

**GOVERNMENT OF PUERTO RICO
PUBLIC SERVICE REGULATORY BOARD
PUERTO RICO ENERGY BUREAU**

NEPR

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IN RE: REVIEW OF LUMA'S INITIAL
BUDGETS

CASE NO.: NEPR-MI-2021-0004

**SUBJECT: Memorandum of Law in Support of
Confidential Treatment of Attachments Submitted as
part of Responses to Requests of Information Filed on
June 19, 2024**

**MEMORANDUM OF LAW IN SUPPORT OF CONFIDENTIAL TREATMENT OF ATTACHMENTS
SUBMITTED AS PART OF RESPONSES TO REQUESTS OF INFORMATION FILED ON JUNE 19,
2024**

TO THE HONORABLE PUERTO RICO ENERGY BUREAU:

COME NOW LUMA Energy, LLC (“ManagementCo”), and **LUMA Energy ServCo, LLC** (“ServCo”), (jointly referred to as “LUMA”), and respectfully state and submit the following:

I. Introduction

1. On May 24, 2024, LUMA submitted to the Puerto Rico Energy Bureau (“Energy Bureau”), the proposed budget for the Transmission and Distribution System (“T&D Budgets”), developed by LUMA. *See Request for Approval of T&D Budgets and Submission of GenCo Budgets for FY2025 and Budget Allocations for the Electric Power System*, filed by LUMA (“FY2025 Budget Submission”). The FY2025 Budget Submission also included the budget proposal for the legacy thermal generation units (the “GenCo Budget”), developed by Genera, and the budget allocation approved by the Puerto Rico Public-Private Partnerships Authority (“P3A”) for the hydroelectric generating units and the public irrigation facilities (“HydroCo Budget”), and the allocation for the Puerto Rico Electric Power Authority (“PREPA”) and its subsidiaries (“HoldCo Budget”).

2. On June 12, 2024, this Energy Bureau issued a Resolution and Order with the subject *Establishment of FY 2025 Budgets, Requirement of Information (“ROI”), and Procedural Calendar* (“June 12th Order”), whereby it set a Procedural Calendar to consider the FY2025 Budget Submission.

3. In the June 12th Order, this Energy Bureau issued Requests for Information (“June 12th RFIs”) to LUMA and Genera and set a procedural calendar pursuant to which the parties were convened to a Technical Conference to be held on June 20, 2024 (“June 20th Technical Conference”). *See* June 12th Order, p. 3-4, and Attachment A. This Energy Bureau directed that responses to the June 12th RFIs were due on June 17, 2024. *See id.*, p. 4.

4. On June 15, 2024, LUMA filed an *Informative Motion on LUMA’s Workpapers and Urgent Request for Extension*. Therein, LUMA informed that it had submitted all supporting work papers with the FY2025 Budget Submission. Regarding the June 12th RFIs, LUMA requested additional time, until June 19, 2024, to submit its responses.

5. On June 18, 2024, LUMA and Genera filed a joint motion requesting that the Energy Bureau reschedule the June 20th Technical Conference and to extend the time to file the presentations for the Technical Conference. *See Joint Request for Continuance of Technical Conference and to Extend Time to File Presentations for the Technical Conference*.

6. In a Resolution and Order dated June 18, 2024, this Energy Bureau re-scheduled the Technical Conference to discuss the FY2025 Budget Submission for June 21, 2024, granted LUMA and Genera until June 19th to file their responses to the June 12th RFIs, and determined that the parties shall file their presentations on June 21st (“June 18th Order”).

7. In compliance with the June 12th Order, as modified by the June 18th Order, LUMA filed its *Motion Submitting Responses to Requests for Information in Connection with FY2025*

T&D Budgets and Request for Confidential Treatment, dated June 19, 2024, whereby it submitted its responses to the RFIs issued to LUMA as a part of Attachment A to the June 12th Order (“June 19th Motion”).

8. Together with its June 19th Motion, LUMA also informed this Energy Bureau that, in compliance with the Energy Bureau’s Policy on Management of Confidential Information, CEPR-MI-2016-0009, issued on August 31, 2016, as amended on September 21, 2016 (“Energy Bureau’s Policy on Management of Confidential Information,” under separate cover and expediently, on or before June 21, 2024, it would submit a memorandum of law in support of its request to file and maintain certain documents under seal of confidentiality. The referenced documents containing confidential information that were submitted under seal on June 19, 2024 were i) ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1, ii) ROI-LUMA-MI-2021-0004-20240612-PREB-030_Attachment1, and iii) ROI-LUMA-MI-2021-0004-20240612-PREB-033_Attachment1. After further consideration, LUMA has determined to withdraw its request for confidential treatment of ROI-LUMA-MI-2021-0004-20240612-PREB-033_Attachment1.

9. In compliance with the Energy Bureau’s Policy on Management of Confidential Information, LUMA submits this memorandum of law that identifies and explains the legal basis for the confidential treatment of portions of ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1 and of the full contents of ROI-LUMA-MI-2021-0004-20240612-PREB-030_Attachment1 that were filed with this Energy Bureau together with the June 19th Motion.

10. With this Memorandum, LUMA is also submitting a public redacted copy of ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1 and requests that the Energy Bureau accept the same. *See Exhibit 1.*

11. It is respectfully submitted that portions of ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1 and the full contents of ROI-LUMA-MI-2021-0004-20240612-PREB-030_Attachment1, should be protected per Article 6.15 of Law 57-2014, known as the Puerto Rico Energy Transformation and Relief Act and the Energy Bureau's Policy on Management of Confidential Information. LUMA is committed to enrich this proceeding with transparency and to enable the Energy Bureau, interested stakeholders, and customers, to fully evaluate and consider the proposed T&D Budgets for FY2025.

II. Applicable Laws and Regulation to submit information confidentially before the Energy Bureau

12. Section 6.15 of Act 57-2014 regulates the management of confidential information filed before this Bureau. It provides, in pertinent part, that: “[i]f any person who is required to submit information to the Energy [Bureau] believes that the information to be submitted has any confidentiality privilege, such person may request the Commission to treat such information as such” 22 LPRA § 1054n. If the Energy Bureau determines, after appropriate evaluation, that the information should be protected, “it shall grant such protection in a manner that least affects the public interest, transparency, and the rights of the parties involved in the administrative procedure in which the allegedly confidential document is submitted.” *Id.*, Section 6.15 (a).

13. In connection with the duties of electric power service companies, Sections 1.10 (i) and (ix) of Act 17-2019 further provide that electric power service companies shall submit information requested by customers, except for: (i) confidential information in accordance with the Rules of Evidence of Puerto Rico; [...]; and (ix) matters of public security involving threats against PREPA, its property or employees. 22 LPRA § 1141i.

14. Access to the confidential information shall be provided “only to the lawyers and external consultants involved in the administrative process after the execution of a confidentiality

agreement.” *Id.*, Section 6.15(b), 22 LPRA §1054n. Finally, Act 57-2014 provides that this Energy Bureau “shall keep the documents submitted for its consideration out of public reach only in exceptional cases. In these cases, the information shall be duly safeguarded and delivered exclusively to the personnel of the [Energy Bureau] who needs to know such information under nondisclosure agreements. However, the [Energy Bureau] shall direct that a non-confidential copy be furnished for public review”. *Id.*, Section 6.15(c).

15. The Energy Bureau’s Policy on Confidential Information details the procedures that a party should follow to request that a document or portion thereof, be afforded confidential treatment. In essence, the Energy Bureau’s Policy on Confidential Information requires identification of the confidential information and the filing of a memorandum of law explaining the legal basis and support for a request to file information confidentially. *See* CEPR-MI-2016-0009, Section A, as amended by the Resolution of September 16, 2016, CEPR-MI-2016-0009. The memorandum should also include a table that identifies the confidential information, a summary of the legal basis for the confidential designation and a summary of the reasons why each claim or designation conforms to the applicable legal basis of confidentiality. *Id.* paragraph 3. The party who seeks confidential treatment of information filed with the Energy Bureau must also file both “redacted” or “public version” and an “unredacted” or “confidential” version of the document that contains confidential information. *Id.* paragraph 6.

16. The Energy Bureau’s Policy on Confidential Information also states the following with regards to access to validated Trade Secret Information:

1. Trade Secret Information

Any document designated by the [Energy Bureau] as Validated Confidential Information because it is a trade secret under Act 80-2011 may only be accessed by the Producing Party and the [Bureau], unless otherwise set forth by the [Bureau] or any competent court.

Id. Section D (on Access to Validated Confidential Information).

III. Request for Confidentiality and Supporting Arguments

A. Sensitive Commercial Information

17. Under the Industrial and Trade Secret Protection Act of Puerto Rico, Act 80-2011, 10 LPRA §§ 4131-4144, industrial or trade secrets are deemed to be any information:

(a) That has a present or a potential independent financial value or ***that provides a business advantage***, insofar as such information is not common knowledge or readily accessible through proper means by persons who could make a monetary profit from the use or disclosure of such information, and

(b) for which reasonable security measures have been taken, as circumstances dictate, to maintain its confidentiality.

Id. § 4132, Section 3 of Act 80-2011 (Emphasis added).

18. Trade secrets include, but are not limited to, processes, methods and mechanisms, manufacturing processes, formulas, projects or patterns to develop machinery and lists of specialized clients that may afford an advantage to a competitor. *See* Statement of Motives, Act 80-2011. As explained in the Statement of Motives of Act 80-2011, protected trade secrets include any information bearing commercial or industrial value that the owner reasonably protects from disclosure. *Id.* *See also* Article 4 of Puerto Rico's Open Data Law, Act 122-2019 (exempting the following from public disclosure: (1) commercial or financial information whose disclosure will cause competitive harm; (2) trade secrets protected by a contract, statute or judicial decision (3) private information of third parties). *See* Act 122-2019, Articles 4 (ix) and (x), 3 LPRA § 9894.

19. The Puerto Rico Supreme Court has explained that the trade secrets privilege protects free enterprise and extends to commercial information that is confidential in nature. *Ponce Adv. Med. v. Santiago Gonzalez*, 197 DPR 891, 901-02 (2017) (citation omitted); *see also Next Step Medical Co. v. MCS Advantage Inc.*, KLCE201601116, 2016 WL 6520173 (P.R. Court of

Appeals, September 13, 2016) (holding that in Puerto Rico, what constitutes trade secrets is evaluated applying a broad definition). A trade secret includes ***any and all information*** (i) from which a real or potential value or economic advantage may be derived; (ii) that is not common knowledge or accessible through other means; and (iii) as to which reasonable security measures have been adopted to keep the information confidential. *Ponce Adv. Medical*, 197 DPR at 906.

i. Attachment 1 to Response to ROI #14 (ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1)

20. Sections 3.0 of each of the Programs that are included in ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1, included as part of LUMA's response to RFI No. 14, include a section on estimated and assumptions on costs (Section 3.3). Several of the Sections 3.3, particularly those involving the Distribution Streetlighting Program, first to fourth bullets, and the Waste Management Program, third bullet, include sensitive commercial information involving future acquisitions that may be conducted through public procurements. Said information should be protected from disclosure to secure the orderly conduct of future competitive procurement processes and to avoid granting unfair advantages to suppliers and/or potential proponents of bidders.

21. On page 5 of a Resolution and Order dated April 29, 2021 with the subject *Request for Partial Reconsideration of Determinations on LUMA's Request for Confidential Treatment and Designations of Portions of Appendix D and of documents and attachments of Responses to Requests for Information to Initial Budget*, this Energy Bureau granted confidential designation to the same information that is included in portions of Section 3.0 of ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1. LUMA is hereby requesting that the Energy Bureau apply said prior ruling on confidentiality to the same sensitive commercial information that was submitted in connection with LUMA's Initial Budgets and that the Energy Bureau find that the same information

that was submitted in ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1, constitutes sensitive commercial information protected from disclosure under applicable law.

22. It is respectfully submitted that the aforementioned portions of Section 3.3 of in ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1, reveal processes and estimations that are key to LUMA's operations and success under the Puerto Rico Transmission and Distribution System Operation Agreement (T&D OMA). They provide details on specific resources that LUMA proposes to acquire for several of the Improvement Programs, including assumption on costs, specifications of materials and goods and explanations on the needs.

23. Premature disclosure of this information would contravene public policy on competitive procurement processes and will impede efficient allocation of PREPA funds that have been earmarked in the Annual Budgets to be invested in programs that would be funded over the next three years to deliver value to customers in accordance with policy and contractual requirements and within annual budget constraints.

ii. *Attachment 1 to Response to ROI #30 (ROI-LUMA-MI-2021-0004-20240612-PREB-030_Attachment1)*

24. This Energy Bureau should also protect the excel file identified as ROI-LUMA-MI-2021-0004-20240612-PREB-030_Attachment1 included as part of LUMA's response to RFI No. 30 because it constitutes financial information that may prove advantageous or useful to LUMA's competitors in the energy business and utilities in Puerto Rico, as well as in the competitive job market for skilled and professional employees in Puerto Rico, as they could use the information to best LUMA in employee recruitment. Additionally, ROI-LUMA-MI-2021-0004-20240612-PREB-030_Attachment1 is a component of LUMA's process, methods, or formula of allocating its financial resources to provide services in a competitive manner. LUMA takes reasonable security measures, such as this one, to maintain confidentiality of its employee's

compensation. Disclosure of the information will compromise LUMA's ability to fairly compete in the future. LUMA respectfully submits that ROI-LUMA-MI-2021-0004-20240612-PREB-030_Attachment1 should be designated as commercially sensitive or trade secret information. This designation is a reasonable and necessary measure to protect the information and enable LUMA to fairly compete in the future.

25. It is respectfully submitted that the right of public access to information is promoted and protected by the public version of the response to RFI No. 30 filed with the Energy Bureau. The protection of the specific information pertaining to ROI-LUMA-MI-2021-0004-20240612-PREB-030_Attachment1 will not hinder nor preclude the public in a material way from gaining access to relevant and necessary information concerning the FY2025 T&D Budget. As such, the interest in the public viewing the information that LUMA hereby requests be kept confidential is outweighed by the harm that LUMA would be exposed to should the information be made available to the public.

B. Critical Energy/Electric Infrastructure Information (CEII)

26. ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1 includes improvements programs that cover all of the functional areas of LUMA as a utility. Several of the programs included in ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1, reference critical energy infrastructure information that, under relevant Federal Law and Regulations, is protected from public disclosure and receives confidential treatment.

27. The Energy Bureau's "Policy on Management of Confidential Information, provides for management of CEII, and directs that information validated as CEII shall be accessed by the parties' authorized representatives only after they have executed and delivered a Nondisclosure Agreement.

28. Generally, CEII or critical infrastructure information is exempted from public disclosure because it involves assets and information the disclosure of which poses public security, economic, health and safety risks. Federal Regulations on CEII, particularly, 18 C.F.R. § 388.113, states that:

Critical energy infrastructure information means specific engineering, vulnerability, or detailed design information about proposed or existing critical infrastructure that:

- (i) Relates details about the production, generation, transportation, transmission, or distribution of energy;
- (ii) Could be useful to a person in planning an attack on critical infrastructure;
- (iii) Is exempt from mandatory disclosure under the Freedom of Information Act, 5 U.S.C. 552; and
- (iv) Does not simply give the general location of the critical infrastructure.

Id.

29. Additionally, “[c]ritical electric infrastructure means a system or asset of the bulk-power system, whether physical or virtual, the incapacity or destruction of which would negatively affect national security, economic security, public health or safety, or any combination of such matters. *Id.* Finally, “[c]ritical infrastructure [(“CI”)] means existing and proposed systems and assets, whether physical or virtual, the incapacity or destruction of which would negatively affect security, economic security, public health or safety, or any combination of those matters.” *Id.*

30. The Critical Infrastructure Information Act of 2002, 6 U.S.C. §§ 671-674 (2020), which is part of the Homeland Security Act of 2002 provides protection from public disclosure of critical infrastructure information. CII is defined as “information not customarily in the public domain and related to the security of critical infrastructure or protected systems....” 6 U.S.C. § 671 (3).¹

¹ Regarding protection of voluntary disclosures of critical infrastructure information, 6 U.S.C. § 673, provides in pertinent part, that CII:

(A) shall be exempt from disclosure under the Freedom of Information Act;

31. The following programs include CEII, that, if disclosed to the public, will expose key assets to security vulnerabilities or attacks by persons seeking to cause harm to the systems. In a Resolution and Order of April 21, 2021 entitled *Determination on LUMA's Request for Confidential Designation and Treatment of Portions of Attachment D of the Initial Budget* ("April 21st Order"), this Energy Bureau granted confidential treatment to the following program briefs, finding that the relevant portions included CEII that should be protected from disclosure. LUMA asks that the Energy Bureau follow its prior ruling and accept the following programs and discrete portions of ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1 confidentially:

i. Critical Energy Management System Upgrades

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- (B) shall not be subject to any agency rules or judicial doctrine regarding ex parte communications with a decision making official;
 - (C) shall not, without the written consent of the person or entity submitting such information, be used directly by such agency, any other Federal, State, or local authority, or any third party, in any civil action arising under Federal or State law if such information is submitted in good faith;
 - (D) shall not, without the written consent of the person or entity submitting such information, be used or disclosed by any officer or employee of the United States for purposes other than the purposes of this part, except—
 - (i) in furtherance of an investigation or the prosecution of a criminal act; or
 - (ii) when disclosure of the information would be--
 - (I) to either House of Congress, or to the extent of matter within its jurisdiction, any committee or subcommittee thereof, any joint committee thereof or subcommittee of any such joint committee; or
 - (II) to the Comptroller General, or any authorized representative of the Comptroller General, in the course of the performance of the duties of the Government Accountability Office
 - (E) shall not, be provided to a State or local government or government agency; of information or records;
 - (i) be made available pursuant to any State or local law requiring disclosure of information or records;
 - (ii) otherwise be disclosed or distributed to any party by said State or local government or government agency without the written consent of the person or entity submitting such information; or
 - (iii) be used other than for the purpose of protecting critical Infrastructure or protected systems, or in furtherance of an investigation or the prosecution of a criminal act.
 - (F) does not constitute a waiver of any applicable privilege or protection provided under law, such as trade secret protection.

32. This program involves replacement of the Energy Management System (EMS) and related technology to operate the electric system safely and reliably. The EMS is a computer-based system that is used by operators to monitor, control and optimize the performance on the generation, transmission and distribution system. ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1 includes a description of the initial state of the EMS, including its vulnerabilities. *See* Section 2.1. Additionally, Sections 2.2, 2.3, and 2.4 provide content on the remediated state and completed state, including the activities to be conducted. Section 2.5 describes the benefits of the program with reference to the primary goals, objectives and impact, and Section 2.6 identifies the risks involved in case of failure of the EMS. *Id.* All of this information should be kept confidentially, as it involves critical infrastructure and provides LUMA's assessment of its vulnerabilities and how and why to address them.

ii. Control Center Construction & Refurbishment

33. Control centers are critical facilities that play a vital role in the safe, reliable and economic performance of the entire electric grid. This program, explained at page 152 of ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1, is targeted at construction or refurbishment of buildings to house the main and back-up control centers and all ancillary support services. The Control Center, undeniably, involves infrastructure that is critical to operating the generation and transmission systems. It is in the public interest to designate as CEII and CI, this program that involves remediation of an essential component of systems operations.

34. Sections 2.1, 2.2, 2.3, and 2.4 of the Control Center Construction & Refurbishment program, provide content on the program for remediation, including the activities to be conducted. Additionally, Section 2.5 describes the benefits of the program with reference to the primary goals, objectives and impact, and Section 2.6 identifies the risks involved in delaying the program. *Id.*

All of this information should be kept confidentially, as it involves the critical infrastructure and provides LUMA's assessment of its vulnerabilities and how and why to address them.

iii. IT OT Telecom Systems & Networks

35. This program includes Information Technology (IT) and Operational Technology ("OT") telecom investments to improve and revamp PREPA's mobile radio system, phone exchange and telephone systems and fiber optic and microwave data radio systems. These systems are used to carry out all of PREPA's IT and OT data. They are, therefore, part of the critical infrastructure to operate the electrical grid safely and responsibly.

36. Section 2.1 includes a description of the technology currently available on network connectivity and Telecom protection. ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1. Sections 2.2, 2.3, and 2.4 of the IT OT Telecom Systems & Networks program provide content on the program for remediation, including the activities to be conducted which in this program involves three steps. *Id.* Additionally, Section 2.5 describes the benefits of the program with reference to the primary goals, objectives and impact, and Section 2.6 identifies the risks of delaying the program because it is a key component of protecting people, property and equipment. *Id.* The aforementioned sections also reference cybersecurity vulnerabilities. All of this information should be kept confidentially, as it involves critical infrastructure and provides LUMA's assessment of its vulnerabilities and how and why to address them with regards to the IT and OT Systems and Networks.

iv. IT OT Cybersecurity Program

37. This program centers on enabling the business and protecting key organizational assets, including people, resources and technology to ensure that cyber risk, internal and external threats, vulnerabilities, and natural disasters are identified and mitigated based on risk and

readiness factors. ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1 includes descriptions of the program that identifies cyber risks that could severely impact T&D operations.

38. Sections 2.1, 2.2, 2.3, and 2.4 of the IT OT Cybersecurity program provide content on the program for remediation, including the activities to be conducted and the types of security measures to be implemented. *Id.* Additionally, Section 2.5 describes the benefits of the program with reference to the primary goals, objectives and impact, and Section 2.6 identifies the risks of failing to implement adequate cybersecurity controls. The aforementioned sections that describe the plan, also reference cybersecurity vulnerabilities. All of this information should be kept confidentially, as it involves critical infrastructure and provides LUMA's assessment of its vulnerabilities and how and why to address them with regards to the IT and OT Systems and Networks. It bears noting that this Energy Bureau has kept pending proceedings on data security matters, confidentially. *See In re Review of the Puerto Rico Electric Power Authority Data Security Plan*, NEPR-MI-2020-0017.

v. Regional & Technical Facilities Security

39. This program will replace and add new security technology and hardware to deter, detect and delay security incidents (e.g., intrusion, theft, damage, etc.) at regional and technical facilities.

40. Sections 2.1, 2.2, 2.3, and 2.4 of the Regional & Technical Facilities Security program provide content on the program for remediation, including the activities to be conducted and the types of measures to be implemented to protect assets, employees and the public. *Id.* Additionally, Section 2.5 describes the benefits of the program with reference to the primary goals, objectives and impact, and Section 2.6 identifies the risks of failing to carry out this program. *Id.* This information should be kept confidentially, as it involves security at regional and technical

facilities and provides LUMA's assessment on vulnerabilities and how to address said vulnerabilities. It bears noting that this Energy Bureau has kept proceedings on physical security plan, confidentially. *See In re Review of the Puerto Rico Electric Power Authority Physical Security Plan*, NEPR-MI-2020-0018.

vi. Warehouse Security

41. This program will focus on providing Closed-Circuit Television (CCTV), card access and fencing at various warehouse locations. This program will replace and add new security technology and hardware to deter, detect and delay security incidents at warehouses.

42. Sections 2.1, 2.2, 2.3, and 2.4 of the Warehouse Security program provide content on the current status of security measures at warehouses, describe the program for remediation, including the activities to be conducted and the types of measures to be implemented to implement physical security controls. *Id.* Additionally, Section 2.5 describes the benefits of the program with reference to the primary goals, objectives and impact, and Section 2.6 identifies the risks associated with not proceeding with this security program. *Id.* This information should be kept confidentially, as it involves security at warehouses and provides LUMA's assessment on vulnerabilities and how to address them. It bears noting that this Energy Bureau has kept proceedings on physical security plan, confidentially. *See In re Review of the Puerto Rico Electric Power Authority Physical Security Plan*, NEPR-MI-2020-0018

43. In conclusion, the aforementioned Sections of ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1 include information and programs for investments and remediation on critical infrastructure and components of PREPA systems whose function is to provide protection and security. They also involve critical elements of systems that are essential for LUMA's operations and critical communication components. If the information falls in the

hands of people who may want to harm the system, it will certainly provide sufficient details to expose the system to risks and harms. It is important to stress that information on security systems, per the aforementioned laws and regulations, should be shielded from public disclosure indefinitely to ensure the systems' integrity and functioning.

IV. Identification of Confidential Information

46. In compliance with the Energy Bureau's Policy on Confidential Information, CEPR-MI-2016-0009, a table summarizing the hallmarks of this request for confidential treatment is hereby included.

Document	Pages in which Confidential Information Is	Summary of Legal Basis for Confidentiality Protection	Summary of Reasons Why Each Claim Conforms to Legal Basis for Confidentiality
ROI #30 ROI-LUMA-MI-2021-0004-20240612-PREB-030_Attachment1	Full contents.	Trade Secret Information under Section D(1) of Energy Bureau's Policy on Confidential Information, CEPR-MI-2016-0009	Attachment I to RFI No. 30 constitutes Trade Secret Information as they contain commercially sensitive or trade secret information that may prove advantageous or useful to LUMA's competitors in the energy business and utilities in Puerto Rico, as well as in the competitive job market.

<p>ROI #14</p> <p>ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1</p> <p>Distribution Streetlighting</p>	<p>Section 3.3; First and Fourth Bullet</p>	<p>Sensitive Commercial Information and Trade Secrets under Act 80-2011</p>	<p>Section III A(i) of this Memorandum discusses and shows that the specified portions the attachment include information for future acquisitions of good and services that may provide unfair advantages to suppliers or proponents and could harm the public interest.</p>
<p>ROI #14 ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1</p> <p>Waste Management Program</p>	<p>Section 3.3; Third Bullet</p>	<p>Sensitive Commercial Information and Trade Secrets under Act 80-2011</p>	<p>Section III A(i) of this Memorandum discusses and shows that the specified portions the attachment include information for future acquisitions of good and services that may provide unfair advantages to suppliers or proponents and could harm the public interest.</p>
<p>ROI #14</p> <p>ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1</p> <p>Critical Energy Management System Upgrades</p>	<p>Sections 2.1-2.6</p>	<p>Critical Energy Infrastructure Information 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674</p>	<p>Section III B(i) of this Memorandum provides the legal basis to establish that that the specified sections of the attachment includes confidential information.</p>

<p>ROI #14</p> <p>ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1</p> <p>Control Center Construction & Refurbishment</p>	<p>Sections 2.1-2.6</p>	<p>Critical Energy Infrastructure Information 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674</p>	<p>Section III B(ii) of this Memorandum provides the legal basis to establish that that the specified sections of the attachment includes confidential information.</p>
<p>ROI #14</p> <p>ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1</p> <p>IT OT Telecom Systems & Networks</p>	<p>Sections 2.1 - 2.6</p>	<p>Critical Energy Infrastructure Information 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674</p>	<p>Section III B(iii) of this Memorandum provides the legal basis to establish that that the specified sections of the attachment includes confidential information.</p>
<p>ROI #14</p> <p>ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1</p> <p>IT OT Cybersecurity Program</p>	<p>Sections 2.1-2.6</p>	<p>Critical Energy Infrastructure Information 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674</p>	<p>Section III B(iv) of this Memorandum provides the legal basis to establish that that the specified sections of the attachment includes confidential information.</p>
<p>ROI #14</p> <p>ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1</p> <p>Regional & Technical Facilities Security</p>	<p>Sections 2.1 - 2.6</p>	<p>Critical Energy Infrastructure Information 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674</p>	<p>Section III B(v) of this Memorandum provides the legal basis to establish that that the specified sections of the attachment includes confidential information.</p>
<p>ROI #14</p> <p>ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1</p> <p>Warehouse Security</p>	<p>Sections 2.1 - 2.6</p>	<p>Critical Energy Infrastructure Information 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674</p>	<p>Section III B(vi) of this Memorandum provides the legal basis to establish that that the specified sections of the attachment includes confidential information.</p>

WHEREFORE, LUMA respectfully requests this Energy Bureau **take notice** of the above and **approve the request for confidential treatment** of portions of ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1 and ROI-LUMA-MI-2021-0004-20240612-PREB-030_Attachment1, which were submitted as part of the responses to requests of information filed on June 19, 2024.

RESPECTFULLY SUBMITTED.

In San Juan, Puerto Rico, this 20th day of June, 2024

I hereby certify that this motion was filed using the electronic filing system of this Energy Bureau. I also certify that a copy of this motion will be notified to the Puerto Rico Electric Power Authority, through its attorneys of record: Mirelis Valle-Cancel, mvalle@gmlex.net and Alexis G. Rivera Medina, arivera@gmlex.net and to Genera PR LLC through: Jorge Fernandez-Reboredo, jfr@sbglaw.com, Alejandro López Rodríguez, alopez@sbglaw.com, legal@genera-pr.com and regulatory@genera-pr.com.



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Exhibit 1
Redacted Public Version of
ROI-LUMA-MI-2021-0004-20240612-PREB-014_Attachment1

Distribution Streetlighting

Distribution Streetlighting

1.0 Program Description

This program deals with upgrading and replacing distribution streetlights that are a physical safety hazard scheduled for repair or replacement based on their criticality. Along with increasing the number of distribution streetlights in service, this process will include light-emitting diode (LED) replacements and geographic information system (GIS) data entry of all streetlights. This program will also audit streetlights' associated billing. PREPA has approximately 500,000 streetlights that should be audited regularly to be determined based on asset management procedures. This program will require LUMA to complete a physical audit of the streetlights, assigning each with a unique identifier. Once this process is complete, updates will be made in the Customer Care & Billing (CC&B) system to ensure customers are being billed accurately for their lights. The program also includes communication with customers on corrections to the street lighting system.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

As a result of natural disasters, including hurricanes and earthquakes, an estimated 70 percent of the approximately 500,000 streetlights in Puerto Rico are damaged. Many of these damaged streetlights (estimated at around 343,000) require repair, replacement, or upgrade. As per Puerto Rico Energy Public Policy Law No. 17 (April 11, 2019), all existing high-pressure sodium (HPS) lamps must be replaced with LEDs by 2030. All streetlights also require data entry into the GIS system (per local rules), proper grounding, and potential underground feeding repairs, with a longer-term need to evaluate and plan the implementation of a smart streetlighting system. The T&D Operation and Maintenance Agreement also requires that public lighting be maintained and improved and that the operations and maintenance of these lights, including LED lighting installation, follow Prudent Utility Practice and applicable law.

Of the 70 percent damaged streetlights, LUMA estimates that approximately 15 percent of the distribution streetlights are a physical safety hazard that requires mitigation to reach remediation. The appropriate personnel will conduct field assessments to categorize assets according to their health based on estimates of condition (likelihood of failure) and criticality (consequence of failure). It will assign an asset score from 0 (worst) to 4 (best). Mitigating risk related to only the highest risk assets will be categorized as a 0 or 1 and performed as System Remediation Plan (SRP) work. These deficient assets will exhibit the following:

- Extreme likelihood of failure, or already failed, *and* likely to cause:
 - A safety impact on the workers or the public and
 - Failure to meet applicable legal requirements, including Act 17, which includes safe and reliable utility operations requirements

All deficient assets, including those in the SRP, will undergo a planning process to achieve the objectives defined in LUMA's Recovery and Transformation Framework. At the assessment time, the most severe safety risks will be flagged for immediate mitigation and pushed to the top of the priority list.

Distribution Streetlighting

Initially, the streetlights had a unique identifier, but PREPA did not document all of them. LUMA's gap assessment shows that PREPA did not complete a billing audit of these streetlights. Without an audit system for streetlights, we cannot incorporate them into key performance indicators (KPIs), and there is no assurance of correct billing.

For the reasons mentioned above, this program is included in the SRP.

2.1.1 Additional Gaps Identified Post-Commencement

As of January 2024, we had completed 95 percent of the assessments. Based on the assessments, LUMA estimates that more than 90 percent (approximately 450,000) of the streetlights in Puerto Rico are damaged and require repair, replacement, or upgrade. Of the 90 percent of damaged streetlights, LUMA estimates that approximately 35 percent (approximately 170,000) of the distribution streetlights are a physical safety hazard that requires pole replacement.

In addition, through assessment, LUMA has identified the proliferation of overhead aerial secondary on a system initially designed to be electrically served by underground means. The ongoing federal program does not have the funding to remediate the underground system's repairs. We estimated that nearly 110,000 streetlights have provisional aerial power and identified over 50 percent of the underground streetlight system needing repairs. Lastly, more than 5,500 streetlights –only poles– have been identified carrying primary voltage lines. We will address the repairs of these poles in another program brief. The ongoing federal program does not have the funding to remediate these poles.

2.2 Description of Remediated State

Under the program, field assessments (audits) will be performed, and a unique identifier will be assigned to all streetlights. High-risk findings (asset scores of 0 and 1) shall be incorporated into a remediation plan within 60 days of identification. That plan shall consider a coordinated approach to remediation based on severity and risk according to the objectives defined in LUMA's Recovery and Transformation Framework.

In the remediated state, we will have accomplished the following:

- A process to identify fused streetlights and dispatch repair crews will have been defined and documented
- Assessment of distribution streetlight assets
- Repair/replacement of distribution streetlight assets that have a high likelihood of failure with the potential to cause damage to public infrastructure or injury to the public

Completing the audit (field assessments) and reaching a remediated state will enable the Customer Experience team to meet the billing improvements and accuracy requirements as outlined under the T&D Operation and Maintenance Agreement, including:

- Implementing and optimizing billing; and
- Implementing accounting and reporting practices for billing, tracking, reporting, management, and collections, including lighting-related services

To ensure accurate and timely billing of all services, LUMA will comply with applicable laws and regulations and the requirements as outlined under Act 83, Act 17, Act 57, and Act 4, including:

- Conducting business responsibly and efficiently with accurate fiscal and operational practices as outlined in Act 83

Distribution Streetlighting

- Adhering to provisions that pertain to developing the form and content of bills, the billing of municipalities, and dealing with billing disputes as outlined under Act 17 and Act 57

2.3 Description of Program Completed State

In the completed state, all damaged lights will have been repaired, replaced, or upgraded over ten years. Within six years from the project's outset, all PREPA-owned streetlights will be entered and monitored through LUMA's GIS system.

Additionally, as part of the completed state, all High-Pressure Sodium (HPS) lamps will be replaced by LEDs by 2030. Finally, a smart streetlight system evaluation will be completed.

In the completed state, LUMA will have achieved the following:

- Improved customer and company ability to report streetlight outages and for LUMA to respond, which improves traffic safety and visibility, pedestrian safety, and personal security by allowing pedestrians and motorists to better see one another
- Updated Oracle CC&B streetlight data with correct locations, wattage details, and unique identifier information to provide a more timely response and dispatch to outages, including customer requests and complaints
- Improved accuracy and billing for public lighting and billing to municipalities, contributing to better communication and relationships with them

2.4 Program Activities

- Completing field assessment to gather asset details (such as location, wattage, and light type) and enter into the asset management database
- Establishing a plan for replacing lights from the perspective of geography and type of light (Complete)
- Evaluating the implementation of smart streetlighting
- Issuing requests for proposals for the replacement of the lights and selecting vendors/contractors to complete the work
- Updating Oracle CC&B (Customer Experience Billing Services functional areas) so that each streetlight has a unique identifier and/or billing account
- Developing processes between Customer Experience, Asset Management, and Operations to identify fused streetlights, including mechanisms to allow customers to report fused streetlights and dispatch personnel to respond
- Identifying key performance indicators related to response times associated with fused streetlights
- Billing audit and updates will happen after the physical audit is completed in the field

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Obtaining federal funding obligation and continuing procurement for materials and construction resources
- Continuing constructions and repairs of cost-obligated federally funded projects

Distribution Streetlighting

- Issuing requests for proposals for the replacement of the lights and selecting vendors/contractors to complete the work
- Develop a map of attributes to update Oracle CC&B so that each streetlight has a unique billing account

2.5 Program Benefits

Primary Goals	Objectives	Direct or Indirect Impact	Streetlight Billing Impact
<input checked="" type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace		
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct	Indirect
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Direct	Direct
	<input type="checkbox"/> Increase service reliability		
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Direct	Indirect
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business		Indirect
	<input type="checkbox"/> Pursue project delivery excellence		
	<input type="checkbox"/> Enable employees to execute operations systematically		
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively deploy federal funding	Direct	
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct	
	<input type="checkbox"/> Improve resilience of vulnerable infrastructure		
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Indirect	
	<input type="checkbox"/> Enable the digital transformation		
	<input type="checkbox"/> Enable the sustainable energy transformation		
<input type="checkbox"/> Other	<input type="checkbox"/> Other		

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Implement effective public safety practices



Distribution Streetlighting

This program improves public safety as fused lights can increase safety and security risks. Also, it will enable better streetlight management. Streetlights enhance traffic safety, pedestrian safety, visibility, and personal security by allowing pedestrians and motorists to see one another better. Customers will be able to identify lights by their unique identifiers and report outages.

This program will help us build better relationships with municipalities so that we are more proactive and less reactive in maintaining streetlights. Increased revenue from streetlighting would reduce the need for revenue increases and aid in reducing the rates customers pay.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

This program will help increase customer satisfaction as customers can identify streetlights by their unique indicator, streamlining customer interactions.

Objective: Deliver electricity at reasonable prices

This program enables a more positive customer experience by restoring streetlights to working order. It also supports proper billing for them, which results in electric consumption being fairly charged to streetlight owners. Re-establishing revenue from the streetlights can potentially postpone or reduce future rate increases for customers.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively deploy federal funding

This program falls directly within one of the targeted federal FEMA funding areas.

Objective: Restore damaged grid infrastructure

This program replaces lights that no longer work due to storm damage or normal wear and tear.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid

Smart streetlighting would satisfy a key component of modernizing the grid, offering the following benefits:

- Contains sensors that adjust their brightness and achieve a significant reduction of energy consumed by dimming each fixture where no traffic is present and by adaptively adjusting its brightness based on the light sensed (as opposed to on/off only)
- Applies a management system that allows for remote monitoring and control of streetlights, enabling the detection of failures and dysfunction
- Incorporates a variety of other functions ranging from containing a level-1 120V vehicle charger to monitoring the availability of parking. It can even sense mischief (e.g., sense the noise of broken glass and initiate an automatic reporting system)

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

Distribution Streetlighting

- This program will increase accuracy in streetlight billing, enabling more systematic business management
- Streetlights can also be incorporated as a performance metric, which will be reviewed annually

2.6 Program Risks

The risks of not moving forward with this program include the following:

- Failure to address public safety/security risks due to non-functioning streetlights
- Failure to deliver a positive customer experience and safe, reliable electricity at reasonable prices
- Reputational risk to LUMA for not delivering an essential service
- Non-compliance with Puerto Rico's Energy Public Policy Law No. 17, which requires the replacement of all HPS lamps with LEDs by 2030.
- Approval and implementation of an LED rate. Updates to CC&B are highly dependent on the LED rate
- If the program is not implemented, LUMA will be unable to meet its commitment under the O&M Proposal T&D 4.2.6, which states: Over a three-year operational period, LUMA will complete an audit on all public lighting assets through the Community Streetlight Initiative (CSI) program. Each asset will have a unique identifier to support a detailed inventory. During this inventory, Streetlights CC&B and Tariffs and Budget groups will work closely to complete a billing audit

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$203.6	\$152.0	\$161.8	\$249.0
SRP Expenditures	\$81.4	\$76.9	\$81.9	\$66.3

3.2 Program Resource Requirements

- Approximately 450,000 LED lights and associated installation hardware
- Adequate internal resources to complete the light field audit and enter GIS data
- Adequate internal and external resources/contractors to carry out the streetlight replacements
- Customer experience representatives
- A scan of the data entered into the asset and GIS databases
- A scan of all documented lighting and billing data from the CC&B system
- Approval of LED rate

3.3 Estimating Methods and Assumptions

We base the average cost for field audits/GIS entry and streetlight replacements on actual experiences with this project.

For field audit/GIS data:

- [REDACTED]

Distribution Streetlighting

- [REDACTED]

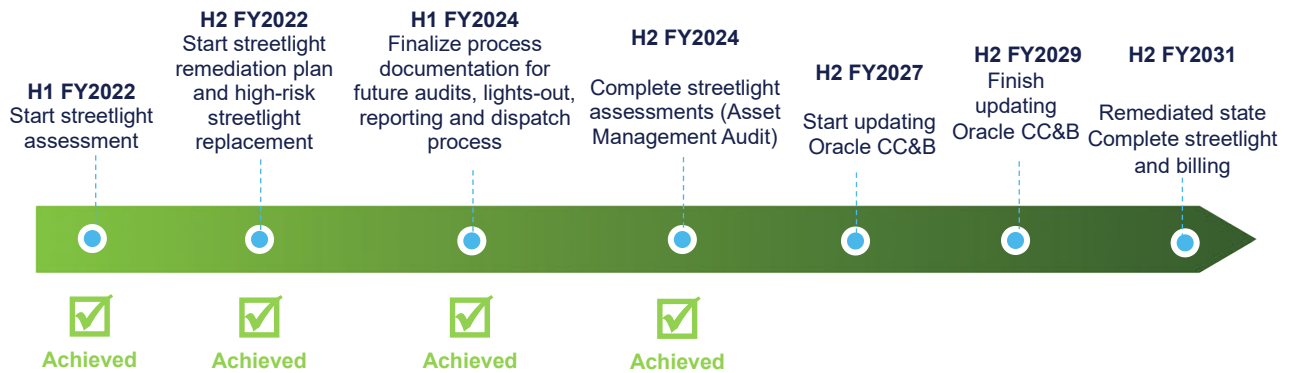
For streetlight replacements:

- [REDACTED]

The following assumptions apply:

- 100 percent of the streetlights will require updates in the CC&B system to add the unique identifier

3.4 Timeline and Milestones



Meter Replacement and Maintenance

Meter Replacement and Maintenance

1.0 Program Description

This program deals with correcting, replacing, and maintaining meters. It will replace failed communication meters on customers with Transmission connection service and provide more system tools to improve daily tasks and reports about meter information or commands. The program also addresses maintaining inventory items related to operating the existing two-way automatic communication system (TWACS).

2.0 Program Rationale

2.1 Initial State and Identified Gaps

- To ensure energy consumption can be measured remotely, and customers are accurately billed rather than given a bill estimation, as the advanced metering infrastructure (AMI) systems replace the approximately 1.5 million meters, we will continue to use present meters to provide service in areas, considering this program will begin in different phases and service areas
- Web services on actual head-end systems/interphases will require optimization or upgrades for today and future needs in order to maintain the service
- Net metering service agreements will continue around the island, and TWACS meters will still be necessary. Three actual projects for non-net energy metering, new connections, and net metering will be available

2.1.1 Additional Gaps Identified Post Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

This program is not in the SRP.

2.3 Description of Program Completed State

The completed state includes:

- More net metering capable meters available around the island for customers installing distributed generation systems
- All safety issues will have been remediated
- Operational efficiencies in going to the substation fewer times. With the new communication boards installed and the communication transmission control protocol/Internet protocol configured, we get those results

2.4 Program Activities

- Issue requests for proposals for the replacement of the meters



Meter Replacement and Maintenance

- Select vendors/contractors to complete the work (Complete)
- Replace meters
- Field work complete (remediated)
- Improved TWACS head end tools or interphases

2.4.1 Additional Activities Identified Post-Commencement

No additional gaps were identified at this time.

2.4.2 FY2025 Activities

The upcoming fiscal year will focus on improving the MV90 program, implementing a meter replacement plan for failing meter readings to reduce manual readings, optimizing/upgrading actual head-end systems (AclaraOne and MV90) and installing new meters with updated communication devices.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Direct
	<input type="checkbox"/> Increase service reliability	
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Direct
<input type="checkbox"/> Operational Excellence	<input type="checkbox"/> Enable systematic management of the business	
	<input type="checkbox"/> Pursue project delivery excellence	
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively deploy federal funding	
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct
	<input type="checkbox"/> Improve resilience of vulnerable infrastructure	
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Direct
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

Meter Replacement and Maintenance

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Implement effective public safety practices

Improves public safety as failed/damaged meters can represent a hazard to customers and utility employees. Having customers with no electrical knowledge exposed to energized electric meter services is a serious hazard. Utility low-voltage employees will not require a monthly visit to the transmission private substation to get meter readings and energy data.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

Continue to retrieve results via the existing remote metering program to provide readings for accurate billing, as we develop a net metering program.

Maintain the current system in good condition and at the lowest cost for the best performance as AMI is implemented.

Objective: Deliver electricity at reasonable prices

Reestablishing accurate revenue from the failed meters can postpone or reduce future rate increases. It improves equability in that all are paying their fair share.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Restore damaged grid infrastructure

Replace meters that are no longer working due to long life or failure communication device.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid

Modernize the grid by installing new meters that have an internal communication device that impacts more than 1,000 customer meters, allowing more frequent meter reads to support modern grid capabilities.

2.6 Program Risks

Risks to delaying or canceling this program include:

- Failure to address safety risks related to damaged meters or minimum acceptable distance
- Failure to deliver a positive customer experience and deliver safe, reliable electricity at reasonable prices
- Continue with estimated of meter readings on customers connected in transmission voltages or key accounts
- Violation of Law 272 if we estimate bills more than 120 days

Meter Replacement and Maintenance

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$11.3	\$12.1	\$8.7	\$34.8
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

Approximately 1,000 meters are required.

External resources/contractors are required to carry out head-end optimizations and upgrades.

3.3 Estimating Methods and Assumptions

The assumptions for the average cost for meter replacements and the two-way automatic communication system are based on net metering program meter changes, new installation programs, and recycling program meter changes.

3.4 Timeline and Milestones



Billing Accuracy & Back Office

Billing Accuracy & Back-office

1.0 Program Description

This program includes a billing print and delivery upgrade and back-office systems to ensure LUMA can continue producing customer invoices. Current technology, machines, and systems are outdated, creating a financial liability in delayed revenue of approximately \$12.5 million for invoices not generated daily. This upgrade includes acquiring new hardware and software to support billing and customer contracts and removing redundant bill printing and enveloping equipment. Additionally, the program supports back-office processing of service order paperwork and mobilizes resources to address backlogs of estimated and unbilled accounts. The program also implements a customer experience metrics dashboard and agent routing technology for Billing Services to reduce resolution time and increase customer satisfaction.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Throughout this program brief, we will discuss separately the different projects under this program, e.g., Bill Print and Delivery Outsourcing, and Removing Redundant Bill Printing and Enveloping Equipment.

BILL PRINT AND DELIVERY OUTSOURCING

For hard copy bills, PREPA currently generates and prints customer bills using an in-house bill print and delivery (BP&D) function located at its main office building (NEOS). Most bills are issued automatically using the Oracle CC&B platform (v2.7) and other key IT systems (e.g., Control M, Doc1, Streamweaver, etc.). As part of this in-house function, PREPA manages the process for handling any returned mail (e.g., marked as undeliverable by the US Postal Service). The bill print and delivery function is costly (approximately \$8.5 million/yr.) and exposes PREPA to unnecessary risks as it relies on outdated bill printing/enveloping machinery (InfoPrint 4000) and uses unsupported IT software (Doc1). PREPA has no current BP&D emergency backup plan (e.g., in the event of a major disaster at NEOS). There is an opportunity to outsource the BP&D function, thereby reducing cost and risk.

REMOVE REDUNDANT BILL PRINTING AND ENVELOPING EQUIPMENT

The BP&D function relies on key assets, including bill print and enveloping machinery and key technology and software platforms. The machinery includes two bill printing machines (InfoPrint 4000 machines) and three enveloping machines (FPS14, RD3W, RD3N). This machinery is old and near the end of its productive life. Oracle's customer care and billing system (CC&B) platform (V2.7; recently upgraded in Q2/Q3 2020) is the base software platform to store customer billing and usage data. The following software is also used to control the BP&D function: Control-M (batch scheduling), Doc1 (bill composition/rendering), Streamweaver (bill file separation), E2Vault (indexes/ prepares files for rendering) and Linux SMTP servers (eBill notifications). The vendor does not currently support the Doc1 platform, which creates risks for PREPA's bill print and delivery function.

Billing Accuracy & Back Office

USE RESOURCES FOR BACK-OFFICE PROCESSING OF SERVICE ORDER PAPERWORK AND MANUAL DATA ENTRY/UPDATE OF CC&B

Currently, service order field work is distributed manually (using paper) to PREPA's field teams on a decentralized basis. Upon completion of service orders, field teams will return completed paperwork to physical locations to be manually entered into record systems (e.g., CC&B, CUCOH, etc.). Examples of service order work include:

- Cut-off for non-payment orders (current PREPA past due and eligible for cut-off accounts customers >100,000)
- Claims-related field work (12,000-15,000 meter investigations/exchanges per year)
- Consumption on active meters without an account approximately (approximately 5K backlog)
- Theft orders (approximately 30K meter investigations conducted per year)

The lack of a digital workforce management solution is a major gap in the effective and efficient completion of quality work. It inhibits the timely and accurate recording of work for PREPA (e.g., due to manual data entry errors). Short-term and long-term solutions may be needed to achieve gains in efficiency, quality, and cost savings that drive long-term value for PREPA and its customers. In the short-term, solutions may include process redesign, labor, use of technology (scanners, fax, etc.), and other digital solutions to minimize paper processing and manual data entry. In the long term, solutions may include implementing a digital workforce management solution that will distribute service orders to field teams on an automated basis.

USE RESOURCES TO WORK DOWN ESTIMATED, UNBILLED, AND OTHER BILLING EXCEPTION-RELATED ACCOUNTS

"Billing exceptions" are defined as customer bills that cannot be automatically issued/printed via the Oracle CC&B platform due to a breakdown or error in the process or a bill objected to by customers, known as a "Claim." PREPA manages several types of billing exceptions, including (backlog amount listed in parentheses):

- unbilled accounts (approximately \$9,000)
- estimated bills (approximately \$143,000)
- billing error dollar amount to be determined – request for backlog made)
- consumption on the active meter without an account (approximately \$5,000), and
- claims (no backlog; approximately \$12,000 claims/year)

In addition, we believe that the asset management and billing systems do not accurately track many streetlights and joint-use assets, so they are not being billed appropriately.

CUSTOMER EXPERIENCE METRICS DASHBOARDS

As part of the review of documents PREPA shared, and through key stakeholder interviews conducted in the functional areas of billing, payments, credit, collections, and theft, the team has not identified a set of holistic performance metrics and management meetings designed to drive PREPA's performance. PREPA's limited metrics are scattered across many documents. In addition, there are limited performance management meetings, but it is unclear how effective they are in driving performance. We did not identify corrective action plans to drive performance (although we identified one-off initiatives on a case-by-case basis).

Billing Accuracy & Back Office

AGENT WORK ROUTING TECHNOLOGY FOR BACK-OFFICE (WORK QUEUE ASSIGNMENT)

Billing exception work (unbilled accounts, estimated bills, etc.) is partially manually managed by extracting information from CC&B and putting it into reports (e.g., some reports are in Excel or within the True North Dashboard). Improved work routing to back-office agents will improve workforce management and productivity, yielding operational improvements for the back-office.

GENERAL TECHNOLOGY BILLING

There are other technology gaps within the current billing solution that this program will address (e.g., loose error controls within Oracle CC&B). Within the scope of this program, the team will further evaluate market-available CC&B solutions and their fit against LUMA's business requirements, technology requirements, cost, and vendor services to implement recommended solutions and required integrations. This program will also decommission the on-premises Aclara Meter Data Management (MDM) solution.

Other technology gaps exist in billing for key areas, including joint use and high-load moves. Investments are needed to achieve Payment Card Industry (PCI) compliance related to payments and work areas related to theft management and credit and collections. Finally, scanning technology will help support the manual service order dispatch and return.

This program supports the necessary investments needed to close these gaps.

2.1.1 Additional Gaps Identified Post-Commencement

Additional gaps and expansiveness of the known gaps became apparent upon the commencement of operations of the billing and payments functions.

OPERATIONAL REPORTING

- Standard operating reports for workforce management, system performance, and task completion on a daily, weekly, or monthly basis are either non-existent, insufficient, unavailable due to data connectivity issues, or questionable in accuracy
- Additional reporting and repair of existing reporting must be addressed to reach a remediated state

BILLING ACCURACY REVIEW AUTOMATION AND PROCESSING

It is limited to no industry standard bill segment that automates quality and error evaluation algorithms or programming. This gap currently impacts unbilled accounts and estimated accounts. Further, the loss reduction of underbilled accounts is significant. Post commencement, it became clear that non-standard configuration and programming of the billing system resulted in underbilled accounts. A lack of controls on user functions results in further underbilling. Programming changes are necessary to limit user roles, create evaluations, and enable issue detection and correction in a controlled and automated process.

Programming changes are also necessary for billing adjustments and bill presentment to enable the adjustment to be accurately and explicitly reflected on customers' bills.

Billing Accuracy & Back Office

2.2 Description of Remediated State

In the remediated state, the following will have been implemented by billing requirements as outlined under Act 17, Act 57, and Annex I of the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement:

- BP&D function outsourced to and being performed by a third-party vendor, reducing risk, and improving customer experience
- A significant reduction of billing exception backlogs (e.g., unbilled accounts, estimated bills, etc.)
- Centralization of back-office operations for improved billing exception management and the optimization of the dispatch, return, and data entry of field services orders into systems of record
- Improve reporting to identify gaps and optimize the bill print and delivery function, billing exception management, payment processing, and theft identification/deterrence

2.2.1 Additional Remediated State Description Identified Post-Commencement

- Optimization of customer care and billing system to include appropriate fiscal controls, mitigate user manipulation of key billing components (meter reads, unauthorized rate changes, etc.), minimize the risk of revenue loss due to underbilling, and establish reporting for business operations and management
- Implemented configuration and programming to reduce the volume of manual tasks that result in higher volumes of errors
- Implementation of appropriate roles to enable the ability to route workflows and tasks through centralized and specialized groups (billing, energy irregularities, revenue protection)
- Accurately rebuild broken and insufficient operational reports and build out currently non-existent standard utility daily, weekly, and monthly operational reports

2.3 Description of Program Completed State

BILL PRINT AND DELIVERY OUTSOURCING

When the BP&D function is outsourced, the outsourced third-party vendor will provide a comprehensive solution to print, batch, render, sort (hard copy printed bills and electronic bills), store images, enable bill image access, etc. The vendor will also be expected to provide address standardization and returned mail services. Finally, the vendor will have a disaster mitigation and recovery plan to manage disaster-related risk.

REMOVE REDUNDANT BILL PRINTING & ENVELOPING EQUIPMENT

After the BP&D function is outsourced, the existing in-house bill printing and enveloping machines will need to be removed, and the current space (NEOS, 1st floor) will need to be remodeled for reuse.

USE RESOURCES FOR BACK-OFFICE PROCESSING OF SERVICE ORDER PAPERWORK AND MANUAL DATA ENTRY/UPDATE OF CC&B

Currently, service order field work is distributed manually (using paper) to PREPA's field teams on a decentralized basis. In the completed state, the back-office service order work will be centrally dispatched (and completed service order notes/details will be returned to the centralized back office).

Billing Accuracy & Back Office

Resources will be appointed to generate and prepare service order lists across many service order types, which LUMA field teams will carry out. Once LUMA field teams complete the work, the back office will follow a process to provide support with returned service orders (completed with notes), which the resources will manually enter into an appropriate record system (e.g., CC&B). This short-term process will be used until the long-term digital solution can be implemented to reduce manual labor-intensive processes, and paperwork.

USE RESOURCES TO COMPLETE BACKLOG OF ESTIMATED, UNBILLED, & OTHER BILLING EXCEPTION-RELATED ACCOUNTS

Significant billing-related backlogs exist at PREPA (e.g., estimated bills, unbilled residential/commercial accounts, unbilled streetlight accounts, etc.). For example, the estimated bill backlog is approximately 143k or approximately 10% of 1.47m PREPA customers. Typical estimated bills as a percentage of total customers at well-functioning utilities range from 1-2% (a gap of 8-9% exists to be closed).

Additional resources will be used to understand root cause drivers, revise/develop key processes, and work down the backlogs to close the gap and achieve a well-functioning billing system.

CUSTOMER EXPERIENCE METRICS DASHBOARDS

In the completed state, the dashboard will deliver a complete set of metrics prioritized and linked to business objectives, ultimately driving effective performance management for these functional areas. Enhancing the dashboard with metrics for these areas would provide transparency into performance (e.g., YTD actuals vs. monthly/annual targets) and drive focus on identified gaps for the development of performance improvement plans (e.g., based on prioritized initiatives with defined scope, timing, cost, and responsible parties).

AGENT WORK ROUTING TECHNOLOGY FOR BACK-OFFICE (WORK QUEUE ASSIGNMENT)

Currently, billing exceptions (estimates and unbilled accounts) are managed by extracting information from CC&B into reports. While the current reports provide insights into monthly totals and trends, they do not provide visibility into intra-day/month volumes for more effective management of backlogs.

A workforce management solution for back-office work will improve work management and productivity by automating work distribution and tracking.

GENERAL TECHNOLOGY BILLING

The completed state will include acquiring technologies and implementing upgrades to the current billing solution to address customer billing and compliance gaps. Solutions may include upgrades to the current CC&B system, improvements to ensure PCI compliance, and the implementation of scanning technology to support the manual service order dispatch and return process.

2.4 Program Activities

- Establishment of reliable bill printing, presentment, and delivery SRP (Complete)
- Reduction of billing exception backlogs (e.g., unbilled accounts, estimated bills, etc.) to normal industry levels (Complete)



Billing Accuracy & Back Office

- Establishment of improved dunning processes to drive increased collections and support achievement of Days Sales Outstanding (DSO) performance metric targets (Complete)
- Centralization of back-office operations to support standardized processes, improved quality and increased workforce productivity (Complete)
- Establishment and development of billing and revenue protection (collections) policies, procedures, processes, and standards (Complete)
- Implementation of key technologies to support improved billing, payments, credit & collections and theft management

2.4.1 Additional Activities Identified Post-Commencement

Post-commencement, the organization has identified additional key activities after evaluating the root cause of related backlog and persistent issues. The initial assessment of the backlog of items was believed to have been a lack of personnel, training, or adherence to work completion. However, upon further evaluation, significant barriers and inefficiencies in the programming and configuration of Oracle CC&B impede the steady-state billing function.

Some of the additional activities include, but are not limited to, the following:

- Reconfiguration of roles and user functions in Oracle CC&B to provide proper workflows, error resolution, and reporting. This will enable:
 - address error alerts to reduce returned mail
 - functional audits to support process adherence and employee coaching
- Reconfiguration of billing exception thresholds, alerts and routing for completion to enable timely billing
- Significant additions of billing segment charge exception handling by charge value and change from historical segments
- Programming and configuration changes related to account management for start, stop, and transferring service as existing programming does not meet business process requirements and results in errors
- Programming changes for service order types and steps to create clarity, efficiency, and tracking between the field and back-office
- Programming, configuration, patching and change management of related business processes to address issues with meter lifecycle between integrated systems and process interdependencies
- Implementing controls, reports, and alerts to address the current deficiencies to bring the billing system up to standard utility billing practice

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Complete user roles and functions configuration developed in FY2025 in CC&B
- Complete final remediation of the Oracle CC&B estimation algorithm issue identified through assessments of meter lifecycle in FY2025
- Develop remaining reporting for work routing, management, and exception handling
- Complete assessment of meter lifecycle issues between Oracle CC&B and TWACS/AMR to target root cause challenges regarding long-term estimating meters. Conduct data clean-up and standardization of historical meter loading to systems
- Automatic closure of service orders in CC&B
- Continued validation of existing utility intelligence platform reporting dashboards



Billing Accuracy & Back Office

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	<input type="checkbox"/> Implement effective public safety practices	
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Direct
	<input type="checkbox"/> Increase service reliability	
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Direct
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input type="checkbox"/> Pursue project delivery excellence	
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild & Resiliency	<input type="checkbox"/> Effectively deploy federal funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input checked="" type="checkbox"/> Improve resilience of vulnerable infrastructure	Indirect
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

Objective: Deliver electricity at reasonable prices

By improving efficiencies and removing billing backlogs, the program will be able to ensure more reasonable prices for customers. In addition, by more efficiently handling billing and associated back-office functions, and increasing the use of digital platforms to engage with customers, the program will help to ensure better customer relations and deliver a more positive customer experience.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business



Billing Accuracy & Back Office

Objective: Enable employees to execute operations systematically

This program will directly improve the systematic management of the business by actively reducing the number of manual processes, and helping to support the implementation of a fully integrated workforce management system. This will also improve employee efficiency.

This program will directly improve the systematic management of the business by ultimately eliminating the significant backlog of estimated, unbilled, and other exception-related accounts. This effort will enable management to be more effective in deploying employees and resources to keep accounts current and up-to-date going forward. Working down the backlog will improve back-office efficiency, improve collections metrics and reduce accounts receivable.

This program will improve the automated distribution and management of back-office work to back-office agents, thereby improving employee productivity and work quality.

This program also includes implementing tools that empower management to measure and manage KPIs actively. Improved oversight and visibility of KPIs will improve the business's management, operations, and performance.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Improve resilience of vulnerable infrastructure

Outsourcing the BP&D function to a third-party vendor with a reliable emergency response plan and business continuity plan improves the resilience of the billing system. Removing redundant bill printing and enveloping equipment will reduce overall risk and improve resiliency as these machines are vulnerable to flooding in their current location.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Enable the digital transformation

This program will enable digital transformation by reducing manual processes and helping support the implementation of a workforce management system. As such, the program will reduce manual efforts and their associated risks, enabling effective management and increased use of digital technology.

This program will enable digital transformation by actively improving back-office work's automated distribution and management.

The KPI dashboard supported by this program bolsters the enterprise-wide effort to adopt best-in-class utility practices, including implementing and using digital technology.

2.6 Program Risks

Risks associated with delaying the program/projects may include the following.

BILL PRINT & DELIVERY OUTSOURCING

- LUMA fully redesigned and branded bills may not be available at commencement



Billing Accuracy & Back Office

- LUMA bills may not be produced accurately or at all and delivered on a timely basis (e.g., due to relying on current outdated equipment/software)
- LUMA bills may not be immediately available via the LUMA website – *Mi Cuenta* (e.g., due to relying on current outdated equipment/software)

REMOVE REDUNDANT BILL PRINTING & ENVELOPING EQUIPMENT

- BP&D equipment being rendered useless in the event of a natural disaster and flooding
- BP&D equipment could break down due to the age of the equipment, thereby delaying the issuance of bills

USE RESOURCES FOR BACK-OFFICE PROCESSING OF SERVICE ORDER PAPERWORK AND MANUAL DATA ENTRY/UPDATE OF CC&B

- Lack of an effective, efficient, and quality system for distributing service order field work and returning completed service order work (and manually entering into systems of record) will negatively impact the business
- The lack of an effective system will affect operations by driving inefficient disposition of work (e.g., inhibiting field resource optimization resulting in cost increases) and lowering customer satisfaction (e.g., delays in service order completion will delay new service connections or result in erroneous disconnection of service – both of which result in negative customer experiences)
- Current systems, or lack thereof, inhibit the timely and accurate recording of work (e.g., due to delays in entering data or errors associated with uncontrolled manual data entry)

USE RESOURCES TO WORK DOWN OF ESTIMATED, UNBILLED, & OTHER BILLING EXCEPTION-RELATED ACCOUNTS

- Continued building of backlogs of unbilled accounts, estimated bills and other backlogs will lead to increased cost of servicing customers and decreased customer satisfaction
- The risk of not working down estimated bill backlogs (approximately 143,000 or approximately 10% of 1.47 million customers) will lead to increased customer confusion due to billing inaccuracy and customer dissatisfaction
- The risk of not working down unbilled accounts backlogs will lead to delayed revenue recognition and collections
- There is a risk of ongoing challenges if bills are not sent to streetlight customers, resulting in unaccounted-for energy usage and lost revenue

CUSTOMER EXPERIENCE METRICS DASHBOARDS

- There is a risk of having an ongoing lack of transparency into performance (e.g., year to date actuals vs. monthly/annual targets) and an inability to drive performance improvement

AGENT WORK ROUTING TECHNOLOGY FOR BACK-OFFICE (WORK QUEUE ASSIGNMENT)

- There is a risk of not having visibility on intra-day/month billing exception volumes for more effective management of backlogs
- There is a risk of being unable to track and manage productivity for sustained operational excellence



Billing Accuracy & Back Office

3.0 Program Funding and Timeline

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$14.8	\$17.8	\$17.8	\$101.5
SRP Expenditures	\$0.1	—	—	—

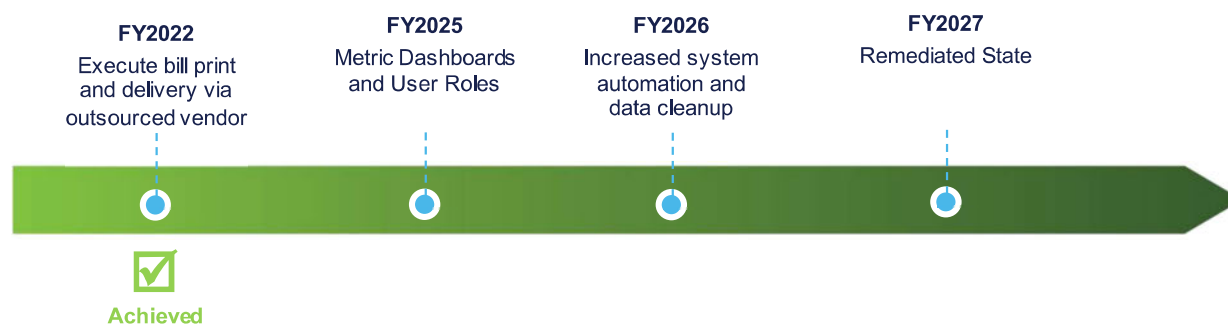
3.2 Program Resource Requirements

- To implement and stand up the new BP&D vendor, both vendor and LUMA testing resources are required to ensure timely and accurate bill production
- Collaboration with IT/OT: Collaboration with LUMA IT/OT resources will be required to stand up the new BP&D vendor (e.g., both bill testing and ensuring electronic bill availability on the LUMA Mi Cuenta website)
- Additional resource needs have been identified for the CC&B Optimization efforts. The program activities will be addressed through current vendors supporting the CC&B application. These resources will be required to support business functional system support, programming system configuration changes and system testing

3.3 Estimating Methods and Assumptions

- The BP&D vendor successfully launched the outsourced third-party function at LUMA commencement
- Costs for the Billing Accuracy and Back-office program (and projects) were estimated based on historical program information, contract & internal resources, expected estimates received from third-party vendors and estimations of the number of employees and hours required
- Post-commencement the anticipated costs for billing accuracy and back-office are being evaluated in two parts:
 - CC&B optimization providing and billing system evaluation through a third-party expert
 - Revenue loss mechanisms through theft deterrence and field investigations

3.4 Timeline and Milestones



AMI Implementation Program

AMI Implementation Program

1.0 Program Description

The Advance Metering Infrastructure (AMI) implementation program establishes two-way remote meter reading reporting and control capabilities. This program enables a broad range of capabilities that result in improved reliability and resiliency, potential cost savings to the utility and customer, and increased customer satisfaction, through the support of clean energy technology integration. This is achieved by offering more granular consumption data, bi-directional metering, outage notifications, power quality measurements, and remote connect/disconnect. For the utility, operational savings and revenue protection are critical drivers, as well as an outage management system (OMS), disaster recovery (DR), data aggregation, load forecasting, load research, rate studies, and many other critical utility functions. AMI programs are usually seen as top-priority foundational programs due to their large number of related and dependent programs and the savings and immediate customer benefits.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

LUMA does not currently have an AMI system. The current system is a two-way automatic communication system (TWACS), limited to reading approximately 1.5 million meters. The current Aclara meters are not AMI and cannot meet the requirements of Act 17. The functions of an AMI metering system are described above in the program description section. Before LUMA started operations, PREPA conducted AMI pilot projects to replace the current meters, but they poorly implemented these and abandoned a portion of them.

We consider a meter data management (MDM) system integral to AMI since it provides many data analytics that other applications and company programs utilize. In particular, an MDM is a critical element in billing load research, revenue protection, and data analytics. We will install an MDM system as part of the AMI implementation. PREPA investigated prepay metering a few years ago but did not proceed. They also do not have an approved rate for implementing prepay. PREPA also had an AMI request for proposal in process in 2018 that Accenture prepared. They put the request for proposal on hold due to the pending LUMA contract. We would need to revisit and revise it since it does not appear to have contemplated departmental needs broadly across the organization.

This program will include consideration of the document “PREB CORE GUIDELINES – Electric Distribution Planning, Section 12 Phased Adoption of Advanced Metering Infrastructure” and Act 17, including:

- Develop a strategic plan for the phased adoption of AMI that identifies the different benefits that can be achieved with this technology, e.g., enhanced reliability and resiliency, including through facilitation of fault location, isolation, and service restoration (FLISR) functionality and characterization of power quality; support of sustainability goals including through conservation voltage reduction mechanisms, identification of favorable locations for the integration of distributed renewable energy, strengthening of the utility telecommunications and control signals networks

AMI Implementation Program

- Make use of AMI to mitigate both technical and non-technical energy losses
- Make use of AMI to identify feeders that can benefit from demand response programs and energy efficiency mechanisms (will be included in requirements gathering in conjunction with LUMA's DR and energy efficiency (EE) initiatives)
- Act 17 considerations, such as making net metering, demand response, and other programs universally available across the island

The addition of special locking devices on customer billing meters will also help to minimize tampering. Tampering with meters contributes to energy theft and non-technical energy losses. Moreover, it can result in electrical contact and potentially grave injury.

2.1.1 Additional Gaps Identified Post Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

This program is not part of the SRP.

2.3 Description of Program Completed State

In the completed state, LUMA will have implemented highly capable AMI and MDM technologies to address operational needs, such as revenue protection, service restoration expediency, and system data analytics. These systems will coordinate with other grid modernization efforts that can take advantage of smart metering and the associated communication canopy accompanying the AMI system. We will tightly integrate it into other utility IT systems to maximize AMI's value to the utility and our customers. These integrations include, to various levels: customer billing, customer information portals, OMS, advanced distribution management system (ADMS), conservation voltage reduction, and work order management systems, among others.

Expected benefits of the program include:

- Improved outage response and restoration speed with detailed knowledge about the location and extent of outages in near-real-time
- Expanded use of net metering to enable more widespread use of solar or other renewables
- Improved customer satisfaction with customer web portal features such as:
 - Detailed views into electric usage during the month on at least an hourly granularity
 - Flexible payment options, including bill date selection, offering different rates such as time of use (TOU), demand, etc., along with prepay and levelized billing
 - Alternate rate comparison capability to allow customers to examine "what if" scenarios if they had been on an alternate rate
 - Customer alerts based on budget and electric consumption targets, outages, etc.
 - Ability to schedule power re-connect/disconnect
- Better environmental responsibility due to reduced truck rolls and remote resolution to address customer concerns such as billing read verification
- Tamper and theft notification
- Better non-pay management by deploying remote disconnect to all residential meters, with the added benefit of reducing operational costs on move-in/out

AMI Implementation Program

- Improved overall conservation with features such as:
 - Providing detailed customer electricity usage information to identify high electric usage in shorter timeframes before they become critical
 - Identifying system losses with system energy balances and electric consumption analysis
 - Enhancing operational and financial performance through revenue recovery
 - Improved operational efficiencies through increased situational awareness of electric systems
 - Improved outage response and restoration speed due to detailed knowledge about the location and extent of outages in near-real-time
 - Improved operational efficiencies, expense, and environmental impacts of truck rolls using remote connect/disconnect electric meters to support remote turn on/off for non-pay, move in/out, and prepay

2.4 Program Activities

- Create a solid cross-functional team to oversee the formation of the business plan and manage the implementation of the technologies
- Identify failed meters and obtain failed meter identification information from PREPA
- Geographically locate failed meters
- Establish a plan for replacing meters from a geographical perspective and a customer size perspective
- Meter inspections to identify safety issues
- Develop a business plan and file for PREB approval (Complete)
- Develop scope, process improvements, and technical requirements documents
- Upon receipt of PREB approval, issue a request for proposal for the decided scope of work (Complete)
- Upon vendor(s) selection, order equipment and commence installation/construction:
 - Installation of a head-end system to capture and partially validate meter data
 - Installation of an MDM system that imports data from the head-end system, completes validation, allows analytics, and makes it usable by other IT/OT applications
 - Installation of a communication infrastructure to bring meter data from the meters to the head-end
 - Installation of smart meters, integration of AMI data with the customer billing system, customer information portals, OMS, work order management system, and other available applications
- Put in place a robust, centralized organization to manage this and other metering systems that may be in place, such as MV-90
- Assure IT/OT applications continue to utilize AMI data effectively and accurately
- Develop/implement algorithms and information portals that analyze MDM data for operational and business purposes (e.g., distribution system planning, energy theft, etc.)
- Develop and implement ongoing partnerships and other business agreements with vendors to manage and maintain the technologies as needed
- Develop and implement processes and methods to capture and measure benefits obtained from the technologies
- Report technology performance and benefits internally and externally as needed

2.4.1 Additional Activities Identified Post-Commencement

No additional gaps were identified at this time.

2.4.2 FY2025 Activities

AMI Implementation Program

The focus for the upcoming fiscal year will be:

- The start of meter deployment with a ramp-up period of installations to allow for functional testing.
- Pre-deployment walk-downs of meters were conducted to survey their condition and obtain meter-to-transformer and transformer-to-device relationships
- Systems integration of the head-end system and the work order management system
- Initial planning for integration of outage management system and GIS.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
☒ Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	☒ Implement effective public safety practices	Indirect
☒ Improve Customer Satisfaction	☒ Deliver a positive customer experience	Direct
	☒ Increase service reliability	Direct
	☒ Deliver electricity at reasonable prices	Indirect
☒ Operational Excellence	☒ Enable systematic management of the business	Indirect
	☒ Pursue project delivery excellence	Direct
	☒ Enable employees to execute operations systematically	Direct
☒ System Rebuild and Resiliency	☒ Effectively deploy federal funding	Direct
	☒ Restore damaged grid infrastructure	Direct
	☒ Improve resilience of vulnerable infrastructure	Direct
☒ Sustainable Energy Transformation	☒ Modernizing the grid	Direct
	☒ Enable the digital transformation	Direct
	☒ Enable the sustainable energy transformation	Indirect
☒ Other	<input type="checkbox"/> Other	

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Increase service reliability

Service restoration speeds will improve through understanding service status via communications from the meters, incorporating meter status info in OMS for improved equipment outage predictions, and more accurate crew dispatching. This will support the grid's resiliency and reliability.

AMI Implementation Program

Objective: Deliver a positive customer experience

We will deliver a positive customer experience by providing visibility into their service status and improving restoration speed, giving them consumption information to facilitate conservation, practically eliminating estimated billing, and facilitating the establishment of smart home technologies.

Objective: Deliver electricity at reasonable prices

We will deliver electricity at reasonable prices through cost reductions due to the elimination of manual reads, reduced truck rolls and travel time, elimination of energy theft, and facilitation of peak load management which can postpone capital improvements.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

Systematic management of the business will be attained through AMI integration with the outage management system, which allows for better system planning by understanding the current load and trends.

Objective: Pursue project delivery excellence

We will deliver excellence through improved service restoration speed and reduced operational costs.

Objective: Enable employees to execute operations systematically

The integration of data with OMS will allow better equipment outage predictions. Understanding meter status will help identify nested customer outages that we could miss without the technology. Moreover, the remote connect/disconnect capability reduces truck rolls and other potential negative customer interactions.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively deploy federal funding

Objective: Restore damaged grid infrastructure

Objective: Improve resilience of vulnerable infrastructure

Smart meters provide data allowing the customer and LUMA more flexibility and understanding of grid conditions and personal usage. Smart meters provide data from the meter and allow LUMA to roll up data to the transformer and feeder level to better understand loading and voltage at the customer and system level. Smart meters are a key component of understanding solar at a customer premise, electric vehicles and other customer owned energy sources. Smart meters are critical in identifying outages and restorations enabling efficiencies in restoring power to customers.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid



AMI Implementation Program

The grid will be modernized by establishing two-way communications with customer meters, collecting additional system data such as voltage and power quality information that can help improve service quality, and establishing a communication infrastructure that can also be leveraged for distribution automation technologies.

Objective: Enable the digital transformation

Installing digital smart meters will enable digital transformation. In addition to increasing service reliability and conservation benefits, they can facilitate the establishment of smart home/business technologies.

Objective: Enable the sustainable energy transformation

Sustainable energy transformation will be enabled through peak load reduction programs, voltage reduction, electric energy conservation, and the facilitation of the installation of distributed energy resources, including microgrids, which will support incremental resiliency.

2.6 Program Risks

Aside from not fully obtaining the benefits mentioned above, continuing with the status quo will exasperate current problems/issues:

- Automatic meter reading is currently an IT initiated process with inadequate involvement in metering and operations
- Personnel in metering operations and ICEE Metering Solutions (theft detection) are limited, resulting in lost revenue
- Theft detection tools available in current technologies, such as CC&B and AclaraONE are limited
- The MDM implementation underway will have limited utility in the current AMR system, minimizing potential benefits

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$148.0	\$351.3	\$283.7	\$87.1
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

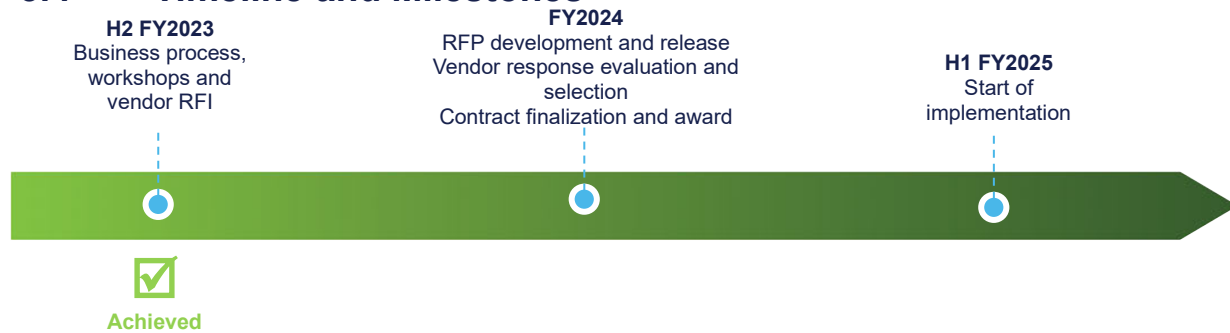
We need federal funding from FEMA (428 and 406) to replace the current automatic meter reading system with an AMI system. We will use the funds to replace all meters, fully implement a communications network, install an AMI data collection and control system, implement MDM and integrate all systems, CC&B, OMS, GIS, ADMS, etc.

AMI Implementation Program

3.3 Estimating Methods and Assumptions

We base the average meter replacements and communication costs on experience with similar projects and estimates from potential suppliers. Installation cost estimates are from a large North American meter installation company and AMI system suppliers.

3.4 Timeline and Milestones



Loss Recovery Program

Loss Recovery Program

1.0 Program Description

This program aims to reduce non-technical losses (NTLs) by applying advanced monitoring and software techniques coupled with many inspection teams in the field. Initiatives include protection software and modules supported by advanced metering infrastructure (AMI) that can identify equipment anomalies and customer consumption, enhanced data analytics, field theft detection tools, and widespread inspections, all supported by a team of new back-office business and data analysts.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Premier utilities across the US and Canada have a combined technical and non-technical energy loss below 4.5%. Most recently, PREPA reported 12.3% combined technical and non-technical losses, approximately 8% above industry levels. PREPA assumes that 7.8% of this 12.3% is due to technical losses, leaving 4.5% as non-technical losses. This program will address the NTLs.

The 4.5% non-technical losses represent 800 GWh of lost energy, which could be recovered through a loss reduction program. The program objective is to reduce non-technical losses and avoid the current substantial economic loss.

Based on LUMA's project team experience, the actual non-technical losses could be even higher than the estimated 4.5% NTL factor. We will revise the NTL factor as the revenue boundary metering with PREPA generation, meter recording, billing, and collection data improve.

The current loss control area at PREPA (e.g., ICEE Division) had approximately 60 field personnel, approximately 50 back-office personnel, and 10 trucks. The ICEE Division focused on customers' energy theft or misuse of electrical energy. Another staff of PREPA was tasked with addressing billing and uncollected funds. There was no formal collections team or group of employees dedicated to collections activities. A formal dunning process did not exist. A customer in arrears may have had the potential for disconnection, but recovering bad debt was not an assigned task.

PREPA classified efforts to track NTLs using the following breakdown:

- PREPA used billing estimation, in which they analyze each case to formalize its service in the meter reading and billing system
- Concerning uncollected amounts or bad debt, PREPA focused on amounts owed to the utility but not collected from customers, including consequences such as service suspension
- Concerning theft, PREPA aims to identify tampered meters, by-passed meters, and service diversion

2.1.1 Additional Gaps Identified Post-Commencement.

Additional gaps in billing losses have been identified and will be addressed through the Billing Accuracy & Back Office program. The impacts of these losses will be measured and tracked. These additional gaps impacting NTLs include, but are not limited to:



Loss Recovery Program

- Unbilled accounts, which are left for an outstanding period, resulting in losses. This occurs when an account has a bill segment or multiple bill segments that are unbilled, and the customer in question is not billed in a timely manner (i.e., final bills)
- Underbilled accounts, such as customers who are billed on estimates and the billing systems have received an actual meter read. These estimations may only be corrected within a 120-day window under Law 272 for residential customers. The underbilling between the estimate and the actual is an extensive issue identified post-commencement
- Underbilled accounts in cases where the customer is only billed the monthly customer charge without consumption
- Historically, automated leads (tamper codes) from the Customer Care and Billing system have not been utilized consistently, if at all, to drive field investigations. These system parameters need to be revised to reflect current business practices
- Programmed monthly reports with automated leads were not working consistently. These leads were generated for inactive service agreements where the meter is registering consumption. Each represents a potential revenue loss that must be evaluated and addressed promptly

2.2 Description of Remediated State

This program is not part of the SRP.

2.3 Description of Program Completed State

After completion of the project, the NTL factor should be reduced to levels in line with other similarly sized utilities. Reducing the possibility of customers bypassing meters or diverting connections will also reduce safety concerns. Lowering the loss factor will essentially eliminate the need to make up for the loss in electricity rates, contributing to more reasonable electricity rates (driven by a reduction in the loss factor included in customer tariffs) and a resulting rise in satisfaction for the customer.

2.4 Program Activities

- Development of NTL reduction plan, including data quality review and coordination with the metering department and utility transformation
- Measurement of billing and collections-related NTLs on a monthly, quarterly, and annual basis
- Customer and community-based messaging and education to deter bypassing meters or diverting connections
- Field inspections
- Hiring and training of required personnel, including technicians and data analytics professionals
- Procurement of field equipment for field investigations
- Continued monitoring of the meters (either through physical inspection or electronically if we implement AMI)
- Addressing meter violations/issues as we discover them
- Maintain a minimum back-office personnel and field inspection crew to ensure NTL are kept low, close to zero
- Involve key stakeholders, individuals, or agencies to increase education on the risks associated with NTLs and, as appropriate, aid in a criminal prosecution of suspected electrical theft

Loss Recovery Program

2.4.1 Additional Activities Identified Post-Commencement

Stakeholder outreach has been determined to be an essential aspect of loss reduction and recovery. The key stakeholders include individuals or agencies involved in criminal prosecution of suspected electrical energy theft. Additionally, key groups play an important role in reducing the activities leading to a misuse of electrical energy in the field. These groups include the electrician's professional organizations, home builder's organizations, community watch organizations, mortgage professionals (such as during a home foreclosure and bank seizure), etc.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year includes:

- Negotiate a memorandum of understanding (MOU) with the Puerto Rico Police Department and the Puerto Rico Special Investigations Bureau for criminal case referrals of irregularities
- Customer and community-based messaging and education
- Complete more than 6,000 field investigations for energy irregularities and suspected meter tampering and ensure team members maintain quality investigations and equipment availability for inspections
- Complete field verification of all commercial and industrial customer disconnections for non-payment that are not reconnected for possible irregularity
- Provide educational information to community organizations, law enforcement, and other government agencies regarding energy irregularities awareness, detection, and reporting
- Procure field equipment for field investigations

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input type="checkbox"/> Increase service reliability	
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Direct
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input type="checkbox"/> Pursue project delivery excellence	
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively deploy federal funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	

Loss Recovery Program

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
	<input type="checkbox"/> Improve resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Implement effective public safety practices

This program reduces public exposure to an unsafe electrical system. Meter tampering and electricity diversions generally involve illegal access to dangerous and live electrical equipment. By eliminating the possibility of tampering, the program helps to reduce safety incidents among public members who would engage in such activity.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver electricity at reasonable prices

Loss reduction translates into lower rates borne by the customer. Customers benefit from lower rates as they are needed less to compensate for revenue losses due to NTLs.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

Normalizing the metering system and constant technical patrol of distribution systems will dissuade customers from accessing the metering system to tamper with or bypass it. The patrolling effort is recommended to continue over time as experience has shown that the NTL factor increases once customers realize the system operator has stopped patrolling their piece of the system.

Improved visibility and control of power flow will lead to better system planning, especially when new technologies (e.g., distributed energy resources [DER], renewable sources, volt-VAR (volt-ampere reactive) regulation/optimization [VVO], etc.) are planned for future deployment.

2.6 Program Risks

Not executing or delaying the project will result in a missed opportunity to recoup lost revenues, negatively affecting LUMA, PREPA, and customers (i.e., Puerto Rico's families and businesses). It will also allow public safety incidents associated with the high NTL factor activities to continue.

Loss Recovery Program

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$3.2	\$3.2	\$3.2	\$22.5
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

The Operations department will conduct field investigations or inspections and utilize some currently available tools to complete this work. Over the coming years, more tools will be acquired.

Visual inspections and meter testing to measure the loss will be key for inspections. Additionally, the following tools or technologies have been identified to support the program work.

- Enhancement of revenue protection module/software
- Procurement of revenue protection module/software
- Procurement of theft detection tool set, such as:
 - Field meter testing (line analyzer)
 - Baroscopic inspection camera
 - Underground voltage tracker
- Establishment of field inspections, which inspection field personnel with appropriate PPE, training, and trucks will carry out

3.3 Estimating Methods and Assumptions

For program years one and two, we developed cost estimates using subject matter experts who estimated the costs of implementing new processes. We also deployed inspection personnel to identify areas where fraud or theft is committed, especially in industrial and commercial customer locations.

Future program years will include enhanced analytical abilities through technology and through training in data analytics methods with back-office staff.

3.4 Timeline and Milestones



Loss Recovery Program




Achieved


Achieved

Modernize Customer Service Technology

Modernize Customer Service Technology

1.0 Program Description

The Modernize Customer Service Technology program focuses on remediating telephony technology by developing and implementing a new cloud-based contact center platform. Contact center software allows for managing a high volume of inbound and outbound customer communications across various channels. Modernizing the contact center and associated procedures will mitigate LUMA's risk of customers being unable to report emergencies. The program will create real-time dashboards and reporting to cover key performance indicators across all customer experiences, including the contact center, district offices, and billing services.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

A new contact center platform is needed to replace the existing Avaya 6.2:

- The existing platform is beyond the end of life and no longer supported by vendors, meaning that as technology degrades, it can no longer be fixed. If the contact center platform is not replaced, LUMA cannot take customer emergency calls, which will impact public safety
- In emergency response situations, it is faster and easier for customers to report situations via digital channels (smartphone app, social media, text, etc.). The current platform does not support digital channels
- The current platform does not support a quality assurance program, including call and screen recording; this does not provide visibility to see if contact center agents follow proper emergency and safety processes
- The current platform does not support management for customer interactions through other digital channels like email, chat, or social media
- Current outsourced vendors use two separate contact center platforms. As a result, there is no consistent reporting to support key emergency and outage response performance metrics or consistent delivery of customer service. In the completed state, all contact center interactions (phone calls, email, chat, etc.) will be tracked and managed through the new cloud-based platform

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

In the remediated state, agents can reliably take calls using a cloud-based contact center platform supporting emergency operations. This means reporting will be consistent with contact center performance, and agents can take calls from any location (e.g., home) to support emergencies. This new platform will enable LUMA to meet obligations by Act 17 and the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement (T&D OMA), including:



Modernize Customer Service Technology

- Adopting new technologies to improve and minimize wait times for customer service, as outlined in Act 17-2019
- Managing all aspects of customer relationships in compliance with Applicable Law as outlined in the T&D OMA
- Monitoring industry advances and changes in technology related to customer care and related services as outlined in the T&D OMA
- Establishing and maintaining customer contact by means of call centers as outlined in the T&D OMA

2.3 Description of Program Completed State

In the program completed state, a new customer service platform will support:

- The ability to tie in emergency contact center support from anywhere to serve LUMA customers during emergencies
- A Quality Assurance program to review agent interactions (through call and screen recording) and provide coaching and feedback on a regular basis
- First contact resolution monitoring and management – FY2025
- Post-interaction customer surveys following phone/chat interactions
- New digital channels (e.g., chat, social media)
- Consistent reporting to support our T&D OMA commitments for an average speed of answer and abandon rate

2.4 Program Activities

- Execute contract to procure new cloud-based contact center platform (Complete)
- Deploy and use a new cloud-based platform to meet basic requirements for all call routing, interactive voice response (IVR), and reporting (Complete)
- Installing and configuring the new platform with the appropriate users, skills, queues, and routing logic (Complete)
- Developing the IVR to provide customers with self-service options (e.g. account balance, report an outage, make payments, object a bill) (Complete)
- Configuring new quality assurance evaluation criteria/scorecards in the platform (Complete)
- Developing new reports to support all Customer Experience departments
- Training contact center agents on the use of the new platform (Complete)

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The upcoming fiscal year will focus on developing the IVR to provide customers with self-service options (e.g., making a payment, reporting an outage, or objecting to a bill). The IVR went live as of 12/19/23 along with our ability to send SMS text messages to customers based on their transactions conducted either through the IVR, contact center, customer experience offices, website and app.

The initial transaction-based short message service (SMS) will include the following:

- New service request confirmation with new account number



Modernize Customer Service Technology

- Confirmation number for streetlight repair reported
- Confirmation number for vegetation issue reported

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Direct
	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input type="checkbox"/> Operational Excellence	<input type="checkbox"/> Enable systematic management of the business	
	<input type="checkbox"/> Pursue project delivery excellence	
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively deploy federal funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a safe workplace

Enabling agents to work remotely during a storm situation or pandemic increases their personal safety.

Objective: Implement effective public safety practices

The new contact center platform will impact public safety by:

Modernize Customer Service Technology

- Providing a reliable supported platform to enable consistent customer communication (i.e., no phone system outages)
- Providing faster response time for customer calls (e.g., to report a dangerous situation)
- Providing flexible staffing/location options (e.g., work-from-home or re-location to other offices) to provide continuous support through storms or other emergencies

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

- The platform will have a direct impact on the customer experience through:
 - Delivering new self-service options
 - Supporting new customer support channels (e.g., email, chat, social media)
 - Supporting efforts to decrease customer wait time before speaking with an agent (i.e., average speed of answer)
 - Enabling quality assurance efforts to improve first contact resolution

Objective: Increase service reliability

Faster response to outage calls results in faster restoration times.

2.6 Program Risks

Not pursuing this program will prolong current working conditions, including the end-of-life contact center platform. This entails an operational risk as LUMA will face difficulties responding to customer needs. Additionally, continued use of the current contact center platform will hamper LUMA's ability to respond to emergency calls, thus impacting public safety.

Risks associated with implementing the new cloud-based platform include an:

- Inability to secure funding / establish contracts in a timely manner
- Inability to implement and test new the platform in a timely manner

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	—	\$7.0	\$8.2	—
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

This effort is largely dependent on support from IT for:

- Contracts and vendor management



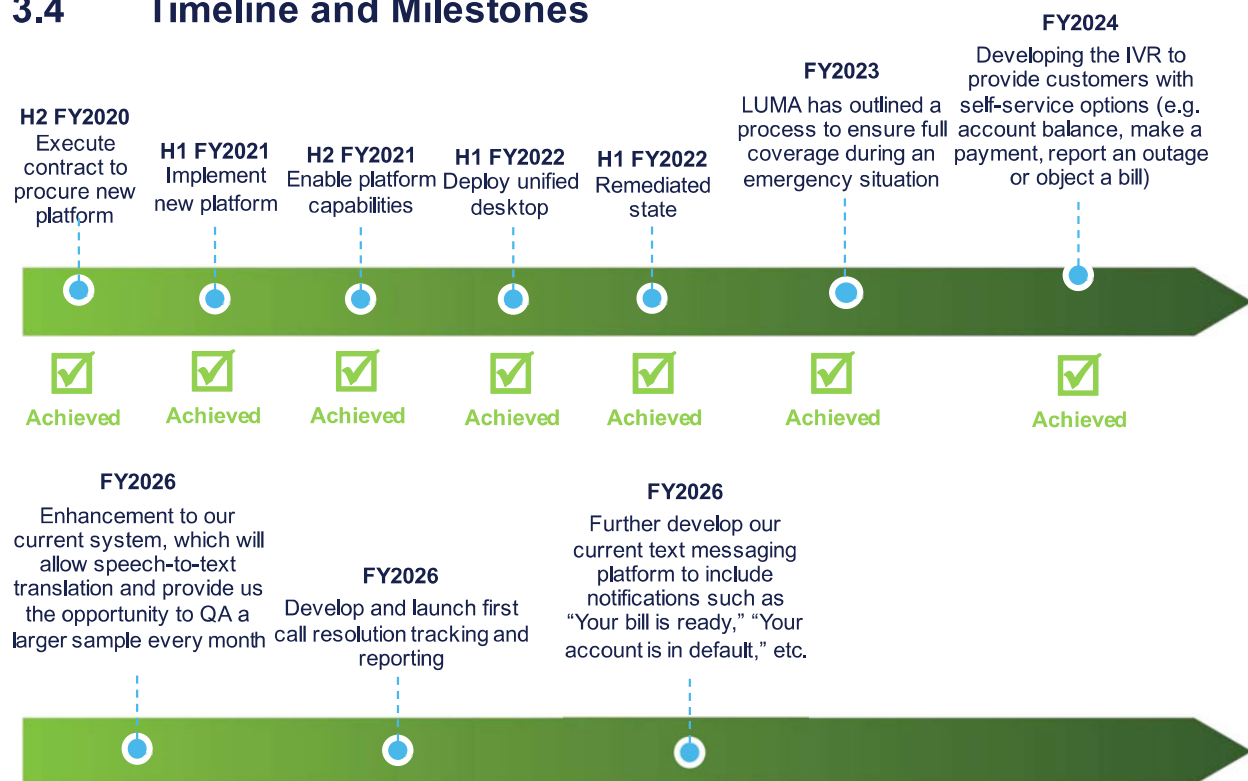
Modernize Customer Service Technology

- Telecom infrastructure
- Laptop/desktop connectivity
- User provisioning
- Cybersecurity reviews
- Integration with other platforms (primarily Oracle CC&B)

3.3 Estimating Methods and Assumptions

The vendor provided costs for the new cloud-based contact center platform implementation as part of a thorough request for proposals and evaluation process conducted by a team of PREPA and LUMA business and IT representatives.

3.4 Timeline and Milestones



Voice of the Customer

1.0 Program Description

This program focuses on customer service, providing customers with increased voice and improving tracking of customer service interactions. Quality assurance mechanisms implemented under this program include customer surveys, welcome packs, customer center voice, and screen recording. The program also includes process and communications improvements, such as quantitative analysis of key performance indicators (KPIs) and other metrics to improve overall customer service and employee training on customer experience.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

The Voice of the Customer (VoC) program is not an applied concept at PREPA. No program currently exists to monitor customer interactions regularly, measure customer sentiment/feedback, or identify opportunities to improve the overall customer experience.

Gaps identified include:

- A method to capture first contact resolution to ensure that we are meeting the customer's needs in the first interaction
- A method to consistently capture/report on customer satisfaction
- A method to consistently identify and prioritize customer issues

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

This program is not part of the System Remediation Plan.

2.3 Description of Program Completed State

In the completed state, the new program will be in place to provide the following:

- J.D. Power customer surveys
- Post-interaction customer surveys following phone/chat interactions
- A Quality Assurance (QA) program to review agent interactions and provide coaching/feedback on a regular basis
- An enterprise-wide customer experience training program
- Speech and text analytics to dive into customer dissatisfiers
- A monthly voice of the customer report to enable prioritization of process improvements

Voice of the Customer

2.4 Program Activities

- Contract with J.D. Power to conduct initial customer surveys (Complete)
- Development of first contact resolution tracking program using a new contact center management platform
- Coordination with Puerto Rico Energy Bureau (PREB) offices to establish customer complaints to PREB tracking (Complete)
- Implementation of speech and text analytics
- Implementation of speech and text analytics to capture first contact resolution information and post-interaction customer feedback. (Complete)
- Creating QA evaluation criteria/scorecards and hiring and training new QA analysts to establish the new QA program (Complete)
- Build out of the speech and text analytics lexicons
- Build out of the Voice of the Customer analytics report (Complete)

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be implementing speech and text analytics lexicons, continuing with ongoing survey issuance, adding listening to posts, leveraging quality programs to capture behavioral trends, and refining training/process improvement programs to continuously improve the customer experience.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
☒ Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	☒ Implement effective public safety practices	Indirect
☒ Improve Customer Satisfaction	☒ Deliver a positive customer experience	Direct
	☒ Increase service reliability	Direct
	<input type="checkbox"/> Deliver electricity at reasonable prices	
☒ Operational Excellence	<input type="checkbox"/> Enable systematic management of the business	
	☒ Pursue project delivery excellence	Indirect
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input type="checkbox"/> System Rebuild and	<input type="checkbox"/> Effectively deploy federal funding	

Voice of the Customer

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
Resiliency	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Implement effective public safety practices

The VoC program gets directly to what customers are missing from a safety perspective. It will enable LUMA to find gaps in public safety communication.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

The VoC program will directly measure customer sentiment/feedback and provide new insight into areas of the operation that may need to be changed to improve the customer experience.

The VoC team will also work closely with other departments to ensure that other customer-facing initiatives are aligned to meet the customer's needs best.

Objective: Increase service reliability

The VoC report will enable LUMA to identify areas with reliability issues by recording and performing speech analytics on all outages and emergency calls.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Pursue project delivery excellence

By providing better visibility into customer feedback, this program will identify areas for improvement in project delivery.

2.6 Program Risks

Not pursuing the VoC program will limit LUMA's visibility of customer needs and prevent tracking KPIs built around this program.

Voice of the Customer

The primary risk for the VoC program is its dependency on the successful and timely implementation of the new contact center platform. Without the new platform, neither customers nor LUMA will obtain many of the benefits of the VoC program.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$0.4	\$0.5	\$0.5	\$1.0
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

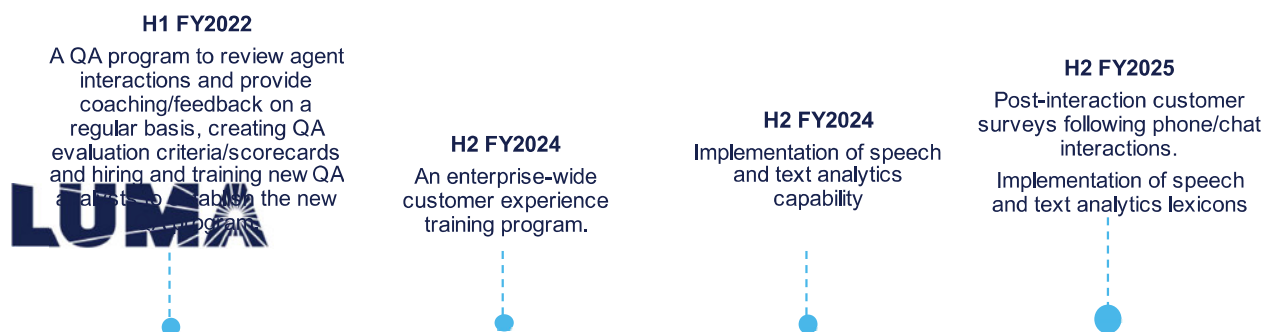
- New cloud-based contact center platform
- New LUMA VoC organization
 - Quality assurance team to monitor calls and provide agent coaching
 - Process improvement team to implement best process management practices using data analytics to identify key opportunities for improvement and drive initiatives to address them
 - Training team to support the Customer Experience department and to provide customer-centric training company-wide
 - Analytics team to develop and produce the monthly VoC report collected and analyzed from multiple data sources

3.3 Estimating Methods and Assumptions

Costs for the VoC programs were estimated based on employee months of effort for each specific project plus annual subscription costs for additional software and third-party services that may be required, for example:

- Speech and text analytics module (software)
 - Cost determined through a request for proposal response
- J.D. Power surveys (service)
 - Actual cost from vendor

3.4 Timeline and Milestones



Voice of the Customer




Achieved


Achieved

Standardized Metering & Meter Shop Setup

Standardized Metering & Meter Shop Setup

1.0 Program Description

The purpose of this program is to re-establish a meter shop and test equipment, establish a location for standardized meter testing, and provide appropriate internal and external testing equipment. It also includes enhanced procedures and operational support for the new facility and equipment.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

The meter shop is currently housed in a temporary location in the hallways of a building in Carolina. This accommodation is inadequate for operations, including receiving, cleaning, testing, sealing, and storing of meter accuracy equipment.

Meter management does not currently meet the requirements of Act 57-2014 as amended or the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement, including requirements for accurate metering and periodic testing. For these reasons, this is an SRP item. The new and existing meter accuracy testing requirements cannot be achieved with the current processes and test equipment. In addition, the requirement to test wholesale account meters every two years is not being followed in the current state.

2.1.1 Additional Gaps Identified Post Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

According to the amended requirements outlined in Act 57-2014 and under the Operation and Maintenance Agreement, this program will achieve its remediated state after implementing a new meter shop and purchasing minimal test equipment. The equipment must function, pass meter acceptance testing, provide clients with accurate metering results, and reflect our commitment to good professional practice consistent with all applicable contract requirements, laws, or regulations.

2.3 Description of Program Completed State

The completed state includes the achievements of the remediated state along with the following:

- An efficient meter shop with the equipment required to support business needs on the metering
- Development of a process for meter sample selection and meter testing verification
- Quality assurance/quality control of the meter handling process
- Documented processes enhanced related to inventory, work orders, and head-end system updates
- Onsite test processes developed and documented for instrument meter installations

Standardized Metering & Meter Shop Setup

2.4 Program Activities

The following activities, primarily related to those required by Act 57-2014, as amended, need to be undertaken:

- Acquisition of a building or finding an existing PREPA building location where we can effectively handle meter shipments, warehouse space for meters, test boards, and associated office space (Complete)
- Requisitions for test equipment
- Installation of appropriate test equipment at the new facility (Complete)
- Transferring all operations from the Carolina location to the new facility (Complete)
- Implementation of new and enhanced processes as soon after the service commencement date as possible, and this would include quality assurance/quality control programs and procedures (Complete)
- Implementation of MV90 cell connectivity

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be on developing the metering process and testing boards.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	<input type="checkbox"/> Implement effective public safety practices	
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input checked="" type="checkbox"/> Increase service reliability	Indirect
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Indirect
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input type="checkbox"/> Pursue project delivery excellence	
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively deploy federal funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	

Standardized Metering & Meter Shop Setup

	<input type="checkbox"/> Improve resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Increase service reliability

This program will enable the implementation of advanced metering infrastructure, which will improve reliability by providing immediate alerts when outages occur.

Objective: Deliver electricity at reasonable prices

Accurate metering will ensure customers pay their fair share thereby lowering costs to other customers.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

A functioning meter shop building with the proper equipment will improve operations and maintenance efficiency by allowing more throughput of meters with the same number of people.

Objective: Enable employees to execute operations systematically

We will check if the meters' factory acceptance test (FAT) has the correct configuration for full-scale deployment, thus allowing employees to execute routine meter tests more efficiently and accurately.

2.6 Program Risks

If this program is not implemented, the ability to perform routine meter tests and the required periodic testing of commercial accounts will still be lacking. In addition, advanced metering infrastructure deployment would be heavily affected without the ability to handle the large number of meters involved. Also, we would likely not meet Contract Standards.

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$0.2	\$0.2	\$0.2	\$1.3

Standardized Metering & Meter Shop Setup

SRP Expenditures	\$0.2	\$0.2	\$0.2	\$0.4
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3.2 Program Resource Requirements

If a new building is built, it should be custom designed for the new meter shop requirements. If an existing building is acquired, modifications will be necessary for the specialized services to be provided.

3.3 Estimating Methods and Assumptions

We performed estimates using vendor estimates for test equipment and have not determined a suitable existing PREPA facility.

3.4 Timeline and Milestones



New Business Connections

New Business Connections

1.0 Program Description

LUMA's New Customer Connections program is focused on construction and engineering compliance, grid modernization, exceptional customer experience, and safety. This program includes:

- Managing all aspects of the new customer connection process: evaluation, endorsement, and inspection phase
- Ensuring compliance with schedule, budget, and engineering standards
- Developing risk assessments and a risk management plan to respond proactively to project risks
- Developing process documents to capture LUMA's standard operating procedures
- Ensuring the capitalization process is followed
- Establishing service fees for each phase of the connection process
- Creating data-driven key performance indicators (KPIs) to measure program performance
- Providing exceptional customer experience by addressing issues promptly and thoroughly

2.0 Program Rationale

2.1 Initial State and Identified Gaps

PREPA has an obligation to connect new customers to the system in accordance with the regulation set by law 161-2009 article 15.1 (integrate permits system) (Puerto Rico Permits Management Office or OGPe by its Spanish acronym). In addition, LUMA's Operation and Maintenance Agreement states, "Operator shall be responsible for all engineering activities related to the operation of the T&D System, including: (5) process to serve (evaluate and approve) new customers (distribution engineering)."

Therefore, this program requires seamless interdepartmental coordination including but not limited to regional engineering, operations, customer service, plant accounting, and records management. In addition, processes, procedures, and KPIs are required to provide safe and reliable service. The gaps identified during the review process are:

- There is no formal, documented engineering and asset management strategy, or processes or tools aligned to an industry best practice
- There is no beginning-to-end process to ensure the correct addition of newly installed equipment to the system of record
- Response time for new customer connections is inconsistent and often not reasonable
- Evaluation, endorsement, and inspection procedures are not clear or lack documentation
- There is no clear process for recordkeeping of customer projects
- No standard template for customer communications
- No standardized process among regions
- No centralized repository for tracking and managing requests and their status
- No business portal that allows simple customer interactions
- There are no KPIs to monitor program performance to meet regulatory commitments and no asset capitalization process in place for the new construction

New Business Connections

2.1.1 Additional Gaps Identified Post Commencement

Labor charges incurred by the Engineering team and other supporting departments of new project connections, (projects paid by the customer), are funded through non-federal capital, impacting ratepayers. LUMA will adhere to existing regulations (Regulation 6030 and 7464) to implement a service fee per phase of the project.

2.2 Description of Remediated State

This program is not part of the SRP.

2.3 Description of Program Completed State

External processes, guided by LUMA, require compliance with their directives and alignment with our safety guidelines, construction compliance, and regulations. In the completed state, the New Service Connection program will have:

- Documented processes on how to perform evaluations, endorsements, and inspections of new customer connections
- Implemented KPIs to ensure program performance meets industry standards and any regulatory requirement
- Defined process timelines
- Individual project charges are being tracked and managed
- Delineated clear roles and responsibilities
- Established communication channels across departments and teams to prevent escalations
- Established and implemented capitalization processes
- Implemented service fees per project phase (Evaluation, Endorsement, and Inspection)
- Implemented a central data repository
- Implemented document management and recordkeeping systems
- Improved customer service satisfaction

2.4 Program Activities

- Create a process document outlining the steps, roles and responsibilities, timeframe, and templates to be used for the evaluation, endorsement, and inspection process
- Establish a document repository or record-keeping system to ensure historical project records are available
- Implement a work management process to ensure work request packages can be tracked and materials are accounted for
- The regional distribution teams perform project evaluations along with the distribution and transmission planning team, which involves a comprehensive assessment of load planning to ensure safe and efficient integration into the grid
- The regional distribution teams approve and endorse project plans, which consist of reviewing technical details, design, and specifications to ensure compliance with safety and engineering standards
- The regional engineering teams convene with the customer in a kickoff meeting; subsequently, the team compiles construction estimates, encompassing projected costs, timelines, and other pertinent details. The work request is then forwarded to Operations for execution

New Business Connections

- Ensure the Land and Permits team is consulted for rights-of-way issues
- Assist the Planning and Scheduling team in the submission of excavation permits and forward the work request to the Operations department
- Initiate the capitalization process for completed projects in collaboration with the Plant accounting team
- Conduct quality assurance and quality control on the data repository to ensure its integrity
- Monitor the project's lifecycle during the execution phase to ensure compliance with our Service Level Agreements
- In collaboration with the finance team, inactivate projects whose phase has been completed to avoid overcharges
- Devising strategies to enhance customer satisfaction by providing accessible project lifecycle information and implementing feedback mechanisms for continual enhancement
- Actively engaging and representing LUMA in diverse third-party sessions, effectively communicating with external stakeholders

2.4.1 Additional Activities Identified Post-Commencement

- For our funding Strategy, we will implement a new service fee (per phase) to align with the company goals and serve the customer needs.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year is the following:

- Establish a document repository or record-keeping system to ensure historical project records are available
- Create a process document outlining the steps, roles and responsibilities, timeframe, and templates to be used for the evaluation, endorsement, and inspection process
- Implement a work management process to ensure work request packages can be tracked and materials are accounted for
- Ensure the Plant accounting team will complete the capitalization process for completed projects.
- Collaborate with the Geographic Information System (GIS) team to establish and maintain a process for updating the system of record to reflect newly installed assets accurately
- Ensure that KPIs are on a positive trajectory.
- In collaboration with the finance team, deactivate projects whose phases have been completed to avoid overcharges
- Devise strategies to enhance customer satisfaction by providing accessible project lifecycle information and implementing feedback mechanisms for continual enhancement
- Implement a new service fee (per phase) to align with the company goals and serve the customer needs

2.5 Program Benefits

Primary Goals	Objectives	Direct Or Indirect Impact
☒ Prioritize Safety	☒ Promote a safe workplace	Direct
	☒ Implement effective public safety practices	Direct
	☒ Deliver a positive customer experience	Direct



New Business Connections

Primary Goals	Objectives	Direct Or Indirect Impact
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Direct
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Direct
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively deploy federal funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input checked="" type="checkbox"/> Improve resilience of vulnerable infrastructure	Direct
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Direct
	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input checked="" type="checkbox"/> Other	<input type="checkbox"/> Other:	

PRIMARY GOAL: PRIORITIZE CUSTOMER SERVICE AND STANDARD COMPLIANCE

Objective: Promote a safe workplace

Project evaluation, endorsement, and inspection processes ensure applicable engineering standards are being followed and meet national safety codes.

Objective: Implement effective public safety practices

Proper departmental coordination ensures that safety setting on electrical equipment is properly coordinated to ensure public safety.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

Improved efficiency in responding to new customer connections will lead to improved customer experience and an improved image of LUMA within the business community in Puerto Rico.

Objective: Increase service reliability

New Business Connections

Improved project evaluation, endorsement, and inspection processes will ensure codes and standards are followed for greater service reliability.

Objective: Deliver electricity at reasonable prices

Increased revenue from new business connections will ensure that the costs associated with these new connections are not passed to ratepayers.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

Implementation of key performance indicators will ensure the program is meeting regulatory and customer expectations.

Objective: Pursue project delivery excellence

Reduced process administration by eliminating duplicate tracking systems.

Objective: Enable employees to execute operations systematically

The application portal and record-keeping system will allow employees to manage new business processes accurately and efficiently.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Improve resilience of vulnerable infrastructure

Implementation of the latest industry standards into new customer projects will ensure greater resiliency for impacted customers.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid

Implementing the latest industry standards into new customer projects will ensure we utilize cutting-edge technology.

Objective: Enable the digital transformation

Likewise, implementing an application portal and record-keeping system will allow the digital transformation of the new business connection process.

2.6 Program Risks

The new project connections team of the electric utility faces a myriad of risks that could impede the initiatives' success. One serious concern is the risk of developing poor relationships with the community. Building a strong rapport with the local community is crucial for the acceptance and smooth execution of new projects. Additionally, the team needs to be vigilant about responding promptly to new business requests to avoid any delays, as a failure to do so could result in missed opportunities and strained relationships. Furthermore, there is a risk associated with new business customers not paying their

New Business Connections

proportionate share of the costs, which could lead to financial strain on the utility. Lastly, the inadequate capitalization of assets poses a threat, as it may hinder the long-term sustainability and effectiveness of the projects. Addressing these issues proactively is essential for the success of the project connections team in navigating these potential challenges.

Key performance indicators that track key aspects of the processes with detailed timelines will be established and reported in monthly KPI meetings. This will serve as a control mechanism to ensure timelines, regulatory requirements, and commitments are being followed.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$11.0	\$13.4	\$14.1	\$106.6
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

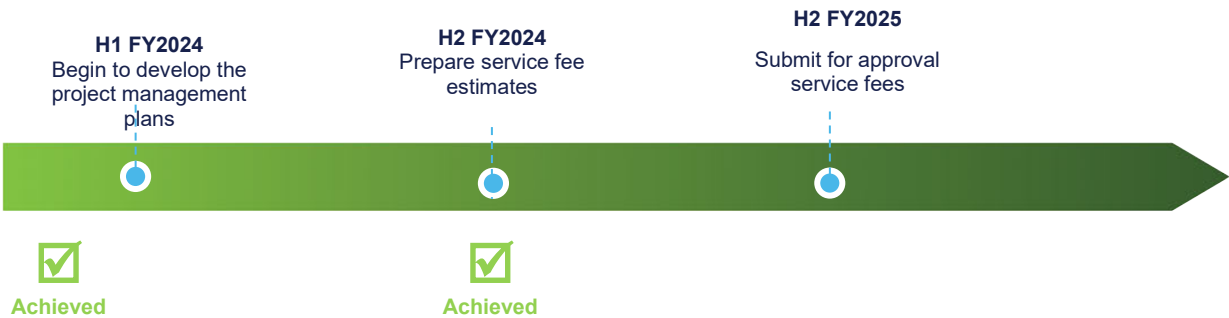
- Technical writing resources will be required to aid in developing and writing the detailed procedures
- Legal resources will be required to investigate service fee standing
- Key accounts resources will be required to aid in the change management process
- An interconnection team will be needed to oversee the process implementation and upkeeping
- Regional engineering resources will be required to perform the evaluation, endorsement, and inspection phase
- Operations resources will be needed to plan and execute work associated with new customer connections
- A portal/central repository is needed to properly process and document the applications
- Integration with various databases (G-electric, Asset Suite, etc.) is needed to maintain good record keeping
- Plant accounting resources will be needed to properly capitalize assets
- As per existing technical bulletins, resources for labor and material will be needed in order to execute the work request from customers

3.3 Estimating Methods and Assumptions

Most of the program funding will support the regional engineering activities and the interconnection team. We assume standard LUMA pay scales for internal resources and previous benchmarking of external resources such as contractors and legal. We have allocated some funding for digital applications implementation. However, implementing the service fee per phase will reduce the program funding for outward years, if approved.

New Business Connections

3.4 Timeline and Milestones



Retail Wheeling Program

Retail Wheeling Program

1.0 Program Description

The Retail Wheeling (RW) program is a Puerto Rico Energy Bureau (PREB or Energy Bureau) mandate required by the Regulation on Electric Energy Wheeling (Regulation 9374), which was enacted and adopted to implement the energy wheeling mechanism in Puerto Rico. In the first phase of the program, industrial and large commercial customers (250 kVA and larger) will be eligible to participate.¹

LUMA is currently the sole provider for customers who buy electricity from the power grid. However, customers can also generate their energy with on-site renewable resources and participate in distributed generation activities using these on-site renewable resources.

The RW program is designed to create a system where retail electricity suppliers (RES) can sell energy directly from eligible private generators to eligible end-user customers. As the Transmission and Distribution (T&D) system operator, LUMA will deliver this energy to participating customers over the existing transmission and distribution network. Given that it provides more choice to customers, the RW program, in its initial phase, will promote partial competition in the Puerto Rico electricity retail sector market when eligible customers may purchase energy from private generators.

The detailed rules for RW have been debated and defined over five years through a series of regulatory dockets that originally date back to 2018. The most recent docket – NEPR-MI-2023-0001 – has established key elements of the Wheeling Services Agreement (WSA) governing the contractual and operational relationship between LUMA and RES. Specifically, the Energy Bureau has approved the WSA draft submitted by LUMA on December 28, 2023. We developed this WSA through an extensive stakeholder consultation process. LUMA is currently contesting two key financial elements of the WSA: the annual energy imbalance charges and wheeling charges RES will pay to LUMA.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

The RW program is a new initiative scheduled to start its pilot or trial operations in FY2028. LUMA did not assess the program's initiatives during the Front-End Transition (FET) Period.

2.1.1 Additional Gaps Identified Post Commencement

The wheeling program is a new initiative the PREB mandated that we expect to launch in FY2028. Many systems required to implement the RW program do not currently exist, and many existing systems that the RW program will interface with are not presently configured to support it. The RW program will also leverage many critical LUMA initiatives, including the deployment of the base infrastructure of the

¹ See page 1 of Final Resolution and Order of January 11, 2022, Docket No. CEPR-MI-2018-0010.

Retail Wheeling Program

advanced grid infrastructure and associated meter data management (MDM) system and the replacement of the energy management system (EMS).

The technical requirements and costs to enable RW and manage the wheeling ecosystem have been developed at a high level and will be further refined through FY2025. In parallel, LUMA will undertake competitive procurement for the new systems and interfaces required to enable RW and establish the wheeling ecosystem. The development of the various systems and interfaces necessary to enable wheeling is expected to run through FY2027, with RW launching in FY2028.

2.2 Description of Remediated State

This program is not part of the SRP.

2.3 Description of Program Completed State

The wheeling ecosystem, as the PREB envisions in Regulation 9374 of 2019, will consist of the following participants:

- Private power generators
- RES
- PREPA (represented by LUMA as the T&D operator)
- Eligible wheeling customers

As noted, the initial phase of the RW program will cover single customers' accounts with 250 kVA and greater load and the WSA will define the respective roles and responsibilities of LUMA and RES within the wheeling ecosystem.

The program, in its completed state, will increase the degree of competition in the energy generation sector, and LUMA, as the T&D Operator, will have the responsibility of:

- Maintaining the reliability of the electric system
- Providing open-non-discriminatory and open access to the electric system to eligible RES and power generators
- Processing all the wheeling service applications according to the rules the PREB established
- Administering settlement and billing for services provided under the WSA
- Serving as the provider of last resort

2.4 Program Activities

The following are the program activities that LUMA must undertake to implement RW in Puerto Rico by the planned timeframe of FY2028:

1. Hire a program manager and a project team to support the RW implementation
2. Define business requirements and technical requirements to procure the equipment and outside services required to implement the program
3. Update and refine implementation cost estimates through competitive procurement activities such as requests for proposals (RFP) or similar
4. Secure approval from the PREB for these updated implementation cost estimates and for the cost recovery mechanism through which the implementation costs will be recovered

Retail Wheeling Program

5. Design and develop new operational processes and written procedures to support the RW operations. RW will require new customer enrollment and billing activities, transaction processing to validate RES forecasting, and scheduling dispatch and settlement procedures on imbalance charges and T&D system and energy usage
6. Design, develop, and build the infrastructure required to support the new processes of:
 - a) RES registration
 - b) Generator registration
 - c) Customer enrollment
 - d) RES scheduling and forecasting
 - e) Transaction monitoring and volume management
 - f) Settlement
7. Transform the functional roles of existing staff in the System Operations and Customer Experience areas due to required changes in the current IT/OT architecture. Several functions, such as scheduling and forecasting from RES, enrollment, and settlement, require new capabilities that the existing staff and current job roles do not possess.
8. Hire and train additional resources to support incremental enrollment, settlement, and key accounts processes driven by RW

2.4.1 Additional Activities Identified Post-Commencement

No further activities have been identified post-program commencement.

2.4.2 FY2025 Activities

The upcoming fiscal year will focus on completion of the first four program activities given above:

- Hire a program manager and a project team to support the RW implementation
- Define business requirements and technical requirements to procure the equipment and outside services required to implement the program
- Update and refine implementation cost estimates
- Secure approval from the PREB for these updated implementation cost estimates and for the cost recovery mechanism through which the implementation costs will be recovered

Additionally, the RW project team will:

- Engage LUMA's Procurement team to solicit costs from vendors in the market through a formal request for proposals process
- Comply with the PREB January 22, 2024, resolution and order requirements on the Wheeling Initiative, including program reporting requirements (i.e., progress reports)
- Continue to monitor and respond as appropriate to the latest PREB proceeding regarding this program (Wheeling Implementation Docket No. NEPR-MI-2023-0001) for changes in requirements and the evolution of the case
- Seek a pricing mechanism (AEIC) from the PREB to discourage RES overproduction of power
- Reach an agreement with PREB on the Wheeling Rate charges to the RES

Retail Wheeling Program

2.5 Program Benefits

Primary Goals	Objectives	Direct or Indirect Impact
<input type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	<input type="checkbox"/> Implement effective public safety practices	
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Direct
	<input type="checkbox"/> Increase service reliability	
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Direct
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input type="checkbox"/> Pursue project delivery excellence	
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively Deploy Federal Funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve resilience of vulnerable infrastructure	
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Indirect
	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input checked="" type="checkbox"/> Enable the sustainable energy transformation	Direct
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

Eligible customers within the wheeling program will be able to choose their RES, thereby facilitating competition.

Objective: Deliver Electricity at Reasonable Prices

Wheeling facilitates competition in the electricity market by allowing eligible consumers to access electricity from various suppliers. This competition may lead to lower electricity prices for participating customers.

Retail Wheeling Program

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

The RW program will require new systems, processes, and enhancements to many interfacing systems and processes, all of which will help to enable systematic management of the business.

Objective: Enable Employees to Execute Operations Systematically

The RW Program will require new systems and processes and enhancements to many interfacing systems and processes, all of which will help to enable employees to execute operations systematically.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Enable the Digital Transformation

Through automation of RES forecasting and scheduling and the integration of RES generation in LUMA's dispatch processes, the RW program will directly support the digital transformation.

Objective: Enable the Sustainable Energy Transformation

The RW program will help enable sustainable energy transformation and contribute to Puerto Rico's achievement of its renewable energy targets by encouraging new renewable generation resources and reducing LUMA's reliance on existing fossil generation resources.

2.6 Program Risks

The risks of not implementing the RW program include:

The primary risk is that LUMA fails to deliver the program. LUMA would be non-compliant with legislation and regulations if it fails to launch the RW program in a timely manner consistent with the rules the PREB established. LUMA must comply with the requirements of the Electric Energy Wheeling (Regulation 9374) by providing open and non-discriminatory to eligible renewable generators and RES, processing all the Wheeling Service applications in accordance with the procedures established by the PREB and administering settlement and billing for services to the RES under the WSA.

The secondary risk is that LUMA implements the program, but there are issues with processes that result in customer dissatisfaction and complaints to the PREB. This would create a reputational risk for LUMA.

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	2028+ ESTIMATE
Total Expenditure	\$3.0	\$15.4	\$15.4	\$15.4
SRP Expenditures	—	—	—	—



Retail Wheeling Program

3.2 Program Resource Requirements

The PREB has not yet approved a cost recovery mechanism for the wheeling implementation costs, but this should not hinder the program's implementation. Infrastructure and personnel changes are necessary to support the new wheeling program, including hiring a program manager and a project support team for implementation.

The resources identified so far that are required to implement RW can be listed as follows:

- Additional full-time employees to operate and administer the program once it is implemented
- External consultants to develop new systems and reconfigure existing ones to support enrollment, transaction processing, volume management, monitoring, and settlement for RW functions
- Design and configuration of application program interfaces to integrate new systems into legacy and other new systems
- RW will build requirements mainly around the following existing initiatives:
 - Advance metering implementation (AMI)
 - Metered data management system (MDM)
 - Energy management system (EMS)

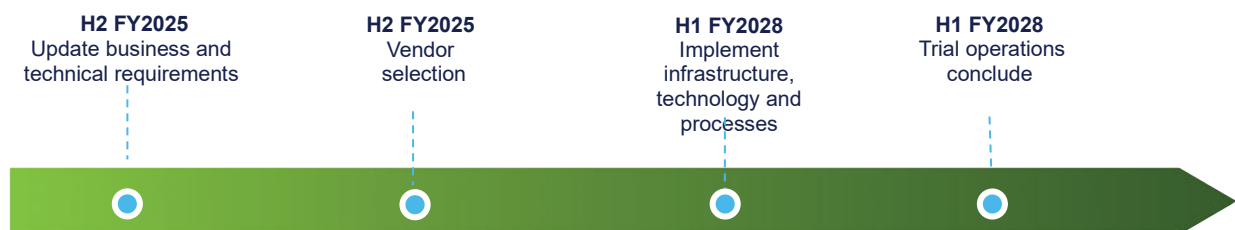
The program's operating costs are mainly related to software license maintenance fees and internal labor costs due to the additional personnel necessary to operate the program daily. These costs will fluctuate based on the final solution selected for implementing wheeling, whether cloud-based, on-premises, or a hybrid solution.

LUMA will estimate the total resource requirements more accurately as cost estimates become available from the competitive procurement process.

3.3 Estimating Methods and Assumptions

The RW implementation costs were estimated based on an assessment of LUMA's existing organizational infrastructure and its planned organizational infrastructure needed to support the retail wheeling ecosystem in Puerto Rico. The funding requirements estimates included capital expenditures to implement wheeling and operational costs. We must validate these costs and expect to provide a more precise estimate at some point during the rate review proceedings.

3.4 Program Timeline and Milestones



Distribution Line Rebuild

Distribution Line Rebuild

1.0 Program Description

The Distribution Line Rebuild program focuses on rebuilding distribution feeders with poor reliability performance and those that serve critical power facilities, targeting the worst-performing feeders first. This program will result in significant system improvements in the short term and incremental improvements for the remaining program duration.

The program introduces alternate (loop) supplies by reconstructing backbone systems with higher-capacity conductors, addressing voltage and loading violations, providing improved service reliability to critical facilities (mitigation measures to include alternate supplies and targeted undergrounding), and implementing reliability based and technologically advanced measures to elevate Puerto Rico's distribution infrastructure up to meet industry codes and standards.

The Distribution Line Rebuild program is informed by comprehensive modeling and analysis of the distribution system to verify circuits and substations where industry-standard criteria like equipment loading, voltage profile, distribution automation device placement, and protection device coordination. This analysis will be combined with high-level field assessments to identify damaged assets that must be repaired or replaced. The goal is to improve these distribution feeders to meet current codes and standards and mitigate any safety concerns or imminent risks identified in high-level assessments or modeling analysis.

This program includes reconstructing distribution lines by replacing distribution poles, conductors, and associated equipment with infrastructure that can withstand requisite design wind speeds according to applicable codes and standards. All new infrastructure will be 15 kV voltage class. The program will also rebuild portions of the feeder backbone with larger gauge conductors and extend feeders to establish feeder ties. Additionally, it will guide the Distribution Automation program in installing reclosers to enable loop restoration to pick up nearby feeders during system emergencies, provide backup support, and construct underground feeder sections for critical power customers.

This program comprises the major feeder reconstruction activities and replaces damaged or ineffective overhead and underground distribution lines. This program also includes the following initiatives, a mix of System Remediation Plan (SRP) and non-SRP work:

- Rebuilding portions of distribution feeders of the worst performing circuits (for example, determined by a high index of customer minutes interrupted – IEEE 1366 aligned reliability standards) by replacing distribution poles with infrastructure that can withstand requisite design wind speeds according to applicable codes and standards. All newly constructed infrastructure will be reconstructed to 15 kV voltage class to allow for future voltage conversion to 13.2 kV (which involves rebuilding 4.16 KV, 8.32 kV, or 7.2 kV with infrastructure prepared to operate at 13.2 kV)

- Increasing conductor capacity to provide acceptable thermal loading for future load projections, accommodate customer electrification, and ensure acceptable voltage performance with high levels of renewable generation

- Installing reclosers to enable loop restoration (in coordination with the Distribution Automation program)

Distribution Line Rebuild

Increasing reliability to critical customers (including, but not limited to, major hospitals, airports, water treatment facilities, and seaports) by hardening feeder backbones, providing alternate underground feeds, or providing redundant feeder supplies

Building new distribution line extensions to provide feeder ties

Restoring out-of-service circuits as necessary to manage system reliability and resilience and maintain compliance with industry codes and standards

Completing the construction of abandoned unfinished circuits where area plans and reliability studies identify that finishing circuit construction would improve the reliability and operational performance of the system

Perform circuit voltage conversions of lower voltage classes (4, 7.2, or 8.2 kV) to 13.2 kV to improve distribution capacity and safety by enhancing the ability to detect and isolate faults

Installing underground cable and tree wiring to improve service reliability and resiliency to critical customers

Including additional mitigation options on feeders as identified by area planning to address voltage regulation or loading issues identified as part of a planning analysis, which can include targeted reconductoring, voltage regulation addition, capacitor bank addition, phase extension, and load balancing

2.0 Program Rationale

2.1 Initial State and Identified Gaps

To reach remediation, LUMA estimates that approximately 20 percent of the overhead and underground distribution line assets require safety and hazard mitigation. Field assessments will categorize the assets according to their health, based on estimates of condition (likelihood of failure) and criticality (consequence of failure with an asset score from 0 [worst] to 4 [best]). Risk mitigation related only to high-risk assets will be performed as SRP work. LUMA estimates that approximately 20 percent of the assets of the distribution feeder projects will be assessed as high risk, requiring safety and hazard mitigation to reach remediation.

These deficient assets will exhibit the following:

High risk of failure, or already failed and likely to cause:

- A safety impact on the workers or the public
- Failure to meet applicable legal requirements or policies, including Act 17-2019, as amended (Act 17), and Act 57-2014, as amended (Act 57), which include requirements related to safe and reliable utility operations, or
- An outage that will be widespread, affecting critical customers, and long duration, such that it is likely to have follow-on safety effects

In addition, LUMA's assessments have suggested that most, if not all, of the distribution overhead structures are not designed to withstand wind speeds of 160 miles per hour. These structures receive a health score of 2 and will also be remediated to the extents funding is available.

For the reasons mentioned above, this program is included in the SRP.

Distribution Line Rebuild

All deficient assets, including those in the SRP, will be planned to achieve the objectives defined in LUMA's Recovery and Transformation Framework. The most severe safety risks will be flagged at the time of assessment for immediate mitigation and elevated to the top of the priority list.

In its assessment, LUMA has identified several areas for improving, upgrading, and replacing distribution lines and their underlying system. Several necessary overhead and underground improvements or upgrades to distribution lines have been identified but have not yet been implemented. There are very few manual loop-restoration opportunities as very few reclosers exist in the LUMA system.

As identified in the Sargent & Lundy report (CS-0017 TD 10 Year Capital Reliability Plan, Section 3.2 Underground Distribution Feeder Replacement Program), about 60% of the underground system requires replacement due to poor conditions and system age (note that it is estimated that approximately 20% of the system falls within the SRP scope requiring safety and hazard mitigation). Switch cubicles and submersible switches in poor condition have also been identified as needing replacement, along with storm-damaged distribution line transformers still operating in the system.

2.1.1 Additional Gaps Identified Post Commencement

Since commencement, LUMA has restored significant out-of-service distribution circuits (partial or total); however, assets damaged in María and Fiona continue to fail. This requires continuous restoration and rebuilding of existing and newly occurring out-of-service and inoperable equipment.

“Provisional overhead” systems have been identified as a key safety issue needing resolution. Provisional overhead refers to the current state of infrastructure intended as a temporary mitigation measure to remedy failed underground distribution lines running through neighborhoods and connecting to loads and customers. Their design does not meet any particular standard and would not withstand high winds because they are often strung overhead on streetlights or have makeshift infrastructure. We must replace and make them safe for customers and utility workers.

Additional gaps identified include capacitor bank operations. Two specific concerns are out-of-service or inoperable capacitor banks and fixed capacitor banks, which exacerbate overvoltage conditions as customers connect solar PV to the distribution system. However, those capacitor banks cannot be switched off to ensure acceptable voltage. Rebuild guidance has been updated to modernize capacitor controls to align with industry standards.

While these gaps have been identified and proper mitigation is necessary, funding mechanisms still need to be determined to help achieve this as part of the completed state.

2.2 Description of Remediated State

High-risk findings of the distribution assets shall be incorporated into a remediation plan and mitigated. LUMA will take a coordinated approach to remediation based on severity and risk according to LUMA's Recovery and Transformation Framework.

LUMA's strategy is to rebuild worst performing (high index of customer minutes interrupted) feeder backbones, up to at least the first recloser, with hardened concrete and steel poles to meet design standards and planning guidelines as identified through comprehensive area planning processes. This strategy will improve system resilience and benefit customers. All new distribution infrastructure will be built to 15 kV voltage class. LUMA will install underground line segments for critical customers between



Distribution Line Rebuild

the hardened main backbone. We will improve the supply to major critical loads by hardening the feeder backbone or undergrounding the primary service tap from the backbone.

The supply to critical loads will be undergrounded from the feeder backbone, and a backup feed will be provided. In cases where undergrounding is not feasible, other solutions to increase reliability will be evaluated. New distribution automation will be installed to improve service (e.g., allow loop restoration). Other enabling technologies will be incorporated into this program, including energy storage, advanced communications infrastructure, sensors at select locations, and power quality meters at feeder heads. Switchable capacitor banks and other voltage-regulating technologies will also be installed as needed to help improve power quality and allow for greater renewable energy penetration (currently, all distribution capacitor banks in the system are fixed, and many are out of service).

To achieve the remediated state, LUMA will first identify all distribution lines that must be repaired and replaced to meet current codes and standards. This identification will follow a methodical exercise that prioritizes all distribution feeders in Puerto Rico using historic reliability metrics (SAIDI, SAIFI, CMI) and exposure and impact by incorporating overhead feeder length, customer criticality scores, number of customers, and the amount of distributed generation that has been integrated.

In the remediated state, the distribution line assets identified as high risk with an assessment score of 0 or 1 will have been repaired and replaced to meet current codes, standards, and requirements under applicable laws and the Operation and Maintenance Agreement.

2.3 Description of Program Completed State

In addition to conditions identified in the remediated state, the program completed state includes:

- Key feeders that meet specific damage and reliability criteria and serve critical facilities or many customers will have a reconstructed backbone up to at least the first recloser (first reliability zone). These feeders will have loop restoration through distribution automation and fault location, isolation, and system restoration and will be reconducted with appropriate conductor gauges. These feeders will have state-of-the-art technology for enhanced visibility through sensors and advanced metering
- Major critical loads will be mitigated by hardening feeder backbones, providing underground feeds from the backbone, or providing two supply feeders. In cases where undergrounding is not feasible, other solutions to increase reliability will be evaluated
- New extensions will have been identified and executed
- Capacity constraints due to an improper operating voltage will have been removed by upgrading the system voltage class
- The system will have been reinforced by underground cables or overhead tree wires to supply critical loads safely and reliably
- All equipment that has been out of service due to damage will have been repaired and restored to service
- non-energized facilities no longer required will also have been salvaged. All abandoned construction for non-energized assets is completed

This includes, but is not limited to, the portions of the underground system in unrepairable condition, damaged underground switch cubicles and switchgear, and storm-damaged distribution transformers. For the underground system remediation, identified sections requiring immediate remediation will be allocated

Distribution Line Rebuild

FEMA funding to replace the damaged portions with new underground cables in line with the National Electrical Safety Code (NESC) requirements.

2.4 Program Activities

The program's activities include the following activities:

- Conduct area planning and reliability studies to determine system improvements and reliability measures (Distribution Area Plans performed in the Compliance and Studies Program)
- Incorporate the rebuild recommendations from the area planning and reliability studies and assessments to drive Distribution Line Rebuilds, which include both overhead and underground infrastructure
- Prioritize and schedule work based on reliability, customer exposure, and condition severity levels
- Complete engineering design/construction plans for each of the projects
- Organize personnel, equipment, and materials, acquire all necessary approvals, and put projects out to bid as needed
- Complete overhead and underground feeder improvement/upgrade projects on feeders with already identified needs
- Repair and rebuild underground systems that are damaged and present safety and reliability issues and those that are near the end-of-life
- Replace distribution line transformers that have failed or may fail due to storm damage
- Address assets with performance issues within the first five years of the program, with identified future work, including assets not addressed here
- Complete new extension projects on feeders with identified needs
- Upgrade voltage class on systems with severe capacity constraints and those feeders where voltage class limits the ability to establish reliability solutions like feeder ties
- Improve supply reliability to critical customers by hardening feeder backbones, providing underground feeds from the feeder backbones, and providing redundant supply feeds
- Repair damaged and out-of-service feeders
- Complete construction on feeders that were partially constructed to improve supply reliability

2.4.1 Additional Activities Identified Post-Commencement

- Reconstruction of provisional overhead circuits to restore functionality
- Creation of a Voltage/VAR management program that includes switchable capacitor banks, repairing voltage regulation functionality

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Continue high-level area planning assessments of distribution lines to identify poles and assets that need to be remedied, as well as identify priorities that require feeder rebuild solutions
- Continue preliminary and detailed engineering on proposed projects, requesting necessary Federal funding obligations
- Continue procurement activities for materials and construction resources and initiate preliminary construction activities on some projects
- Continuing construction and repairs of cost-obligated federally funded projects

Distribution Line Rebuild

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input type="checkbox"/> Operational Excellence	<input type="checkbox"/> Enable systematic management of the business	
	<input type="checkbox"/> Pursue project delivery excellence	
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively deploy federal funding	Direct
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Direct
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Direct
	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input checked="" type="checkbox"/> Enable the sustainable energy transformation	Direct
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a safe workplace

Provide a safe workplace by repairing or replacing assets that are in poor or damaged condition and could present a safety risk to those working around them (e.g., arc flash) or to the public (e.g., downed infrastructure)

Objective: Implement effective public safety practices

Implement effective public safety practices by repairing or replacing assets in poor or damaged condition, such as damaged pole-top and pad-mounted transformers, which are located near customer facilities

Distribution Line Rebuild

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Increase service reliability

Increase customer service continuity and reliability by replacing and upgrading facilities with poor reliability performance and adding and completing facilities, allowing alternate feeds

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively deploy federal funding

A large portion of this work is expected to be federally funded.

Objective: Restore damaged grid infrastructure

Restore damaged grid infrastructure by replacing or restoring assets damaged by storms (such as distribution line transformers, switching cubicles, and submersible switchgear) and other assets in poor condition (e.g., cables and switches)

Objective: Improve the resilience of vulnerable infrastructure

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid

Where practical, replaced assets such as switches will be capable of being incorporated into future distribution automation schemes

Objective: Enable the digital transformation

Deploy advanced sensors and communications network to support the integration of modern distribution technologies and the digital transformation

Objective: Enable the sustainable energy transformation

Enable using larger conductor size and improved observability and controllability (e.g., enhanced voltage regulation and Volt/VAR optimization) to improve hosting capacity and integration of renewable generation and other clean energy technologies

2.6 Program Risks

Risks of delaying or not pursuing this program include:

Increasing safety hazards for employees and the public as the condition of equipment continues to deteriorate

Decreasing reliability and resiliency levels due to increased asset failures, working against the achievement of reliability performance targets

Reliability performance stagnation for critical customers

Reduced operational flexibility as out-of-service lines impact how the system is configured and operated

Distribution Line Rebuild

3.0 Program Funding

3.1 Program Funding (\$ millions)

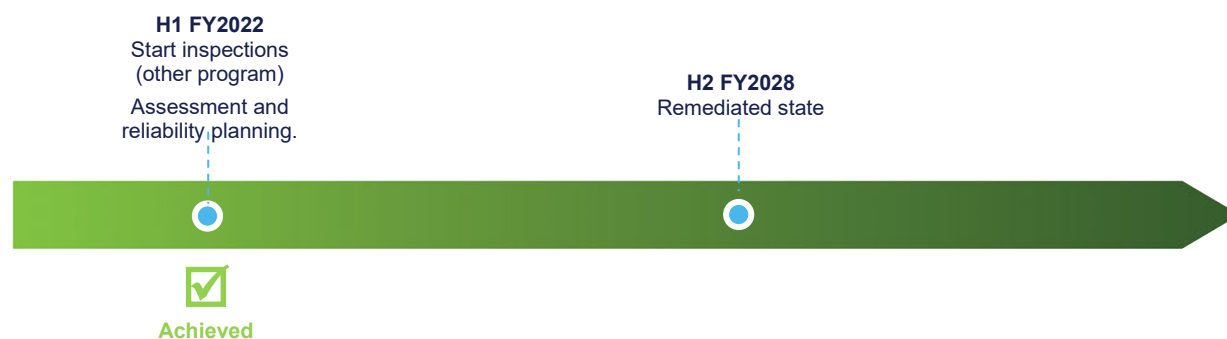
Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$127.2	\$262.6	\$271.7	\$3,504.7
SRP Expenditures	\$100.4	\$212.9	\$237.3	\$324.6

3.2 Program Resource Requirements

Required resources include:

- Pad-mounted and submersible switches
- Distribution line transformers
- Cable for SRP activities plus those required by planning studies for non-SRP
- Overhead conductors and other materials for the overhead work
- Capacitor banks and controllers for remote operation (in conjunction with DA)
- Voltage regulators and controllers for remote operations (in conjunction with DA)
- Feeder head metering for three-phase line quantity visibility, line sensors, PQ metering equipment (in conjunction with DA)
- Adequate internal and external resources to complete the work
- Overhead materials for non-SRP voltage conversions and SRP upgrades
- Tree-wire as determined by planning studies
- Mobilize personnel and source equipment as required by the specific project

3.3 Timeline and Milestones



Distribution Automation

1.0 Program Description

This program focuses on deploying equipment for distribution automation. It includes deploying automated switchgear and communicating fault sensors on distribution feeders to improve reliability. It is not part of the SRP.

The included switchgear consists of three-phase and single-phase reclosers. To further enhance reliability, LUMA will deploy automatic switching distribution feeder automation systems. Communicating fault sensors will be deployed to provide fault location information to the Operations team to improve service restoration.

Communication components and system tools are included to enable remote operation and visualization of the field devices. Labor and services are included for reliability analysis, load flow analysis, protection coordination studies, engineering design packages, testing, installation, commissioning, enterprise integration of operational and nonoperational data, training, and maintenance.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

An initial assessment has identified the following issues:

- The distribution system does not align with regulation/law, specifically Act 17, Subsection 1.15 (o)
- Inadequate or insufficient technology is employed in the distribution system to improve system reliability, resulting in higher customer costs. Customers currently pay energy costs significantly above the US average
- Feeders do not have in-line automated switchgear to reduce the number of customer interruptions per outage occurrence. Substation breakers and fuses are used for protection, causing unwanted outages and slow, laborious restoration actions
- Fault locations are unknown by Operations, and the faulted circuits must be manually located by inspecting the feeder network
- Feeder system loading is not visible to balance loads at a substation on a per feeder and per phase basis, causing poor visibility for planning purposes
- Reliability performance metrics – current reliability performance is well below industry standards (in the fourth quartile)

2.1.1 Additional Gaps Identified Post-Commencement

- Distribution automation fleet management software applications were not considered during the initial stage of the program. However, given the volume of smart distribution automation devices, fleet management software is needed to maintain a large fleet of reclosers, fault sensors, and other grid edge devices under the distribution automation program. These software-based solutions allow for system health monitoring at a device level and programmatic maintenance

Distribution Automation

- Distribution automation includes two distinctly different functions. One is reliability improvement, addressed in this program, and the other is power quality. The power quality includes voltage management systems that ensure customers receive a quality supply within industry standards. Volt VAR optimization systems should be considered for deployment to improve customer voltage quality. Additionally, Conservation Voltage Reduction (CVR) schemes optimize the customer supply voltage to the lowest allowed voltage. The CVR system saves consumed energy by lowering feeder voltages. The energy savings can be used to defer potential expenditures on new transformers, and energy savings can be passed on to the consumers
- While these gaps have been identified, funding mechanisms still need to be determined to help achieve this as part of the completed state

2.2 Description of Remediated State

This program is not part of the SRP.

2.3 Description of Program Completed State

The program will reach a state of completion when it achieves the following:

- The deployment of three-phase, single-phase reclosers, and fault indicators on approximately 1,100 distribution feeders
- The integration of all communication-capable field devices into the LUMA enterprise applications and SCADA
- The deployment of decentralized fault location, isolation, and service restoration (FLISR) systems on 80% of distribution feeders
- The deployment of Decentralized ATS systems at critical customer locations

2.4 Program Activities

- Reliability assessment studies
- Load studies to determine optimal locations for reclosers
- Perform protection coordination studies and system model updates
- Development of coordinated protection settings for reclosers and substation feeder breakers
- Studies to determine optimal locations for fault indicators
- Studies and testing to determine supporting communication devices are required
- Engineering design package development for feeder reliability upgrades
- Deployment of reclosers and fault sensors
- Deployment of fault sensors
- Deployment of FLISR and ATS systems

2.4.1 Additional Activities Identified Post-Commencement

- Studies to employ fuse optimization and installation of new fuse cutouts
- Deployment of communication system components

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:



Distribution Automation

- Start the installation of 38kV reclosers
- Continue installation of three-phase and single-phase reclosers
- Start the installation of communicating fault current indicators (CFCIs)
- Continue installation of fuse cutouts and fuse optimization
- Start deployment of distribution automation communication infrastructure to support FLISR
- Start construction of test lab

2.5 Program Benefits

Primary Goals	Objectives	Direct Or Indirect Impact
<input checked="" type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Direct
	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Indirect
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Indirect
	<input type="checkbox"/> Pursue project delivery excellence	
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Indirect
<input checked="" type="checkbox"/> System Rebuild & Resiliency	<input checked="" type="checkbox"/> Effectively deploy federal funding	Direct
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Direct
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Direct
	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input checked="" type="checkbox"/> Enable the sustainable energy transformation	Indirect
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Implement effective public safety practices

Modernization of distribution feeders with field devices will help to identify the number of customers affected by faults on feeders and will provide a more efficient, automated service restoration. Additionally,

Distribution Automation

it will provide our field crews segmentation points and flashover protection to perform repairs and upgrade jobs safely.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

Reducing feeder outages has a direct impact on customers, residential and primarily commercial customers.

Objective: Increase service reliability

Modernizing distribution feeders with field devices minimizes the number of customers affected by faults on feeders and improves service restoration times.

Objective: Deliver electricity at reasonable prices

Reducing customer outages directly maximizes power delivery to improve revenue and reduce costs.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

The project will provide LUMA stakeholders with visibility on feeder status and health. System models, planning, and maintenance will significantly benefit from the program.

Objective: Enable employees to execute operations systematically

Distribution automation assets contribute to real-time and historical system performance data, which enables operations for employees.

PRIMARY GOAL: SYSTEM REBUILD & RESILIENCY

Objective: Effectively deploy federal funding

This work will be carried out with a portion of the federal funds allocated for the rebuilding of the system. LUMA will make efficient use of these funds for this crucial aspect of the system rebuild.

Objective: Improve resilience and visibility of vulnerable infrastructure

Combining reclosers, fault sensors, and automation facilitates rapid service restoration during contingencies and disasters.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid

Deploying communication-enabled field devices will enable monitoring and provide visibility for managing and integrating renewable energy sources.

Objective: Enable the digital transformation



Distribution Automation

The distribution automation assets provide the system visibility, control, and data, which are key to a modern digital grid.

Objective: Enable the sustainable of energy transformation

The distribution automation program deploys equipment to the distribution systems that locate and isolate outages. This investment will restore services automatically from alternative supply points, minimizing the impact of outages on customers (duration and extent) and improving reliability and resilience.

2.6 Program Risks

- The primary risk of delay or lack of implementation leads to continued poor reliability performance
- There is a risk of not quickly acquiring equipment and services to support the program
- Note that this program has several interdependent programs (e.g., line assessments, fuse replacement, device installations, communication infrastructure, SCADA integration) that must be completed for this effort to succeed

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$103.9	\$156.8	\$181.9	\$493.0
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

Feeders will, on average, be upgraded to two three-phase reclosers, nine single-phase reclosers, and twelve communicating fault sensors:

- Approximately 4,000 three-phase reclosers
- Approximately 10,000 single-phase reclosers
- Approximately 10,000 fault sensors
- Approximately 5,000 fuse cutouts
- Visualization software and fleet management tools
- Communication networking equipment and software tools
- Sufficient human resources to carry out the specified studies and projects

3.3 Estimating Methods and Assumptions

For reclosers, a high-level estimate was performed by analyzing feeders to calculate how many reclosers on the feeder would yield a cost-benefit ratio of \$2/Customer Minute Interrupted (CMI) or better. These include feeder ties. For this study, customers and outages were assumed to be evenly distributed. Also, it is considered that installing two mid-stream overhead reclosers for each feeder with significant overhead



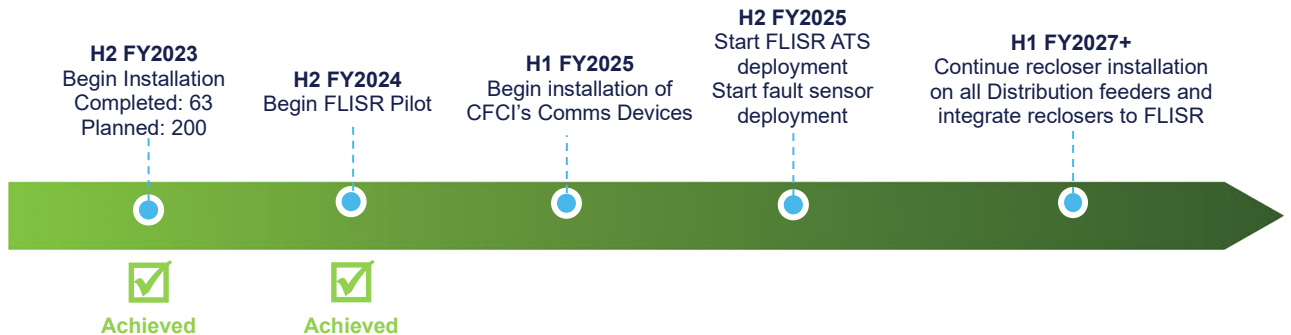
Distribution Automation

mileage will be required. The budget includes approximately four three-phase reclosers, nine single-phase, and three sets of three fault sensors per line. After accounting for these assumptions, the reclosers and fault sensors were multiplied by unit costs to generate the estimate.

The following labor vs. material split was assumed:

CATEGORY	LABOR	MATERIALS
Overhead	61%	39%
Underground	28%	72%
Data Concentrators	25%	75%
Last-Mile Telecom	50%	50%

3.4 Timeline and Milestones



Distribution Pole & Conductor Repair

Distribution Pole & Conductor Repair

1.0 Program Description

This program focuses on minimizing the safety hazards caused by distribution poles, equipment, and conductors that must be repaired or replaced. Major repairs and replacement will be based upon the results of an assessment of the distribution system and an analysis by engineers to schedule the repair or replacement based on the criticality of the pole. Following this process, safety hazards and priority poles will be replaced, along with damaged equipment, conductors, and hardware.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Field inspectors will categorize assets according to their health based on estimates of their condition (likelihood of failure), and engineers will assess the criticality (consequence of failure) with a score of 0 (worst) to 4 (best). Risk mitigation of only the highest risk assets will be categorized and performed as System Remediation Plan work. LUMA estimates that approximately 20 percent of the assets comprising the distribution lines require safety and hazard mitigation to reach remediation. These deficient assets will exhibit the following:

- High risk of failure or already failed
- and likely to cause:
 - A safety impact on the workers or the public,
 - Failure to meet applicable legal requirements or policies, including Act 17-2019, as amended (Act 17), and Act 57-2014, as amended (Act 57), which include requirements related to safe and reliable utility operations

An outage that will be widespread, affecting critical customers, and long duration, such that it is likely to have follow-on safety effects. Initial analysis has uncovered the following issues:

- Distribution structures that are not compliant with applicable laws and policies, specifically under the Puerto Rico Transmission and Distribution System Operation Maintenance Agreement Annex I, Act 17, and Act 57
- Line equipment, conductors, anchors, and guys must be reinforced or replaced. It is known that a significant proportion of them need some form of remediation work, but there is no exact data on which ones need improvement
- The frequency of forced outages is much higher than industry norms
- There are insufficient records of what equipment is damaged, the nature of the damage, and its location

A significant portion of distribution poles, equipment, conductors, and hardware require replacement due to damage from severe weather events or because they have reached the end of useful life, becoming more prone to failure. Safety priority poles, equipment, conductors, and hardware have been neglected,

Distribution Pole & Conductor Repair

contributing to the unsafe operation of the grid by increasing asset failures, failing to address conductor clearance issues, and increasing arc-flash risks.

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

High-risk findings in the main line overhead (3 phase) of the distribution poles, equipment, conductors, and hardware with an inspection score of 0 or 1, shall be incorporated into a remediation plan and mitigated. LUMA will take a coordinated approach to remediation based on the severity and risk according to the objectives defined in LUMA's Recovery and Transformation Framework.

To achieve the remediated state, LUMA will have first identified distribution poles, conductors, and hardware to be repaired and replaced to meet current codes and standards. This work is described and will be performed under the Inspection of Distribution Lines program.

In the remediated state, the main lines (3 phase) distribution poles, conductor, and hardware assets identified as high risk with an inspection score of 0 or 1 will have been repaired and replaced to meet current codes, standards, and requirements under applicable laws and the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement.

2.3 Description of Program Completed State

With the required repairs and replacements of distribution poles, structures, and conductors (as determined by the inspection activities), LUMA will have established a system resilient to severe weather with higher service reliability and extended life span assets.

2.4 Program Activities

- Ensure adequate pole, equipment, conductor, and hardware stock for replacements identified through the inspection program
- Replace safety hazard poles and associated hardware
- Replace priority poles and associated hardware
- Pole replacements include replacing/upgrading guys, anchors, foundations, and associated equipment as needed
- Initiate job orders based on the results of the inspections
- Complete engineering designs for the replacements
- Organize employee resources, equipment, and materials
- Acquire all necessary permits and approvals
- Schedule work and replace poles to meet the latest safety codes and loading factors aligned with the latest design criteria and Acts 17 and 57

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

Distribution Pole & Conductor Repair

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be to:

- Continue distribution line inspections, preliminary and detailed engineering on proposed projects, requesting necessary Federal funding obligations
- Continue procurement activities for materials, construction resources, and project construction on approved projects
- Continuing constructions and repairs of cost-obligated federally funded projects

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input type="checkbox"/> Operational Excellence	<input type="checkbox"/> Enable systematic management of the business	
	<input type="checkbox"/> Pursue project delivery excellence	
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively deploy federal funding	Direct
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Direct
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	Indirect
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

Distribution Pole & Conductor Repair

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a safe workplace

The replacement of the critical poles reduces the exposure of our employees to hazardous conditions. The installation of the new poles ensures that the system meets the current codes and standards, making it safer to operate.

Objective: Implement effective public safety practices

- The program increases field personnel and public safety by replacing poor-condition poles and associated hardware and conductors with a high risk of failure
- The program also contributes to the safe operation of the grid by addressing conductor clearance issues, reducing arc-flash risks, and reducing potential pole, equipment, conductor, and hardware failures

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Increase service reliability

The program improves reliability by reducing outages resulting from pole, conductor, and hardware failures.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively deploy federal funding

This work will be completed with a large portion of the federal funds allocated for the remediation of the Puerto Rico electric transmission and distribution system. Given the enormous benefits of rebuilding the system into a resilient network, the funds will be used effectively, and their use for this program will deliver significant value for money.

Objective: Restore damaged grid infrastructure

The program replaces distribution poles, equipment, conductors, and hardware that are in poor condition due to damage from severe weather events and aging.

Objective: Improve the resilience of vulnerable infrastructure

Poles that need replacing will be replaced with structures that meet the updated design criteria. These poles will be either higher-strength wood, concrete, steel, or composite or more resilient to harsh weather conditions. Meanwhile, additional equipment for guys, anchors, and grounds may be upgraded simultaneously.

2.6 Program Risks

Risks related to delaying or not performing this work include:

- Failure to provide a safe work environment for field personnel
- Failure to reduce public safety risks

Distribution Pole & Conductor Repair

- Potential adverse consequences for failure to meet the applicable standard or legal requirements or policies
- Pole, conductor, or guy and anchor failures could impact adjacent structures creating wider-spread failures
- Continued service unreliability

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$70.3	\$98.5	\$98.5	\$466.6
SRP Expenditures	\$32.0	\$43.0	\$43.0	\$28.4

3.2 Program Resource Requirements

- Approximately 31,750 priority (score 0 and 1) poles and associated hardware
- Approximately 1,300 linear miles of the conductor (score 0 and 1)
- Personnel — 42 × 6 – 7 person crews. As the amount of work grows in subsequent years, more crews will be needed.

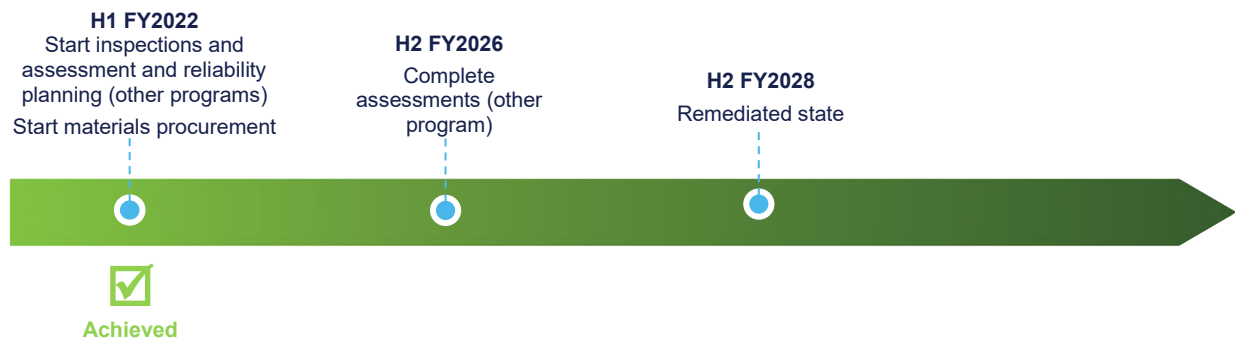
3.3 Estimating Methods and Assumptions

- Estimates are based on average costs for pole, equipment, conductor, and hardware replacements from parent company experience.
- Use of internal resources is anticipated but will likely need to be supplemented with contract resources, which may increase average costs.
- Availability of poles, equipment, conductor, hardware, and manufacturing capacity could also affect material costs.
- Assumptions: Estimating cost splits based on historical projects

CATEGORY	PERCENTAGE
Engineering/PM	5%
Material	29%
Construction/Commissioning	50%
Pre-Construction Field Activities	16%

Distribution Pole & Conductor Repair

3.4 Timeline and Milestones



Distribution Lines Assessment

Distribution Lines Assessment

1.0 Program Description

This program targets the assessment, testing, and study of distribution lines. We will first prioritize distribution line assessments by worst-performing feeder and highest criticality, initially focusing on identifying System Remediation Plan (SRP) items. Because of the magnitude of the work, we anticipate that the SRP portion of the assessment program will take five years to complete and that we will finish assessing the remainder after the SRP period.

It aims to restore the system and improve reliability and resiliency in line with current codes and standards with activities including, but not limited to:

- Assessing poles
- Performing ground rod assessments
- Assessing anchors and guys
- Assessing conductor condition
- Performing line clearance checks to ensure that distribution assets meet live line clearance requirements under the applicable codes and standards
- Assessment of third-party attachments on LUMA infrastructure

This program considers assessments only, and repairs and/or replacements will be undertaken by separate programs.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

PREPA has not conducted a comprehensive health assessment of the distribution system or programmed pole line assessments in recent years. Consequently, they did not know or document the condition of the distribution assets in the field. It is apparent to experienced LUMA utility engineers from visual observations, site visits, and an asset health sampling that widespread deficiencies exist in the distribution system.

Field assessments will help categorize assets according to their health, based on estimates of condition (likelihood of failure), and engineers will assess criticality (consequence of failure) and assign an asset score from 0 (worst) to 4 (best). Risk mitigation of only the highest risk assets will be categorized and performed as System Remediation Plan (SRP) work. These will be assets that exhibit the following:

- High risk of failure or already failed
- and likely to cause:
 - A safety impact on the workers or the public,
 - Failure to meet applicable legal requirements or policies, including Act 17-2019, as amended (Act 17), and Act 57-2014, as amended (Act 57), which include requirements related to safe and reliable utility operations, or

Distribution Lines Assessment

- An outage that will be widespread and of long duration, which will affect critical customers, and is likely to have follow-on safety effects

LUMA estimates that approximately more than 20 percent of the assets comprising overhead and underground distribution lines require safety and hazard mitigation to reach remediation.

PREPA did not maintain accurate records of third-party attachments to their poles and had not performed loading analysis for those poles, especially those with multiple attachments.

For the reasons mentioned above, this program is included in the SRP.

All deficient assets, including those in the SRP, will go into a planning process for remediation to achieve the objectives defined in LUMA's Recovery and Transformation Framework. The most severe safety risks will be flagged at the assessment time for mitigation with higher priority.

The initial analysis uncovered the following issues:

- Distribution structures that are not compliant with laws, regulations, and safety codes, specifically Act 17
- Anchors and guys need to be reinforced or replaced. We know that a large proportion of them require some form of remediation work, but there is no exact data on which ones need improvement
- A frequency of forced outages much higher than industry norms
- Lines lacking design capacity and needing restoration
- Insufficient records of what equipment is damaged, the nature of the damage, and its location
- PREPA did very few planning studies and feeder analyses and did not know the capabilities/weaknesses of most circuits

2.1.1 Additional Gaps Identified Post-Commencement

During program execution, we identified additional gaps as outlined below to complete the necessary work or activities for the distribution system to be in a remediated state:

- Single- and two-phase lateral assets require condition and criticality assessments. Assessment includes third-party attachment on LUMA infrastructure in these laterals. Items identified as 0 and 1 are to be designated for repair
- Identification and assessment of missing assets and mapping back to LUMA's geographic information system. Some assets are missing or are not currently recorded in the system
- Gaps assessment to identify asset conditions such as thermography, wood pole test and treatment, equipment testing, cable testing, and light detection and ranging

While we have identified these gaps, we still need to identify funding mechanisms to help achieve this as part of the completed state.

2.2 Description of Remediated State

In the remediated state, we will have completed an organized field assessment program of the main overhead line to determine the asset's condition and the criticality (consequence of failure). We will have identified mitigation of risk related to only the highest risk assets (i.e., those scoring a 0 or 1 on the previously mentioned scale of 0 to 4), currently estimated at 20 percent, for subsequent



Distribution Lines Assessment

repair/replacement to meet current codes and standards, and requirements under applicable laws and the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement.

The asset score will be documented, and high-risk findings shall be incorporated into a remediation plan that will consider a coordinated approach to remediation based on severity and risk according to the objectives defined in LUMA's Recovery and Transformation Framework.

In the remediated state, the main line overhead of the distribution system will have been visually assessed. The hazard, safety, and reliability issues identified through this assessment will have been logged and prioritized.

In addition, third-party attachments on assessed LUMA infrastructure will have been identified in the remediated state.

2.3 Description of Program Completed State

In addition to what has been noted for the remediated state, the program completed state includes:

- Completion of the full initial round of assessments (including all additional assessments identified) of the distribution lines system (including non-main lines)
- Continuation of routine/recurring assessments of the distribution system
- Identification of system components in need of replacement, such as poles, with Engineering informed of the prioritized findings
- Completion of the corresponding data-gathering required for planning studies and reliability assessments of all feeders
- Completion of line clearance checks to ensure that distribution assets meet live line clearance requirements of the applicable codes and standards
- LUMA will have identified pole third-party attachments on assessed infrastructure
- Construction projects, such as pole and conductor replacements, are addressed under separate programs

2.4 Program Activities

- Create a detailed plan and complete an assessment of the distribution system within the first five years
- Identify and plan high-risk failure items or high-potential safety issues on both overhead and underground feeders in restricted access areas or within public access to be remediated within the first five years
- Identify high-risk failure items or high-potential safety issues involving grounding, anchors, guying, clearance, etc., on all feeders in vulnerable areas or within public access to be remediated.

2.4.1 Additional Activities Identified Post-Commencement

- Create a plan to address the additional gaps in the assessment of the distribution system
- Identify and plan imminent failure items or high potential safety issues involving grounding, anchors, guying, clearance, etc., on all lines in vulnerable areas or within public access to be remediated
- Identify any new safety and security issues and other quick wins in the near term
- Identify preventive and corrective maintenance plans

2.4.2 FY2025 Activities



Distribution Lines Assessment

The focus for the upcoming fiscal year will be:

- Continue distribution line assessments and condition prioritization for planning repair and replacement projects
- Continue to collect distribution asset data condition information
- Create a plan for the additional gaps in assessing the distribution system
- Create a plan to complete the assessment of the single and two-phase laterals in the distribution system
- Create a plan to complete the assessment of the underground distribution system
- Find appropriate funding methods to uncover further gaps in evaluating the distribution system

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Indirect
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Indirect
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively deploy federal funding	Indirect
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Indirect
<input type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Indirect
	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input type="checkbox"/> Enable the sustainable energy transformation	

Distribution Lines Assessment

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a safe workplace

Objective: Implement effective public safety practices

The program will promote field personnel and public safety by identifying and mitigating potential safety hazards due to poor equipment conditions on both the overhead and underground systems.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Increase service reliability

This program will improve service reliability by identifying damaged equipment requiring replacement and key locations that would benefit from segmentation/protective and other reliability improvement devices on the overhead and underground feeders.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

Objective: Pursue project delivery excellence

Data collection will provide the basic information required to systematically execute system planning and asset management. The data will support the identification of projects and lead to data-driven investment decisions.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively deploy federal funding

A portion of this program is expected to be federally funded.

Objective: Restore damaged grid infrastructure

Objective: Improve the resilience of vulnerable infrastructure

The program will facilitate system rebuild and improved resiliency by identifying damaged poles, hardware, and conductors for follow-up replacement.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid



Distribution Lines Assessment

Objective: Enable the digital transformation

The data collected will provide valuable information for making decisions about grid modernization. It will also be used to comply with requirements under the integrated distribution planning principles docket.

2.6 Program Risks

Delaying or not performing this program compromises the ability to adequately perform subsequent repair and replacement work, which includes risks such as:

- Lack of compliance with regulations/law — Act 17: Failure to maintain the electric power infrastructure to ensure reliability, resilience, and safety for utility workers and the public
- Inability to reach reliability target goals under Performance Metrics; failure to meet the required reliability targets set forth in the LUMA's contract
- Access issues to the distribution line may delay assessments. This includes vegetation, road and sidewalk conditions
- Safety issues found on the distribution line may delay assessments. Risk is present when conductors or equipment are below the minimum clearance requirements of the codes and standards adopted by the utility

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$11.6	\$11.8	\$11.7	—
SRP Expenditures	\$5.6	\$5.6	—	—

3.2 Program Resource Requirements

- Adequate resources will be necessary to complete the fieldwork and back-office analysis, likely a combination of internal and contractor resources

3.3 Estimating Methods and Assumptions

- Estimates are based on the average cost for pole and line assessments derived from previous experience
- LUMA anticipates using internal resources, but will likely need to be supplemented with contract resources, which may increase average costs
- Gaps identified will also increase the costs and require a proper funding mechanism

Distribution Lines Assessment

3.4 Timeline and Milestones



Transmission Line Rebuild

Transmission Line Rebuild

1.0 Program Description

The Transmission Line Rebuild program increases resilience by reconstructing transmission lines so they will withstand high wind loads, become floodproof by elevation or relocation, and reduce concerns related to contingency security violations. As part of the Transmission Line Rebuild program, LUMA performs comprehensive modeling and analysis on the transmission lines to verify criteria such as equipment loading, voltage profile, automation device placement, and coordination of protective devices. This program includes numerous 230 kV, 115 kV, and 38 kV projects to harden and upgrade the transmission system. It also includes rebuilding towers and reinforcing or replacing anchors and guys as required. The upgrade process also involves undergrounding targeted lines, with a design for accommodating future circuits for reliability and redundancy (e.g., undergrounding) on select transmission lines. This program also incorporates an investigation to mitigate corrosion and restore and upgrade line design capacity. In addition to the overhead transmission line upgrade work, this program includes the 115 kV underground cable repair in the San Juan area.

We will combine these activities with field assessments to identify assets in need of repair or replacement. The goal is to bring these transmission lines up to current codes and standards and mitigate any other issues identified during the analysis.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Field assessments (conducted under the Assessment of Transmission Lines program) will categorize assets according to their health, based on estimates of their condition (likelihood of failure) and criticality (consequence of failure), assigning an asset score of 0 (worst) to 4 (best). We will mitigate risk related to only the high-risk assets categorized as 0 or 1 as system remediation plan (SRP) work. LUMA estimates that approximately 10 percent of the assets comprising the transmission line projects will be assessed as high risk and will require safety and hazard mitigation to reach remediation. These deficient assets will exhibit the following:

- High risk of failure, or already failed and likely to cause:
 - A safety impact on the workers or the public
 - Failure to meet applicable legal requirements or policies, including the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement, Annex I, Act 17-2019, as amended (Act 17), and Act 57-2014, as amended (Act 57), which include requirements related to safe and reliable utility operations
 - An outage that will be widespread, affecting critical customers, and long duration, such that it is likely to have follow-on safety effects

In our initial assessments performed to date, we have identified the following gaps related to transmission lines:

Transmission Line Rebuild

- Anchors and guys need to be reinforced or replaced. Many of them need some form of remediation work, but there is no exact data on which ones need improvement
- Transmission infrastructure is corroded in places, though again, we to investigate to gather exact data on where to mitigate corrosion
- The frequency of forced outages is much higher than US mainland industry norms
- Lines are operating below design capacity and need restoration
- Hardening of the San Juan area 115 kV grid is required to withstand critical loads. Underground line additions are set out as part of the modified action plan in the approved 2020 Integrated Resource Plan (IRP).

2.1.1 Additional Gaps Identified Post-Commencement

Based on the recent reliability performance of transmission assets, the widespread failure of transmission line insulation indicates that we must replace line insulators, which will increase resistance to severe weather events and prepare for environmental factors that impact line performance.

2.2 Description of Remediated State

LUMA will take a coordinated approach to remediation based on severity and risk according to the objectives defined in LUMA's Recovery and Transformation Framework. As such, all high-risk findings of the transmission assets shall be incorporated into a remediation plan and mitigated.

To achieve the remediation, LUMA will first perform high-level assessments to identify all transmission lines that need to be repaired and replaced to meet current codes and standards. The high-level assessment identification tasks described in this program brief will be performed under the Assessment of Transmission Lines program (a different program); also, the replacement of poles will be performed under the Transmission Priority Pole Replacement program (a different program). Those programs are critical to achieving the system-remediated state. A smaller subset of projects may be performed under the Line Rebuild program when not covered under one of the other programs mentioned above.

In the remediated state, the transmission line assets identified as high risk will have been repaired or replaced to meet current codes and standards, and requirements under applicable laws and the Operation and Maintenance Agreement.

2.3 Description of Program Completed State

All rebuilt transmission towers will withstand 160 mph winds and thus align with Act 17, Articles 1.15(a), (b) and (c). In addition to the wind resistance standard, Act 17 requires the replacement of temporary transmission towers with single poles and poles with equipment to prevent overload, the replacement and maintenance of transmission infrastructure anchoring systems to maintain resiliency, and the implementation of programs to mitigate corrosion in grid infrastructure.

Furthermore, the transmission system's infrastructure will be reconstructed in conformity with the highest standards, and industry-standard maintenance programs will ensure that reliability levels are maintained. The San Juan area 115 kV network will be able to withstand single contingency outage criteria without load loss due to transmission-forced outages.

Transmission Line Rebuild

2.4 Program Activities

Completion of the following priority projects:

- Rebuild towers to current standards with the inclusion of double circuit towers on select lines
- Assess, reinforce, or replace anchors, guys, or foundations
- Investigate where there is corrosion to mitigate it and make the transmission system safer and more resilient, and subsequently continue corrosion mitigation work
- Regarding compliance, safely operating the grid, avoiding structural failures and conductor clearance conflicts
- Review pole/structure assessment data collected during the execution of the Transmission Assessment program and other sources to avoid duplication of work already completed
- Replace safety hazard poles/structures and associated hardware
- Replace priority poles/structures and associated hardware (115 kV, 38 kV)
- Replace damaged and highly loaded conductors
- Increase insulation to withstand capability based on environmental design factors
- Restore and upgrade line design capacity (non-SRP)
- Create single-line-diagrams to depict transmission line layout and critical elements
- Create new 115 kV underground paths in the San Juan metro area to improve reliability and maintain critical load support. Terminal additions at affected substations are also required. This will allow generation at Palo Seco and San Juan to better supply the area load following major storm events (non-SRP)

2.4.1 Additional Activities Identified Post-Commencement

Identify insulator replacement initiatives and funding sources.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Continue transmission line assessments, as well as preliminary and detailed engineering on proposed projects, requesting necessary federal funding obligations
- Continuing procurement activities for materials and construction resources and initiating preliminary construction activities on some projects
- Begin construction activities on projects in advanced project planning stages

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
☒ Prioritize Safety	☒ Promote a safe workplace	Direct
	☐ Implement effective public safety practices	
	☐ Deliver a positive customer experience	

Transmission Line Rebuild

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Direct
<input checked="" type="checkbox"/> Operational Excellence	<input type="checkbox"/> Enable systematic management of the business	
	<input type="checkbox"/> Pursue project delivery excellence	
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively deploy federal funding	Direct
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Direct
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Direct
	<input type="checkbox"/> Enable the digital transformation	
	<input checked="" type="checkbox"/> Enable the sustainable energy transformation	Direct
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a safe workplace

Improvement of anchors, insulators, and conductors will harden the system to prevent failures and enhance operating conditions for employees, allowing them to work safely.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Increase service reliability

Rebuilt and replaced infrastructure will improve the system's ability to withstand the impact of transmission-forced outages.

Objective: Deliver electricity at reasonable prices

Additional line paths described in the approved IRP allow for a more efficient and reliable supply of electricity, which will maintain prices at a reasonable level.

Transmission Line Rebuild

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable employees to execute operations systematically

Improvement to anchors, insulators, and conductors will harden the system to prevent failures and improve operating conditions for employees, allowing them to complete work without interruption. Improved resilience provides additional operational flexibility to the system, reducing the need for non-routine operations to be run by employees.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Restore damaged grid infrastructure

Replacement of line elements helps to restore the grid's performance by providing functioning infrastructure.

Objective: Improve the resilience of vulnerable infrastructure

Towers rebuilt to 160 mph standard will reduce tower failures. Given the climate in Puerto Rico, the strength of towers against high winds is of particular importance and a key vulnerability if not properly addressed. Improved transmission (N-1 and N-1-1) capacity will reduce the impact of forced outages, increasing overall system resilience.

Objective: Effectively deploy federal funding

Maximize the value of available federal funding to provide repairs and mitigations.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid

Deploy advanced grid technologies, including sensors to enhance situational awareness to improve resiliency and sustainability.

Objective: Enable the sustainable energy transformation

Additional line paths and capacity described in the approved IRP will have a more sustainable design, helping transform the overall system.

2.6 Program Risks

If this program is either delayed or not carried out, the main risks to the system are the following:

- Safety risk associated with the operation of damaged equipment
- Continued forced outages due to damaged structures and equipment
- Continued forced outages due to reduced design capacity and difficulties in operating in contingency (N-1 and N-1-1) scenarios

Transmission Line Rebuild

3.0 Program Funding

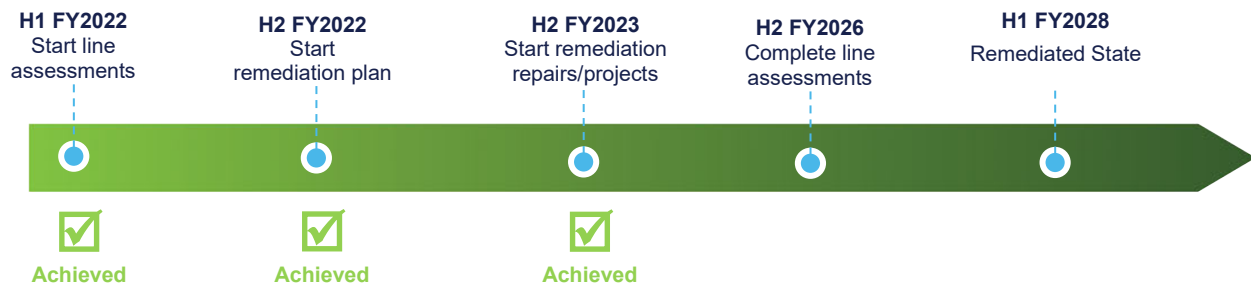
3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$67.6	\$162.8	\$257	\$2,838.9
SRP Expenditures	\$66.7	\$162.8	\$257	\$333.3

3.2 Program Resource Requirements

- Adequate resources to complete the work are likely a combination of internal and contractor resources.
- Construction resources to complete the line projects will likely be contractors, including resources from outside Puerto Rico. Commissioning and handover will be done using internal resources.

3.3 Timeline and Milestones



IT OT Telecom Systems & Networks

IT OT Telecom Systems & Networks

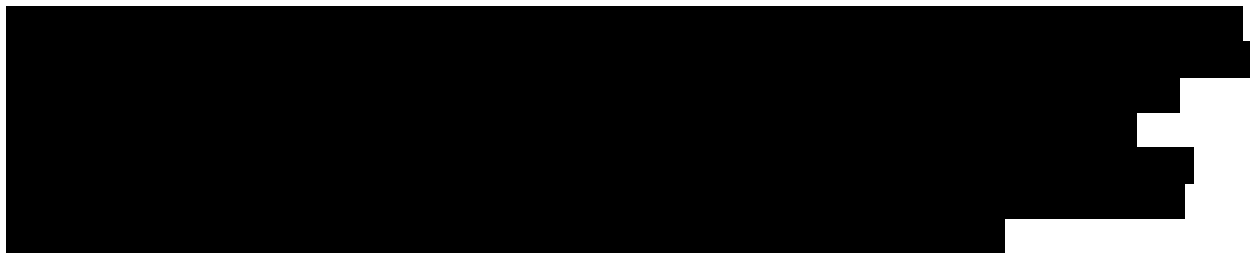
1.0 Program Description

This program includes IT and OT telecom investments to improve and revamp PREPA's mobile radio system, phone exchange and telephone systems, and fiber optic and microwave data radio systems. These systems are used to carry all PREPA IT and OT data. Capability enhancements will include improved first responder and emergency response communication, greater resilience of the internal telecommunications network, an enhanced microfiber network, and a network control center to improve centralized monitoring and control over facilities and IT traffic.

2.0 Program Rationale



2.1 Initial State and Identified Gaps



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

2.3 Description of Program Completed State

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

2.4 Program Activities

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Continue facility and system inspections and assessment, development of system requirements and standards, preliminary and detailed engineering on proposed projects, requesting necessary Federal funding obligations, and procurement activities for materials and construction resources

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
☐ [REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]

IT OT Telecom Systems & Networks

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
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PRIMARY GOAL: PRIORITIZE SAFETY

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

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[REDACTED]

PRIMARY GOAL: OPERATIONAL EXCELLENCE

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

IT OT Telecom Systems & Networks

PRIMARY GOAL: OTHER

2.6 Program Risks

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$22.9	\$59.0	\$79.0	\$291.1
SRP Expenditures	\$22.9	\$59.0	\$79.0	\$210.8

3.2 Program Resource Requirements

Contractors will be required for all the programs. It is not expected that LUMA will have enough internal resources with skill and equipment to complete this work in a timely manner. For example, bucket trucks and fusion splicers will be required to repair the OPGW fiber, and enough of these resources are not available without being supplemented by contractors. Access roads might have to be cleared again requiring contractor expertise.



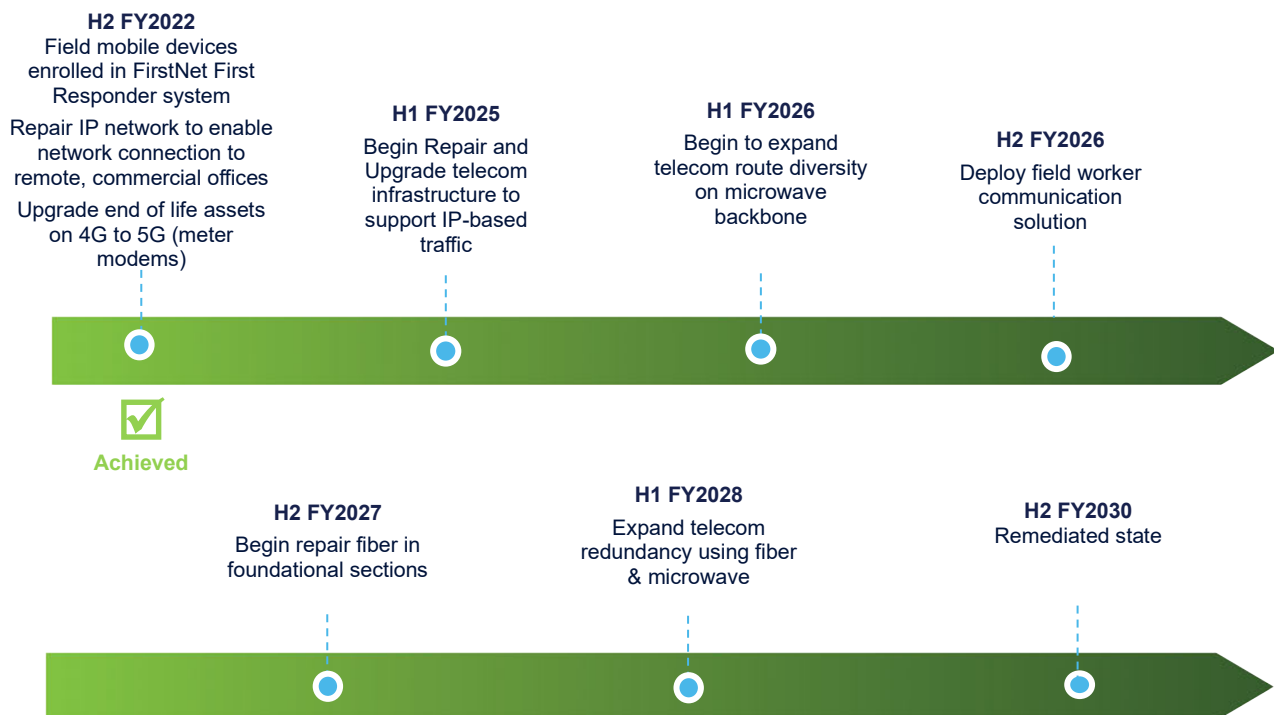
IT OT Telecom Systems & Networks

Engineers, integrators, network technicians and contractors will be required for the deployment of DWDM, IP/MPLS, LMR system and other communications technologies. Integration of systems and system integration is key and vendors or certified specialists have better experience to deploy these systems in a timely and effective manner.

3.3 Estimating Methods and Assumptions

- LUMA has reviewed and ascertained that PREPA's cost estimates for this program are reasonable
- Further verification of funding was done using IBM and additional LUMA and parent company resources
- It is assumed that LMR (P25 or equivalent) will remain the leader in first responder technologies and will not be replaced by 5G
- It is assumed that all programs will be built using the LUMA Telecom Design Control Document (DCD) and all its associated standards and requirement

3.4 Timeline and Milestones



Transmission Priority Pole Replacements

Transmission Priority Pole Replacements

1.0 Program Description

This program replaces damaged overhead transmission poles and towers, along with associated hardware and conductors. Repairs under this program will be made based on the results of an assessment conducted under the Assessment of Transmission Lines program. Major repairs and replacement will be based on the results of the transmission system assessment and analysis by engineers, after which the repair or replacement will be scheduled based on the criticality of the pole or structure. Following this process, priority poles and structures and damaged conductors and hardware will be replaced for safety/hazard reasons.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

LUMA has determined that a large quantity of transmission poles need to be repaired or replaced. The number of wood/concrete structures that would need replacement is undetermined. Field assessments performed in the Assessment of Transmission Lines program will categorize assets according to their health, based on estimates of condition (likelihood of failure) and criticality (consequence of failure), and assign an asset score of 0 (worst) to 4 (best). Mitigation of risk related to only the highest risk assets will be categorized and performed as SRP work. LUMA estimates that approximately 25 percent of the transmission poles are within the high-risk category (0 or 1) and will require replacement.

These deficient assets will exhibit the following:

- High risk of failure, or already failed
- and likely to cause:
 - A safety impact on the workers or the public
 - Failure to meet applicable legal requirements or policies, including Act 17-2019, as amended (Act 17), and Act 57-2014, as amended (Act 57), which include requirements related to safe and reliable utility operations
 - An outage that will be widespread, affecting critical customers, and long duration, such that it is likely to have subsequent safety effects

All deficient assets, including those in the SRP, will go into a planning process to achieve the objectives defined in LUMA's Recovery and Transformation Framework. The most severe safety risks will be flagged at the assessment time for immediate mitigation and pushed to the top of the priority list.

This program will mitigate safety risks to field workers and the public by replacing poor-condition poles and associated hardware and conductors with a high risk of failure. LUMA's assessment has confirmed that a large percentage of transmission poles, hardware, and conductors are in poor condition, possibly due to damage from severe weather events and age. The condition of poles and associated hardware poses a safety risk to field workers and the public. Timely replacement of safety priority poles and

Transmission Priority Pole Replacements

associated hardware and conductors will contribute to the safe operation of the grid by reducing potential asset failures, addressing conductor clearance issues, and reducing arc-flash risks.

2.1.1 Additional Gaps Identified Post-Commencement

In the original Assessment, LUMA estimated that approximately 25 percent of the transmission poles would be within the high-risk category (0 or 1), necessitating their replacement. However, subsequent findings have shown that only around 10 percent of the poles actually require replacement. This indicates a decrease in the scope of the replacement project, as the actual number of high-risk poles is lower than initially anticipated.

2.2 Description of Remediated State

High-risk findings of transmission poles or structures with an assessment score of 0 or 1 shall be incorporated into a remediation plan and mitigated. LUMA will take a coordinated approach to remediation based on the severity and risk according to the objectives defined in LUMA's Recovery and Transformation Framework.

To achieve the remediated state, LUMA will have first identified all transmission poles, structures, and conductors to be repaired and replaced to meet current codes and standards, as described in the Assessment of Transmission Lines program.

In the remediated state, those identified high-risk assets with an assessment score of 0 or 1, currently estimated at approximately 10 percent of all poles, will have been repaired or replaced to meet current codes, standards, and requirements under applicable laws and the Operation and Maintenance Agreement.

2.3 Description of Program Completed State

In the program completed state:

- Transmission poles, associated hardware, and conductors identified in the assessment process as posing a safety hazard will have been repaired or replaced system-wide
- Remaining priority (poor condition) poles/structures and associated hardware and conductors will be repaired or replaced within one year after being identified through the assessment process

2.4 Program Activities

- Compiling pole/structure assessment data from various sources to avoid duplication of work already completed
- Performance of health assessments to ensure proper prioritization and focus on high-risk items.
- Completion of engineering design/construction plans for each of the projects
- Organizing personnel, equipment, and materials, acquiring all necessary approvals, and putting projects out to bid as needed
- Replacement of safety/hazard and priority wood poles at 115 kV and 38 kV across Puerto Rico with new poles meeting the wind load requirements. This includes:
 - Improved embedment techniques to resist structure uplift in high-wind events

Transmission Priority Pole Replacements

- Upgrade of insulators and hardware to components meeting wind load and contamination requirements
- Restoration of sky wires and structure grounding/bonding
- Replacement of damaged conductors with new, appropriately sized conductors with the necessary tensile strength for anticipated wind loads
- Addressing anchor corrosion and tension issues to restore/improve anchoring systems to meet wind load criteria
- Repair of compromised lattice structures through member replacements, correcting bolt deficiencies, and torquing all connections to specification
- Selective upgrade of structures at all voltages to improve anti-cascading performance of line segments in high wind zones

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Increase transmission line assessments, as well as preliminary and detailed engineering on proposed projects, requesting necessary Federal funding obligations
- Continue procurement activities for materials, engineering, and construction resources
- Continue to replace damaged overhead transmission structures, conductors, and associated hardware
- Commence process to acquire permanent Licenses of PLS Cat for design and analysis

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input type="checkbox"/> Operational Excellence	<input type="checkbox"/> Enable systematic management of the business	
	<input type="checkbox"/> Pursue project delivery excellence	
	<input type="checkbox"/> Enable employees to execute operations systematically	

Transmission Priority Pole Replacements

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively deploy federal funding	Direct
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Direct
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a safe workplace

Objective: Implement effective public safety practices

The program increases field worker and public safety by repairing and/or replacing poor-condition poles and associated hardware and conductors with a high risk of failure. Those failures could otherwise present a safety risk to those working near them (e.g., arc flash) or to the public (e.g., downed infrastructure).

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Increase service reliability

The program increases service continuity and reliability for customers by replacing and upgrading facilities with poor reliability performance and adding/completing facilities that allow for alternate feeds.

PRIMARY GOAL: SYSTEM REBUILD & RESILIENCY

Objective: Effectively deploy federal funding

This work will be carried out with a large portion of the federal funds allocated for the system's rebuilding. LUMA will efficiently use these funds for this crucial aspect of the system rebuild.

Objective: Restore damaged grid infrastructure

The program replaces poles and associated hardware and conductors that are in poor condition due to damage from severe weather events and aging.

Objective: Improve the resilience of vulnerable infrastructure

Poles will be replaced with higher-strength wooden poles, concrete, steel, resin, or other types of poles that will increase resiliency to harsh weather conditions.



Transmission Priority Pole Replacements

2.6 Program Risks

Risks of delaying or not pursuing this program include:

- Increasing safety hazards for employees and the public as equipment condition continues to deteriorate
- Decreasing reliability levels due to increased asset failures, working against the achievement of reliability performance targets
- Reliability performance stagnation for critical customers
- Reduced operational flexibility as lines out of service can affect how the system is configured and operated

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$26.3	\$42.4	\$59.0	\$169.7
SRP Expenditures	\$21.3	\$35.0	\$50.0	\$52.4

3.2 Program Resource Requirements

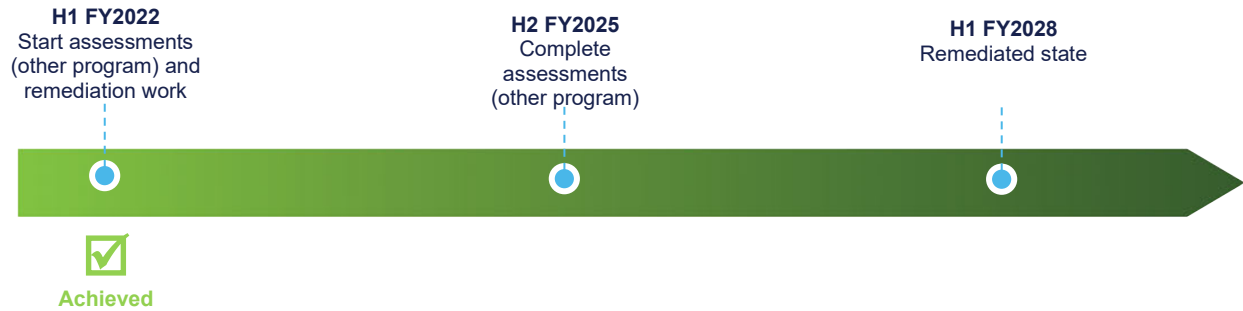
- Structures and associated hardware/conductors for structures fall into this work scope
- Work is expected to be mainly performed by on-island resources

3.3 Estimating Methods and Assumptions

- Estimate is based on average cost for pole, hardware, and conductor replacements from previous experience
- We anticipate using internal resources but will likely need to supplement with contract resources, which may increase average costs
- Availability and manufacturing capacity of poles, hardware, and conductors could also affect material costs

Transmission Priority Pole Replacements

3.4 Timeline and Milestones



Assessment of Transmission Lines

Assessment of Transmission Lines

1.0 Program Description

This program includes the assessment, data collection, and testing of the transmission lines. It will identify deficiencies that need to be addressed to restore the system and improve reliability and resiliency according to current codes and standards. Assessments will include but are not limited to, poles, towers and structures, ground rods, anchors and guys, conductor condition, and line clearance checks. This program considers assessments only. Separate programs will undertake repairs and replacements.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

PREPA did not have a health assessment of the transmission system. In recent years, PREPA did not conduct programmed transmission line assessments. Consequently, the condition of the transmission field assets is basically unknown and undocumented. It is apparent to experienced LUMA utility engineers from visual observations, site visits, and asset health sampling that there are widespread deficiencies in the transmission system. The results of field assessments will determine how we categorize assets according to their health, based on estimates of their condition (likelihood of failure) and criticality (consequence of failure), and assign an asset score from 0 (worst) to 4 (best). We will categorize and mitigate risk related to only the highest risk assets as System Remediation Plan (SRP) work. Note that these assessments include identifying and surveying all high-potential safety or imminent failure issues involving grounding, anchors, guying, clearance, etc.

These deficient assets will exhibit the following:

- High risk of failure or already failed
- *and* likely to cause:
 - A safety impact on the workers or the public
 - Failure to meet applicable legal requirements or policies, including the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement, Annex I, Act 17-2019, as amended (Act 17), and Act 57-2014, as amended (Act 57), which include requirements related to safe and reliable utility operations
 - A widespread, long-duration outage that will affect critical customers and likely have follow-on safety effects

Past analysis estimates that approximately 22,500 poles (52% of total wood/concrete poles) may require replacement and recommends a pole assessment program to determine the actual number. LUMA estimates that approximately 25 percent of the assets will be assessed as high-risk (0 or 1 health score) and will require safety and hazard mitigation to reach remediation. These include both overhead and underground transmission lines.

We included most of the work above in the SRP for the reasons listed.



Assessment of Transmission Lines

All deficient assets, including those in the SRP, will undergo a remediation planning process to achieve the objectives defined in LUMA's recovery and transformation framework. At assessment time, the most severe safety risks will be flagged with higher priority for mitigation.

Compared to prudently operated utilities, a disproportionately large percentage of the transmission system has deficiencies, possibly due to damage from severe weather events, aging, and the lack of programmatic transmission line assessments and maintenance.

Initial assessments have uncovered the following issues:

- Anchors and guys need to be reinforced or replaced. A large proportion of them need some form of remediation work, but there is no exact data on which ones need improvement
- Transmission infrastructure is corroded in places, though again, we need to investigate to provide exact data on where to provide corrosion mitigations
- Missing static wire
- Transmission line rights-of-way (ROW) encroachment with private structures constructed under the ROW
- Vegetation encroachment/lack of vegetation management
- The frequency of forced outages is much higher than US mainland industry norms
- The line currently lacks a capacity design and needs restoration

2.1.1 Additional Gaps Identified Post-Commencement

During program execution, LUMA identified additional gaps as outlined below to complete the necessary work or activities to be in a remediated state:

- Additional needed assessments, including but not limited to thermal and corona imaging, wood pole test and treat, switches and motor operated disconnects assessments, and light detection and ranging
- Assessments of the Underground system identification and assessment of missing assets and inclusion in LUMA's geographic information system, where some assets are not currently recorded
- While we identified these gaps and determined that proper mitigation is necessary, we still need to identify funding mechanisms to support the achievement of this as part of the program

2.2 Description of Remediated State

In the remediated state, an organized field assessment program of transmission overhead structures will be completed to assess the asset's condition and criticality (consequence of failure). Risk mitigation related to only the highest-risk assets, currently estimated at 10 percent, will have been identified for subsequent repair/replacement to meet current codes, standards, and requirements under Applicable Laws and the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement.

The asset score will be documented, and high-risk findings shall be incorporated into a remediation plan that will consider a coordinated approach to remediation based on severity and risk according to the objectives defined in LUMA's Recovery and Transformation Framework.

The transmission lines will have been visually inspected in the remediated state. The hazard, safety, and reliability issues identified through this assessment will have been logged and prioritized.

Assessment of Transmission Lines

2.3 Description of Program Completed State

In addition to what has been noted for the remediated state, the program completed state includes:

- Completion of the full initial round of assessments (including all additional assessments identified) of the transmission lines system
- Continuation of routine/recurring assessments of the transmission system
- Identification of system components that need to be replaced, with Engineering being informed of the prioritized findings
- Completion of line clearance checks to ensure that transmission assets meet live line clearance requirements of the applicable codes and standards (with violations flagged to be addressed)
- Construction projects, such as Transmission Priority Pole Replacements, are addressed under separate programs

2.4 Program Activities

- Create a detailed plan and complete assessment of the transmission system within the first five years
- Identify and plan imminent failure items or high potential safety issues on overhead transmission systems in restricted access areas or within public access to be remediated within the first five years
- Identify and plan imminent failure items or high potential safety issues involving grounding, anchors, guying, clearance, etc., on all lines in vulnerable areas or within public access to be remediated
- Prioritize new work identified in the assessment process
- Identify any new safety and security issues, and other quick wins, in the near term

2.4.1 Additional Gaps Identified Post-Commencement

The following additional activities were identified:

- Create a plan to address the additional gaps in the assessment of the transmission system within the next two years
- Identify and plan imminent failure items or high potential safety issues involving grounding, anchors, guying, clearance, etc., on all lines in vulnerable areas or within public access to be remediated within the next two years FY2026
- Identify any new safety and security issues, and other quick wins, in the near term
- Identify preventive and corrective maintenance plans

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Continue transmission line overhead assessments and condition prioritization for planning repair and replacement projects
- Continue to collect transmission asset data condition information
- Create a plan for the additional gaps in the assessment of the transmission system
- Identify proper funding mechanisms to help achieve the additional gaps in the assessment of the transmission system

Assessment of Transmission Lines

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input checked="" type="checkbox"/> Increase service reliability	Indirect
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Indirect
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Indirect
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively deploy federal funding	Indirect
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Indirect
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Indirect
<input type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Indirect
	<input checked="" type="checkbox"/> Enable the digital transformation	Indirect
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a safe workplace

Objective: Implement effective public safety practices

The program will promote field workers and public safety by addressing potential safety hazards such as poor grounding, loose anchors and guying, conductor condition, and line clearance issues..

Assessment of Transmission Lines

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Increase service reliability

The program will indirectly promote customer satisfaction by identifying repairs that will improve service reliability.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

Objective: Pursue project delivery excellence

Data collection will provide the basic information required to systematically execute system planning and asset management. The data will support the identification of projects and lead to data or data-driven decisions.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively deploy federal funding

This work will be carried out with a portion of the federal funds allocated for the rebuilding of the system. LUMA will make efficient use of these funds for this crucial aspect of the system rebuild.

Objective: Restore damaged grid infrastructure

Objective: Improve the resilience of vulnerable infrastructure

The program will indirectly improve service reliability by identifying damaged poles, hardware, and conductors for follow-up replacement, facilitating system rebuild, and improved resiliency.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid

Objective: Enable the digital transformation

The data collected will provide valuable information for making decisions about grid modernization and will also be used as part of the digital transformation.

2.6 Program Risks

Delaying or not performing this program compromises the ability to adequately perform subsequent repair and replacement work, which includes risks such as:

- Inability to reach reliability targets under Performance Metrics, as well as those set forth in the LUMA's contract
- Access issues to the Transmission right of way (ROW) may delay assessments. This includes vegetation, road, and sidewalk conditions

Assessment of Transmission Lines

- Safety issues found on the Transmission ROW may delay assessments. Risk is present when conductors or equipment are below the minimum clearance requirements of the codes and standards adopted by the utility

3.0 Program Funding

3.1 Program Funding (\$ millions)

Identify proper funding mechanisms to help achieve the additional gaps in the assessment of the transmission system.

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$2.9	\$3.6	\$3.6	—
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

- Adequate resources to complete the fieldwork, and back-office analysis will be necessary and likely a combination of internal and contractor resources
- Adequate resources are also needed to complete the additional gaps identified in assessments of the transmission system
- Specialty assessments such as X-ray and light detection and ranging will be carried out by either purchasing specialty cameras and performing the work using internal resources, third-party contractors, or a combination thereof

3.3 Estimating Methods and Assumptions

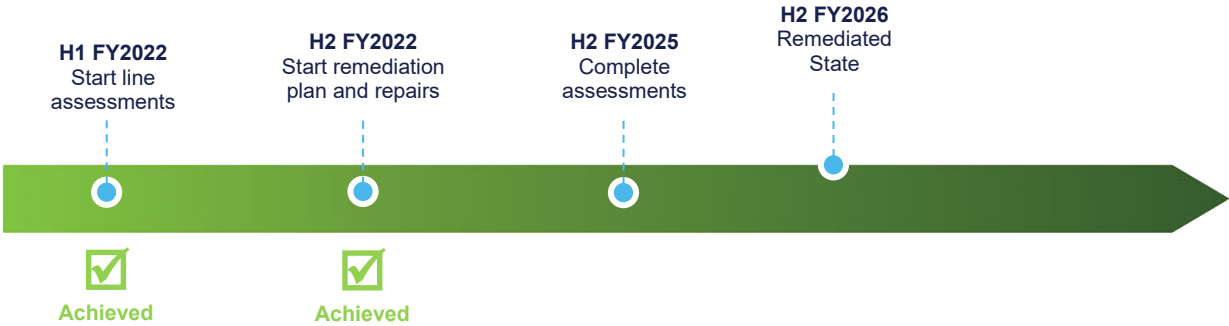
- Estimates are based on the average cost for pole and line assessments derived from previous experience
- LUMA anticipates using internal resources, but will likely need to supplement them with contract resources, which may increase average costs
- Gaps identified will also increase the costs and the need for a proper funding mechanism

Category	Percentage
Engineering and admin	10%
Material	0%
Pre-construction Activities (field assessments)	90%

Assessment of Transmission Lines

Category	Percentage
Construction and commissioning	0%

3.4 Timeline and Milestones



Substation Rebuilds

Substation Rebuilds

1.0 Program Description

The Substation Rebuild program focuses on improvements to substations to strengthen the electric grid, and covers required high-level assessments, minor substation repairs, and rebuilding of damaged or end-of-life substations. This includes upgrades to the latest codes and industry standards to achieve reliability improvement. The Substation Rebuild program focuses on the rebuilding of existing substations that are in poor physical condition, the rebuilding of substations with a history of operational deficiencies, the mitigation of flood risk where applicable, and the relocation of substations with a high risk of flooding when flood mitigation alone is not an option.

This program was initiated by building upon a foundation of asset prioritization. Many aspects quantifying reliability, resilience, risk, exposure, impact, and criticality were combined in such a way that structures with the highest need were addressed first, both to maximize the impact of investment and prioritize the remediation of the most critical items.

It introduces industry best practices for reliability and resilience enhancements, such as reliable bus configurations, the adoption of enclosed metal-clad and gas-insulated switchgear, and the modernization of infrastructure to provide operating flexibility. Enhanced bus configurations may include main-and-transfer bus, ring bus, or breaker-and-a-half configurations. Each of these provides enhanced reliability by mitigating the possibility of failure of a single bus or substation element and minimizing the probability and the likelihood of customer outages for these common failure modes. The enclosed metal-clad and gas-insulated switchgear provides additional capacity to resist exposure to extreme weather such as heavy wind and flooding.

Flood mitigation may be accomplished by elevating or relocating equipment to minimize the probability and likelihood of damage. Substations needing relocation to mitigate flood risks are full substation rebuilds that will incorporate reliable configuration, modern technology, and low flood-risk locations. The adoption of technology such as intelligent substation automation and protocols also provides higher reliability, operating flexibility, and manageable costs.

In summary, this program focuses on improvements to transmission and distribution (T&D) substations to strengthen the electric grid. This includes (1) hardening and modernizing T&D substations, (2) making upgrades to conform to the latest codes, industry standards, and practices, (3) replacing electromechanical and electronic relays, (4) relocating substations in flood-prone areas and (5) deploying new substations to meet industry standards.

This program will also focus on the demarcation requirements for transmission and generation assets, required under the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement (T&D OMA); specifically, the scope of services as set forth in Annex I. High-accuracy metering¹ is required to accurately measure power generation at major plants and their injection into the

¹ High Accuracy Metering is defined as a total metering system, including meters, CTs, PTs with a recommended aggregate accuracy within one percent where possible.

Substation Rebuilds

network and to facilitate communication with the system operator. This measurement will provide transparency of total net power generation and energy losses to the network. This demarcation will also be defined in a non-complicated manner to provide LUMA and Generation Company operators sufficient clarity regarding the separation of assets to prevent misoperation and subsequent damage to equipment and/or system outages. A Demarcation Study identified opportunities to manage these deployments, and the plant retirement projections called for in the IRP are considerations to prioritize the work.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Initial state estimates calculated that approximately 30 percent of the substations would require safety and hazard mitigation to reach remediation. Furthermore, the CIP-014-2 standard requires mitigation measures for sites with a convergence of a high number of electrical lines that could result in cascading service disruptions if rendered inoperable or physically damaged. Field assessments will categorize assets according to their health, based on estimates of their condition (likelihood of failure) and criticality (consequence of failure), and assign an asset score from 0 (worst) to 4 (best). Mitigating risk related to only the highest-risk assets will be categorized as a 0 or 1 and performed as SRP work.

These deficient assets will exhibit the following:

- Extreme likelihood of failure, or already failed, *and* likely to cause:
 - A safety impact on the workers or the public
 - The failure to meet applicable legal requirements or policies, including T&D OMA Annex I, Act 17-2019, as amended (Act 17), and Act 57-2014, as amended (Act 57), which include requirements related to safe and reliable utility operations, or
 - An outage that will be widespread, affecting critical customers, and of long duration, such that it is likely to have follow-on safety effects

All deficient assets, including those in the SRP, will go into a planning process to achieve the objectives defined in LUMA's Recovery and Transformation Framework. The most severe safety risks will be flagged with the highest priority for remediation.

During the hurricanes, several substations were flooded, which affected all components subject to flood damage. Additionally, damaged fences, missing grounding components, bent structures, and leaking or out-of-service apparatus are identified as common issues throughout the system.

Protection and control and supervisory control and data acquisition (SCADA) infrastructure are obsolete and do not allow adequate data collection for planning and system operations, nor do they allow for supervisory control of the system, which are both well behind industry standards. For example, most substations only have a measurement for one out of three-phase quantities, so distribution planners and operators do not have the required data to monitor the health of LUMA's T&D infrastructure.

All substations require high-level assessments to assess, prioritize, and plan the required remediation strategies. Most substations require major and minor repairs because of hurricanes, approximately 30 percent of which are estimated to require safety and hazard mitigation to reach remediation. This includes repairs for the four broad-based categories:

Substation Rebuilds

- Structure: Overhead hazards and unsecured equipment
- Yard: Unsafe yard conditions to equipment and personnel, caused by erosion of the substation pad, vegetation growth reducing the effectiveness of substation insulating gravel, etc.
- Components: Imminent failure of high-voltage equipment that can cause the potential for employee or public harm
- Control house: Leaking roofs or equipment enclosures (including switchgear enclosures)

Further demonstrating the need for this program, the T&D OMA Annex I, Section II(G) specifies that LUMA is responsible for developing necessary interconnection agreements, identifying the interconnection demarcation points, and developing a work plan to delineate generator interconnection for new plants.

LUMA has made the following assessments regarding the current state of the interconnection points between the T&D System and PREPA's six major thermal generating plants (Costa Sur, San Juan, Palo Seco, Cambalache, Mayagüez, Aguirre) and the peaking/hydro plants:

- Demarcation supports compliance with Standard Operating Procedures, contributing to system control and operation. The high-accuracy metering, separation, and operating agreement must specify properly separated interactions under normal and emergency conditions for LUMA to respond to events
- A misoperation without proper metering and communication with the system operator of the current protection scheme could place LUMA in a high-risk position should the following conditions arise:
 - An outage at the demarcation point could potentially be widespread, affecting critical customers for long durations. With no clear delineation of assets and responsibilities, response times will be lengthy, and responsibility for taking corrective actions will be unclear
 - Inaccurate metering (i.e., non-compliant) could result in unbalanced energy interactions and incur corresponding financial, system operation, and commercial risks, as well as adversely affect the ability to accurately determine technical and non-technical losses. It could also result in inaccurate generation and energy-injected information, with a cascading effect on system operations

For the reasons stated above, this program is included in the SRP.

2.1.1 Additional Gaps Identified Post-Commencement

High-level assessments performed since commencement have yielded significantly more damaged, defective, and unsafe conditions at substation sites than anticipated. Damage from Hurricane Fiona exacerbated the already fragile substation asset base with additional flooding, wind, and storm damage. Minor repairs have been proposed at multiple substation sites, studies are evaluating grounding remediation required (a separate Program), and high-level assessment findings are being addressed. The overall consensus is that substation assets are in even worse physical condition than contemplated.

Many substations still have equipment that is well beyond its useful life. Documentation for existing configurations and maintenance records of existing assets do not exist. To compound the challenge, critical emergency spare management programs did not exist. When components fail, even routine parts are generally not available to perform quick repair and replacement. Component failures often lead to long-duration outages and abnormal system configuration persisting while emergency spares can be acquired. For example, the Bayamón 230/115 kV transformer, which is a critical substation transformer that feeds the large San Juan and Bayamón load centers, was at the end of useful life and failed

Substation Rebuilds

catastrophically in June/July 2023. The system was placed in an abnormal configuration for over eight months while a critical emergency spare could be acquired. This condition is not uncommon for the Puerto Rico grid because many existing critical transformers and breakers are beyond useful life and could fail at any moment, leaving limited options for ensuring customer loads can remain energized.

Additionally, FEMA has provided updated flood zone maps that implicate additional substation assets that require relocation or flood mitigation. Also, transmission and distribution area plans have revealed the need for new substations, to create new T&D injection sources to balance reliability needs, excessive customer counts on existing assets, and bring system loading to within acceptable levels. While we identified these gaps and mitigation to address them is necessary, we still must find proper funding mechanisms to achieve this as part of the remediated state.

2.2 Description of Remediated State

To ensure compliance with the relevant articles of Act 17 and Act 57, and the T&D OMA, high-risk findings (asset score of 0 and 1) shall be incorporated into a remediation plan within 60 days of identification. That plan shall consider a coordinated approach to remediation based on severity and risk according to the objectives defined in LUMA's Recovery and Transformation Framework.

In the remediated state, the following will have been accomplished:

- All substations will have been assessed
- The key repairs, estimated at 30 percent of the substations, will be completed. This will eliminate critical failure points within the substation, including identifying at-risk in-service equipment, unsafe structures or overhead hazards, leaking control buildings or switchgear enclosures, and unsafe yard conditions. All high-risk components in the substations will have been repaired or replaced to meet current codes and standards, the NESC, and requirements under Applicable Laws and the T&D OMA
- Flooded substations and sites below the flood plain must also be remediated to comply with legal requirements. These requirements include: the Puerto Rico Planning Board's Joint Regulation for the Evaluation and Issuance of Permits Related to Development, Land Use and Business Operations, Regulation 9233, effective January 2, 2020; Puerto Rico Planning Board's Special Flood Hazard Areas Regulation, Regulation 9238, effective January 7, 2021 (and preceding regulation currently in effect); Act 17-2019, as amended; and Act 57-2014, as amended. Specifically, substations and sites identified as being in a "regulatory floodway" as defined by FEMA Flood Hazard maps will be relocated. Substations and sites identified as being in a "1% Annual Chance Flood Hazard", the "0.02% Annual Chance Flood Hazard" will be evaluated for flooding risk and will be mitigated or relocated to reduce the likelihood of flooding impacting public safety and electrical equipment.
- PREPA's major generation plants, peaking units, and hydro plants, as well as the T&D System, will be demarcated as identified in the interconnection and shared services agreements with each power plant as required under the T&D OMA Annex 1, Section II(G) and will also have high-accuracy metering installed to measure the energy flowing into the T&D system
- Electrical interconnection operating agreements will exist between the power plant operator and LUMA for each unit within the power plant. New revenue class meters will be installed, replacing the existing non-revenue meters. The interconnection and operating agreements and the addition of high-accuracy metering will reduce the risk of (but not eliminate) control errors that can lead to misoperation
- Separate yet shared site access to maintain transmission switchyard assets will exist at the major PREPA generation facilities, hydro units, and peaking units

Substation Rebuilds

- All generation units will be demarcated and installed with high-accuracy metering. Currently, the program's estimated cost includes replacing the non-revenue meters with revenue meters and entering into interconnection and shared services agreements

2.3 Description of Program Completed State

In the program completed state, the electric grid will have been heavily bolstered, including wide-scale repairs to substations, the enhancement of communication between substations and operation centers through new Intelligent Electronic Devices (IED), and an essential portion of the electric grid will be fully upgraded to all applicable codes and industry standards and practices. Specifically, this program completed state includes:

- Substation repairs throughout the electric grid
- Creation of Substation Single-Line-Drawings (SLD), which depict equipment layout and nameplate ratings, including amperage
- Deployment of high-voltage gas-insulated switchgear systems at select sites
- Reconfiguration of existing straight bus transmission infrastructure to main-and-transfer bus, ring-bus, or breaker-and-a-half configuration
- Reconfiguration of transmission infrastructure with the addition of a second switchyard on select stations classified as critical and with numerous electrical services in a single site
- Reconfiguration of distribution bus from straight-bus to main-and-transfer bus, or ring-bus in substations with dual distribution transformers in high-load density areas
- Conversion of select distribution substations to 13.2 kV to enable voltage conversion and standardization to 13.2 kV
- Standardization of transformer sizes and configurations
- Substation modernization for smart data collection by replacing electromechanical relays with microprocessor-based relays and providing for three-phase measurements at the distribution feeder exits
- Replacing the non-revenue meters with revenue meters and entering into interconnection and shared services agreements

2.4 Program Activities

The following priority projects include:

- Completion of high-level assessment, near-term reliability plans, and long-term reliability and asset transformation plan
- Completion of key substation repair items (imminent failure and major safety items) based on assessments of the different elements (primary equipment, security, safety, and secondary equipment or control room)
- Major gas-insulated switchgear deployments for selecting critical substations
- Rebuild or relocate substations based on flood risk, condition, and criticality
- Ramp up to the target of one transmission substation rebuild and two distribution substation rebuilds per year based on condition and criticality
- Major and minor substation repairs that are not SRP related based on detailed assessments of the different elements (primary equipment, security, safety, and secondary equipment or control room)
- Substation upgrades: The upgrade work will include installing a new control building (if applicable), transmission and distribution bus configuration upgrades, replacing transformers that are damaged or

Substation Rebuilds

past their service life, provision of spare services, and space for future expansion, protection and control and SCADA upgrades, new cabling, and some high-voltage equipment replacements such as switchgear, circuit breakers, disconnects, etc.

- Initiate discussions between LUMA and the operator of all PREPA generation units to identify the demarcation points and install revenue meters based on their size and retirement projections
- Prioritize installation of high-accuracy metering where it makes sense in sequencing the work.
- Define the high-accuracy metering and demarcation projects and schedule based on priority, budget, and operational impact
- Develop an operational agreement at all interconnection points to mitigate the risk of misoperation.
- Train personnel and document training to avoid sole reliance on institutional knowledge (training requirements for LUMA and Generating company will be part of the operating agreement)
- Perform detailed engineering and construction means and methods to mitigate outage impacts

2.4.1 Additional Activities Identified Post-Commencement

Additional substations in floodways and flood zones indicate that additional substation mitigation and relocation projects are required. The substation assessments and testing will determine the scope and timeline for mitigation and rebuild.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Continue substation high-level assessments, preliminary and detailed engineering on proposed projects, requesting necessary Federal funding obligations
- Continue procurement activities for materials and construction resources and initiate preliminary construction activities on some projects
- Continue with substations minor repairs, equipment replacement program and managed/repaird failed/out of service equipment

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
☒ Prioritize Safety	☒ Promote a safe workplace	Direct
	☒ Implement effective public safety practices	Direct
☒ Improve Customer Satisfaction	☒ Deliver a positive customer experience	Direct
	☒ Increase service reliability.	Direct
	☐ Deliver electricity at reasonable prices	

Substation Rebuilds

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business.	Direct
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Direct
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively deploy federal funding	Direct
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure.	Direct
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Direct
	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input checked="" type="checkbox"/> Enable the sustainable energy transformation	Direct
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY.

Objective: Promote a safe workplace

Objective: Implement effective public safety practices

This program will improve safety standards for both employees and the public by increasing the distribution grid's ability to withstand severe weather conditions and will also bring substations up to applicable safety codes and standards.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION.

Objective: Deliver a positive customer experience

Objective: Increase service reliability

This program will improve service reliability by increasing the electric grid's ability to operate under severe weather conditions. Additionally, the repairs and upgrades will enable faster electric grid restoration under failing conditions.

Substation Rebuilds

PRIMARY GOAL: OPERATIONAL EXCELLENCE.

Objective: Enable systematic management of the business

Objective: Pursue project delivery excellence

Objective: Enable employees to execute operations systematically

The program will provide employees with repaired infrastructure, thereby improving their ability to execute operations. For example, planned and maintenance outages can occur with minimal interruptions when field personnel switch loads from one substation transformer or bus to another. The program will also provide more data to support system operations, grid modeling, and asset conditions, all of which improve employee productivity and efficiency.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY.

Objective: Effectively deploy federal funding

This program will make use of Federal funds to implement an adequate and optimized solution, which will prevent catastrophic damage if a severe weather event reoccurs.

Objective: Restore damaged grid infrastructure

Substation repairs directly restore and replace damaged grid infrastructure. It will also improve resiliency by increasing the distribution grid's ability to withstand severe weather conditions.

Objective: Improve the resilience of vulnerable infrastructure

Enhancement to the existing substations will positively impact system integrity by optimizing system control and operation. Relocation and mitigation of flood prone substations minimize the risk that hurricane and rain events cause interruption of customer load.

PRIMARY GOAL: SUSTAINABLE ENERGY TECHNOLOGY

Objective: Modernizing the grid

Deploying advanced technologies to meet industry standards, improving situational observability and resiliency

Objective: Enabling the digital transformation

Deploying equipment capable of meeting advanced industry standards (e.g., IEC 61850)

Objective: Enabling the sustainable energy transformation

Enabling the integration of clean energy technologies through increased capacity, enhanced situational awareness and controllability

Substation Rebuilds

2.6 Program Risks

The main risks identified include the following:

- Events occurring during the work's completion. Performing this work will take multiple years to complete. These substations, and the T&D grid are at risk in the meantime
- By delaying some or all repairs and investments under this program, there will be elevated safety risks to employees and the public
- A lack of clear operating responsibility for assets not divided between LUMA and GenCo
- Higher operational risk and potential damage of major equipment
- Higher risk of worker errors, leading to misoperation
- Lower substation reliability and resiliency

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$89.0	\$171.5	\$202.3	\$1,759.3
SRP Expenditures	\$46.7	\$138.0	\$187.5	\$148.9

3.2 Program Resource Requirements

Requirements include:

- External contract labor: Most projects will be conducted as engineering, procurement and construction projects
- Mobile substations to be used to minimize service interruption time during project execution
- Contract labor — 40%
- Material equipment — 60%

3.3 Estimating Methods and Assumptions

PREPA and FEMA have defined preliminary methods of repairs, such as substation relocation, drop-in control house, and gas-insulated switchgear deployments. However, additional assessments will be performed to determine the final scope of work.

Regarding standards and requirements, all designs are expected to follow LUMA's engineering standards and the different Puerto Rico codes and regulations, such as the new building code for the drop-in control house design.

LUMA has provided estimates for the different projects assuming $\pm 30\%$ accuracy except for FEMA-funded projects.

Assumptions: Estimating splits based on historical projects:



Substation Rebuilds

CATEGORY	PERCENTAGE
Material	32%
Detailed Engineering	10%
Site preparation & Survey	17%
Construction	35%
Commissioning	6%

The interim program cost estimates for replacing the existing meters with high-accuracy meters on all thermal, hydro, and peaking units and entering into agreements:

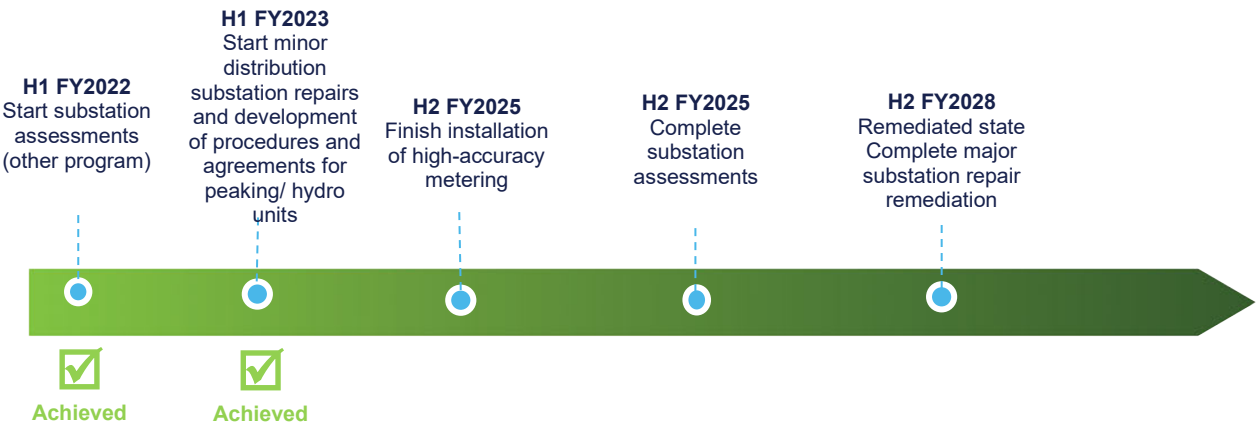
- Communication with the system operator is accomplished via cable connection from the meter to the master station, remote terminal units, etc.
- The new revenue meter fits in the same location as the existing non-revenue meter with minor modifications
- The existing wiring is in good status. The new wiring included in the estimate is for communication purposes

The program cost estimates were based on the following factors and elements:

- Sage estimating software was used to determine the direct charges for material, labor, equipment, engineering, and project management. Based on the project's maturity, indirect charges, such as overheads, taxes, profit, etc., are estimated along with contingencies
- Sargent and Lundy Report for Demarcation of PREPA Generation Assets from the T&D System, TD-0003, dated October 2019
- Power plants' electrical single-line diagrams covering all thermal, peaking, and hydro generation units were gathered and utilized as a basis for evaluating the feasibility of demarcation
- Labor cost is based on U.S. labor costs with increased overheads to account for contractor housing and overseas travel. Taxes were included. All costs are for the year 2020
- Project contingency is 30 percent based on a maturity level or AACE® International Estimate Class 3 Cost estimate
- In addition to maturity or project definition, estimate accuracy is also driven by the estimator's experience and skill level, familiarity with the technology, and time and effort budgeted to prepare the estimate
- There are no gaps for the intermediate program of installing revenue meters and entering into agreements

Substation Rebuilds

3.4 Timeline and Milestones



Substation Reliability

1.0 Program Description

This program will reinforce and upgrade existing system infrastructure to improve reliability, including replacing aging transformers, oil circuit breakers, distribution circuit breakers, other high-voltage equipment, alternating current/direct current (AC/DC) systems, standby generators, relays, remote terminal units (RTUs), and auxiliary systems. It will also include protection and control upgrades and procurement of emergency spares.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Upon review of Puerto Rico Electric Power Authority's (PREPA) asset database and substation assessment, high voltage infrastructure was found, in many cases, to be aging, with a large quantity operating past its expected useful life. The vast majority of substations still have transformers and circuit breakers in operation that PREPA installed 40 years ago and have experienced electrical faults and system disturbances far in excess of other typical utilities. All of this equipment will be subject to more rigorous and frequent assessment and testing to maximize longevity. Replacement will be based on condition assessments, including but not limited to, oil sampling on power transformers, breaker timing tests, and contactor resistance checks for high-voltage breakers.

With an aging infrastructure and major weather events such as hurricanes remaining a constant threat, spare parts stock is essential. However, due to limited resources, PREPA does not have spares of those main components on hand in case of failure. The availability of mobile substations to be deployed in emergencies as a temporary measure will facilitate power restoration during outages caused by catastrophic equipment failures or poor project execution, but the long-term fix involves replacing these deteriorating assets.

In some cases, transmission substations either lack an installed emergency generator or have one that is not in good working condition. Industry standards call for emergency generators to act as backup AC/DC power supply for all 230 kV substations. Currently, deficient AC/DC systems with cabling issues, broken panels, and defective battery banks have been identified and must be addressed.

The prevalence of obsolete protection and control (P&C) and supervisory control and data acquisition (SCADA) systems add to our maintenance costs, reduce the possibility of implementing asset monitoring to support the Asset Management process and compromise our ability to supervise and operate the system remotely.

2.1.1 Additional Gaps Identified Post-Commencement

After evaluating maintenance records, conducting significant testing and assessment of equipment, and analyzing the results, it was determined that a considerable amount of equipment was out of cycle with respect to its maintenance intervals. The condition of the assets was, generally speaking, far worse than

Substation Reliability

expected. The high duty placed on the equipment, frequent outages, and significant wear and tear were above what a normal utility would typically experience.

There are significant needs that have been identified and have driven the need to initiate and execute planned program-level equipment replacement programs, including oil circuit breakers, gas circuit breakers, metal-clad switchgear, power transformers, protection, automation, and control systems.

While these gaps are identified and proper mitigation is necessary, funding mechanisms still need to be identified to help achieve this as part of the completed state.

2.2 Description of Remediated State

This program is not part of the SRP.

2.3 Description of Program Completed State

At the end of the program, LUMA will have achieved the following:

- Restoration of substation design capacity to industry standards
- Rehabilitation, emergency replacements, and continual renewal of high voltage equipment in substations
- Modernized protection and control and SCADA systems for data collection and use based on the latest industry standards

2.4 Program Activities

- Replace aging high voltage infrastructure such as transformers, circuit breakers, and other high voltage equipment, including switches, potential transformers, arrestors, etc., that are deemed end-of-life and have poor condition assessment ratings
- Procure standby generators as per new standard requirements and replace broken or deficient AC/DC systems
- Procure the required spare parts for high-voltage equipment based on industry standards to maintain adequate response levels for any eventuality or equipment failure
- Replace aging RTU SCADA equipment deemed end-of-life, has poor condition assessment ratings, or is obsolete

2.4.1 Additional Activities Identified Post-Commencement

- Circuit Breaker Replacement program with new gas circuit breakers (CB): The replacement of circuit breakers with new SF6 gas circuit breakers over the next 5 years
- Protection Automation Control (PAC) Replacement program: The engineering, procurement, and installation of protection and control outdoor cabinets to replace legacy protection systems over the next 5 years, as a measure to increase resiliency and prevent future outages

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Continue substation inspections, and preliminary and detailed engineering on proposed projects



Substation Reliability

- Planned Relay Replacement programs, including ABB Solid State Relay (DPU) and Electromechanical Replacement program
- Animal Mitigation program: Installation of animal contact mitigation on existing transmission and distribution substations to minimize wildlife contacts with energized high-voltage equipment and improve reliability
- Planned Arrestor Replacement program: Replace automatic meter reading and substation arrestors that are at the end of life or are not suitably designed or installed according to typical industry standards
- Grounding program improvement initiatives, including installation of new insulating substation gravel and installation of improved substation equipment grounding
- Development, planning, and prioritization of new planned equipment replacement programs for high-impact, critical assets, including, but not limited to, the replacement of transmission and distribution power transformers, metal-clad switchgear, high-voltage transmission gas circuit breakers, and distribution vacuum breakers
- Continuing procurement activities for materials and construction resources and initiating construction activities on some projects

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
☒ Prioritize Safety	☒ Promote a safe workplace	Direct
	☒ Implement effective public safety practices	Direct
☒ Improve Customer Satisfaction	☒ Deliver a positive customer experience	Indirect
	☒ Increase service reliability	Direct
	☒ Deliver electricity at reasonable prices	Indirect
☒ Operational Excellence	☒ Enable systematic management of the business	Indirect
	☒ Pursue project delivery excellence	Direct
	☒ Enable employees to execute operations systematically	Direct
☒ System Rebuild and Resiliency	☒ Effectively deploy federal funding	Direct
	☒ Restore damaged grid infrastructure	Direct
	☒ Improve the resilience of vulnerable infrastructure	Direct
	☒ Modernizing the grid	Direct

Substation Reliability

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input checked="" type="checkbox"/> Enable the sustainable energy transformation	Indirect
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a safe workplace

Objective: Implement effective public safety practices

This program replaces equipment prone to failure and enhances the protection system's ability to properly de-energize failed equipment, thus reducing safety risks for both employees and the public.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

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Objective: Increase service reliability

This program improves reliability and resiliency by proactively addressing potential points of failure.

Objective: Deliver electricity at reasonable prices

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

Objective: Pursue project delivery excellence

Objective: Enable employees to execute operations systematically

The program provides the means for quicker restoration of the system after equipment failure or damage by defining and acquiring the proper levels of spare parts.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively deploy federal funding

Substation Reliability

Objective: Restore damaged grid infrastructure

This program includes the replacement of failed transformers, circuit breakers and other high voltage equipment.

Objective: Improve the resilience of vulnerable infrastructure

Reduces the number of major forced outage impacts due to aged equipment.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid

Facilitates asset management activities by providing condition assessment data through modern protection and control and SCADA infrastructure.

Objective: Enable the digital transformation

Enhances protection and the SCADA system, representing a step towards grid modernization.

Objective: Enable the sustainable energy transformation

2.6 Program Risks

- Risk of not pursuing this program: Since some of the primary or high voltage components (transformers, circuit breakers, etc.) are past their useful life, they run the risk of experiencing catastrophic failure. This is a major safety risk that could affect the entire electrical system if not replaced
- Risk of program delays: Delaying this program could place service continuity at risk

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$45.2	\$79.5	\$91.0	\$540.4
SRP Expenditures	—	—	—	—

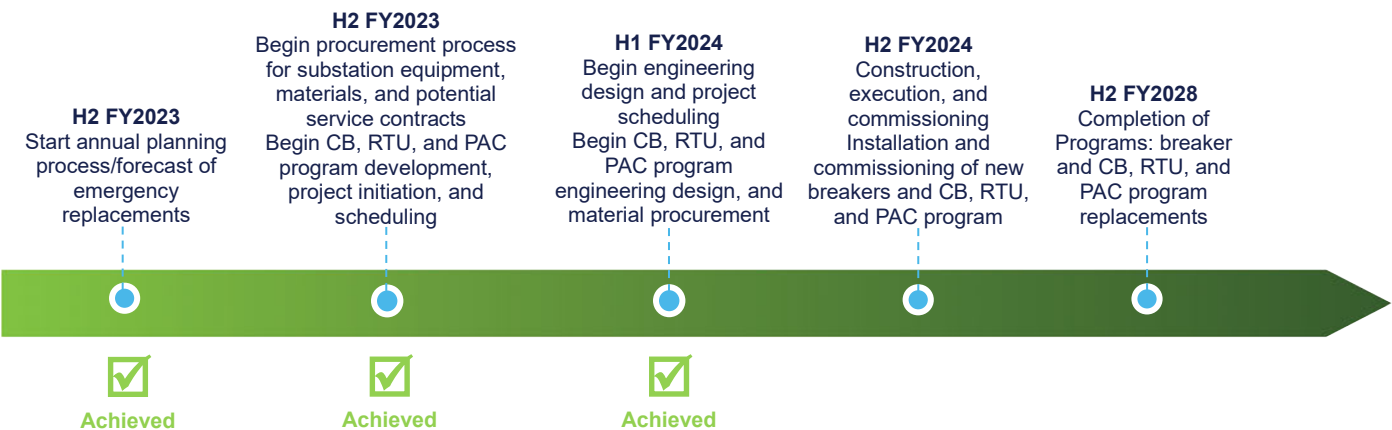
3.2 Program Resource Requirements

- The replacement of transformers, circuit breakers, and other equipment is necessary
- Mobile substations are needed to minimize the service interruption time during project execution

Substation Reliability

3.3 Timeline and Milestones

3.3.1 Emergency Capital and Program-Based Replacements



Substation Physical Security

Substation Physical Security

1.0 Program Description

This program will focus on various physical security concerns at transmission and distribution substations. The program will replace and add new security technology and hardware to deter, detect, and delay physical security incidents (e.g., intrusion, theft, damage, and employee and public safety). This program's physical security concerns involve fencing and gates, including locking devices, lighting, signage, perimeter cleanup, and window bars. In distribution facilities, the program also supplies locks for distribution switches and pad mount transformers in the field.

2.0 Program Rationale

Confidential

2.1 Initial State and Identified Gaps

[REDACTED]

[REDACTED]

[REDACTED]

2.1.1 Additional Gaps Identified Post Commencement

[REDACTED]

2.2 Description of Remediated State

[REDACTED]

Substation Physical Security

[REDACTED]

2.3 Description of Program Completed State

[REDACTED]

2.4 Program Activities

[REDACTED]

2.4.1 Additional Activities Identified Post Commencement

[REDACTED]

2.4.2 FY2025 Activities

[REDACTED]

[REDACTED]

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> [REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]

Substation Physical Security

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
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PRIMARY GOAL: PRIORITIZE SAFETY

Substation Physical Security

PRIMARY GOAL: OPERATIONAL EXCELLENCE

[REDACTED]

[REDACTED]

[REDACTED]

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

[REDACTED]

[REDACTED]

[REDACTED]

2.6 Program Risks

[REDACTED]

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$4.8	\$5.2	\$4.7	\$5.4
SRP Expenditures	\$4.1	\$4.5	\$4.0	\$2.3

3.2 Program Resource Requirements

- Internal planning and construction supervision
- Tools and equipment for installation of locks
- Major work items will require construction contractors

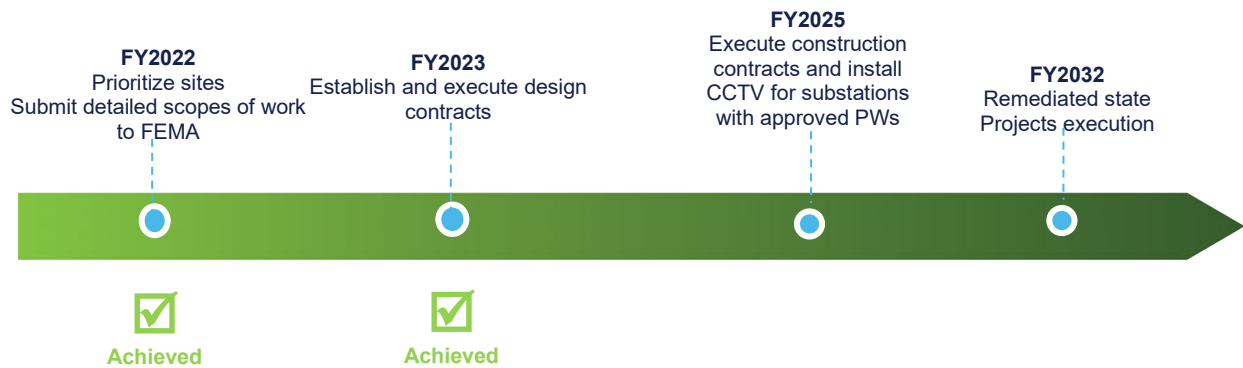
3.3 Estimating Methods and Assumptions

- Estimates for the locks, lighting, signage, clean up, doors, and windows, were prepared based on unit count multiplied by purchased cost and estimated time to install
- Estimates for the fences were based on an average estimated cost for average damage multiplied by the number of substations. For the implementation of technology to monitor security, the estimates were produced from vendors' unit rates

Substation Physical Security

- The estimates were based on a broad understanding of the current state as no real data was available. All estimates will be refined site-by-site as more information becomes available

3.4 Timeline and Milestones



Regional & Technical Facilities Security

Regional & Technical Facilities Security

1.0 Program Description

This program will replace and add new physical security technology and hardware to deter, detect and delay physical security incidents (e.g., intrusion, theft, damage, etc.) at regional and technical facilities. This includes replacing and installing new CCTV equipment at several regional and technical facilities. The program also funds fence repairs where identified.

2.0 Program Rationale

Confidential

2.1 Current State & Identified Gaps

[REDACTED]

2.1.1 Additional Gaps Identified Post-Commencement

[REDACTED]

2.2 Description of Remediated State

[REDACTED]

2.3 Description of Program Completed State

[REDACTED]

2.4 Program Activities

[REDACTED]

2.4.1 Additional Activities Identified Post Commencement

[REDACTED]

Regional & Technical Facilities Security

[Redacted]

[Redacted]

2.5 Program Benefits

Primary Goals	Objectives	Direct or Indirect Impact
☑ [Redacted]	[Redacted]	[Redacted]
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[Redacted]	[Redacted]	
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[Redacted]	[Redacted]	

PRIMARY GOAL: PRIORITIZE SAFETY

[Redacted]

[Redacted]

Regional & Technical Facilities Security

2.6 Program Risks



3.0 Program Funding & Timeline

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate ¹	FY2026 Estimate ¹	FY2027 Estimate ¹	FY2028+ Estimate ¹
Total Expenditure	\$0.1	\$0.1	—	—
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

Program resources for outsourcing contractors and construction supervision.

3.3 Estimating Methods & Assumptions

These estimates were prepared based on discussions with local vendors, who provided unit rates. These estimates are approximations due to the lack of data available regarding the extent of the necessary repairs and replacements. The estimates will be adjusted once projects are identified and approved.

3.4 Timeline & Milestones



¹ We will leverage facility projects' funds to include physical security requirements and costs.



Facilities Development & Implementation

Facilities Development & Implementation

1.0 Program Description

This program is focused on the development, implementation, and maintenance of several different areas overseen by the Real Estate, Facility Services, and Architectural divisions, including:

- Construction required to remediate facilities and real property (e.g., warehouses, mechanic shops, etc.) damaged by natural disasters
- Implementation of a facility capital improvement program
- Implementation of LUMA testing lab facilities
- Implementation of an asset management system to support facility maintenance and the preventative maintenance program
- Deployment of robust security devices and systems
- Development and implementation of a tenant services program
- Development and implementation of safety training programs for Facilities employees
- Planning and construction to delineate space between LUMA and GenCo

2.0 Program Rationale

2.1 Initial State and Identified Gaps

PREPA's current commercial real estate portfolio consists of:

- 23 warehouses that support T&D operations and customer service
- Four plant warehouses
- 24 mechanic shops
- One helicopter hanger
- One control center
- One backup control center
- 45 technical offices
- 39 commercial offices
- 31 former offices that have been closed
- Five corporate offices
- 23 properties where PREPA is the landlord

The Facility Services and Real Estate department is comprised of four siloed divisions. There are no established workflows or practices documented showing inter-departmental collaboration. Facilities management is decentralized across Puerto Rico. The PREPA Facilities team maintains 16 out of 197 properties, while the remaining 181 facilities are managed independently. LUMA plans to implement a centralized facilities management model to maximize economies of scale.

Significant gaps were identified within the Real Estate, Facilities Services, and Architectural divisions during the gap assessment:

Facilities Development & Implementation

- PREPA lacks the experience, programs, processes, training, tools, equipment, assets, and infrastructure to operate and maintain building assets efficiently and safely
- Hurricanes and the lack of regular maintenance or capital replacement programs significantly damaged the existing facilities, fences, security infrastructure, and yards, which represent unsafe or uninhabitable conditions for employees
- PREPA is not currently compliant with OSHA regulations, the International Fire Code, fire services features, fire protection and life safety systems, and building services and systems
- Certain facilities or properties may be in a hazardous or environmentally unsafe condition or contain dangerous materials or products
- Baseline data for key performance indicators, internal benchmarking, service requests, and closeout rates are unavailable. There are no observed measurements of performance in any area of Real Estate or Facility Services

2.1.1 Additional Gaps Identified Post-Commencement

- Develop and implement inventory and asset tracking, auditing, and decommissioning processes
- Develop and implement business continuity plans for post-emergency event preparedness per facility

2.2 Description of Remediated State

In the remediated state, the following will have been achieved:

- Construction on sites with damage caused by hurricanes, flooding, and earthquakes will have been completed with certificates of inspections and occupancy that meet building code and municipal regulations
- Upgrades to life, fire, safety, security systems, and physical barriers and equipment will have been locked or tagged out, inspected, and repaired, providing certificates of approval that meet building code and municipal regulations
- Site abatement and remediation or legal containment for hazardous materials will have been carried out
- The organization will be compliant with all local, commonwealth, and federal laws and regulations, as well as training requirements and certifications

2.3 Description of Program Completed State

The following are aspects of the program completed state:

- The department will be lean, agile, accurate, redundant, and able to meet the forthcoming changes required to meet Act 17 renewable energy targets
- Safety will be embedded in the organization's operating procedures, and all equipment will support/enhance a safe working environment
- Facilities will meet all building code requirements, adequately support the needs of the organization, and be prepared for natural disasters
- The department will be centralized, working collaboratively with internal stakeholders
- Decisions will be data-driven and evidence-based, relying on established benchmarks, key performance indicators and industry standards
- The service requirements of the organization will be exceeded in steady state or emergency operations while remaining fully compliant with all local, commonwealth, and federal laws and regulations

Facilities Development & Implementation

- Assets damaged by hurricanes, such as furniture, building systems, parts, and components, will have been decommissioned or removed

2.4 Program Activities

- Development of Real Estate and Facility Services bid, build, design processes, templates, and standards. These will be controlled by governing boards comprised of select parties within the organization
- Conducting health checks and sustainability inspections per commercial site (Complete)
- Carrying out asset compilation of building systems and components, studies of remaining useful life, and required capital improvements per commercial site
- Procurement of services and materials to perform repairs/improvements to remediate and reconstruct facilities, including roofs, walls, drainage, overhead cranes, fences, yards, water distribution systems, internal and external lighting, generators, heating, ventilation, and air conditioning (HVAC), doors, windows, and shutters
- Remediation or legally compliant containment of any hazardous materials found on the properties or within the facilities
- Development and implementation of preventative maintenance, training, and educational programs to ensure safe work practices across the organization
- Instituting programs and services that promote healthy and safe working conditions for personnel within the facilities across the organization

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be the design and refurbishment of fire control, electrical and mechanical systems, asset and space management, implementation of the computerized maintenance management system (CMMS), and initial design for federal programs.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
☒ Prioritize Safety	☒ Promote a safe workplace	Direct
	☐ Implement effective public safety practices	
☒ Improve Customer Satisfaction	☐ Deliver a positive customer experience	
	☒ Increase service reliability	Indirect
	☒ Deliver electricity at reasonable prices	Indirect
☒ Operational Excellence	☒ Enable systematic management of the business	Direct
	☒ Pursue project delivery excellence	Indirect

Facilities Development & Implementation

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Direct
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Direct
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input checked="" type="checkbox"/> Enable the sustainable energy transformation	Indirect
<input checked="" type="checkbox"/> Other	<input checked="" type="checkbox"/> Other: Environmental	Indirect

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

- Real Estate and Facility Services employees will have the expertise, training, equipment, and knowledge to perform safe work within the facilities
- Any identified hazardous materials will have been remediated or otherwise legally contained and safeguarded

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Increase Service Reliability

Objective: Deliver Electricity at Reasonable Prices

- This program will enable the organization to focus on its core functions, delivering service to the customer with greater reliability, at a lower cost, with greater efficiency and lower safety risk
- Overall service costs will be reduced through procuring materials and services through economies of scale, removing costs from supply chain processes, and reducing material unit prices

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Objective: Enable Employees to Execute Operations Systematically

Implementing defined procedures, processes, performance measurement, and technology will improve efficiency and allow data-driven decisions. This will also enable employees to execute operations more efficiently.

Objective: Pursue Project Delivery Excellence



Facilities Development & Implementation

Increased facility repairs and maintenance through a centralized team to reduce risk and improve the execution of capital projects

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively Deploy Federal Funding

Enabling the execution of critical projects that replace and restore critical infrastructure within yards and facilities will allow for more effective deployment of federal funds.

Objective: Improve Resilience of Vulnerable Infrastructure

This program allows for more efficient replacement and repair of facility systems and their components to prepare for and withstand natural disasters.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Enable the Sustainable Energy Transformation

These programs help to reduce energy consumption rates within facilities by introducing energy efficiency programs and sustainability initiatives. As such, these programs ensure that system infrastructure is rebuilt to accommodate a higher penetration of intermittent distributed resources.

PRIMARY GOAL: OTHER

Objective: Other: Environmental

These programs reduce liability and risk by completing HAZMAT programs and implementing policies and procedures related to the acquisition, construction, refurbishment, decommissioning, or remediation of real estate and real property.

2.6 Program Risks

RISKS OF DELAYING THE PROGRAM

- Non-compliance with the International Building Code
- Loss of asset(s) or life or personal injury due to failed or unavailable fire safety systems or failure to legally contain or remove hazardous substances
- Loss of life or personal injury due to untrained employees or unsafe work practices
- Risk of failing fiscal control metrics and internal audits: No visibility of spend, unexecuted lease contracts, run-to-fail buildings approach
- Increase in employees lost time to unhealthy working conditions
- Insurance and liability risks for faulty building systems and components
- Capital investment could be exponentially more significant should another natural disaster occur before remediation

Facilities Development & Implementation

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$15.0	\$29.9	\$22.3	\$109.7
SRP Expenditures	\$13.9	\$29.3	\$21.4	\$102.0

3.2 Program Resource Requirements

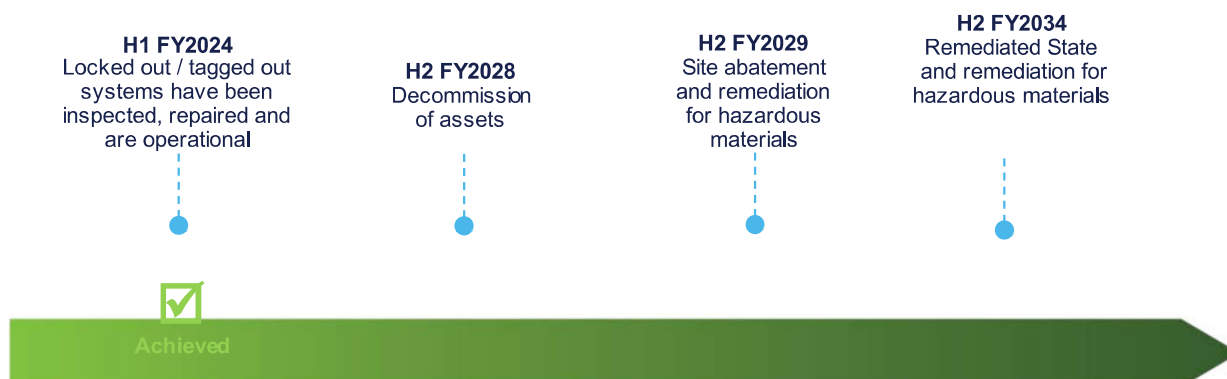
Each project within the program will have its resource requirements to be identified as part of a project plan. In general, the program will require resources to be hired internally and external contractors to complete the work required.

3.3 Estimating Methods and Assumptions

Estimating Method/Assumption: (Estimate template available if required)

- Researched materials and equipment costs
- Researched construction costs per square foot for greenfield, brownfield, commercial, and residential property types
- Researched vendor labor rates
- Used industry and market average rates for utility consumption estimates
- Assumed loaded hourly rates for full-time employees for employee training
- Used comparable historical proforma costs for facility maintenance and tenant services
- Used comparable historical costs for capital improvement programs

3.4 Timeline and Milestones



Critical Energy Management System Upgrades

Critical Energy Management System Upgrades

1.0 Program Description

This program will replace an obsolete and unsupported Energy Management System (EMS) and add relevant technology to operate the electric system safely and reliably. This program will also implement Advanced Distribution Management Systems (ADMS). The energy management system (EMS) is a computer-based system that operators use to monitor, control, and optimize the performance of the generation, transmission, and distribution system. Additionally, this program will develop capabilities related to energy management and load/generation balancing. This includes the development of strategies and mechanisms for energy balancing and the establishment and implementation of a strategy for operating reserves. Additionally, the program will address the technology needed to efficiently manage renewable energy, unit commitment, economic dispatch, generation performance testing, battery storage, and demand response programs along with defining the role of microgrids within the electrical system as required by the Integrated Resource Plan.

*Confidential

2.0 Program Rationale

2.1 Initial State and Identified Gaps

[REDACTED]

[REDACTED] that
reason, it was included in the System Remediation Plan.

[REDACTED]

Critical Energy Management System Upgrades

2.1.1 Additional Gaps Identified Post-Commencement

[REDACTED]

2.2 Description of Remediated State

[REDACTED]

[REDACTED]

2.3 Description of Program Completed State

[REDACTED]

2.4 Program Activities

[REDACTED]

[REDACTED] automated generation control [REDACTED]

[REDACTED]

[illegible][illegible]

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
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Critical Energy Management System Upgrades

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PRIMARY GOAL: OPERATIONAL EXCELLENCE

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

[REDACTED]

[REDACTED]

[REDACTED]

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

[REDACTED]

[REDACTED]

[REDACTED]

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Critical Energy Management System Upgrades

[Redacted]

2.6 Program Risks

[Redacted]

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$12.6	\$8.8	\$8.8	\$0.5
SRP Expenditures	\$8.9	—	—	—

3.2 Program Resource Requirements

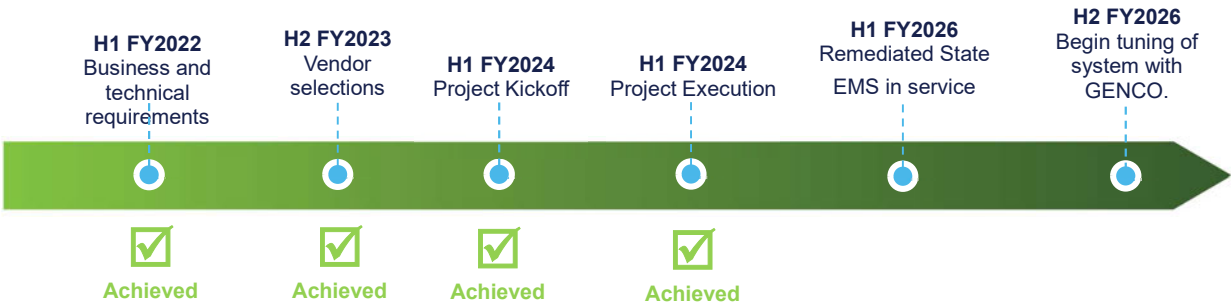
LUMA hired a project team and a consultant to support the implementation of this program. LUMA will train new people to use the modernized system and be the support team for the next decade (this project will be managed in collaboration with our IT/OT group).

3.3 Estimating Methods and Assumptions

Originally, LUMA obtained a high-level estimate from IBM to replace the existing EMS. As the project progresses, the team provided a more detailed estimate.

The cost estimates will be adjusted as more detailed information becomes available.

3.4 Timeline and Milestones



Control Center Construction & Refurbishment

Control Center Construction & Refurbishment

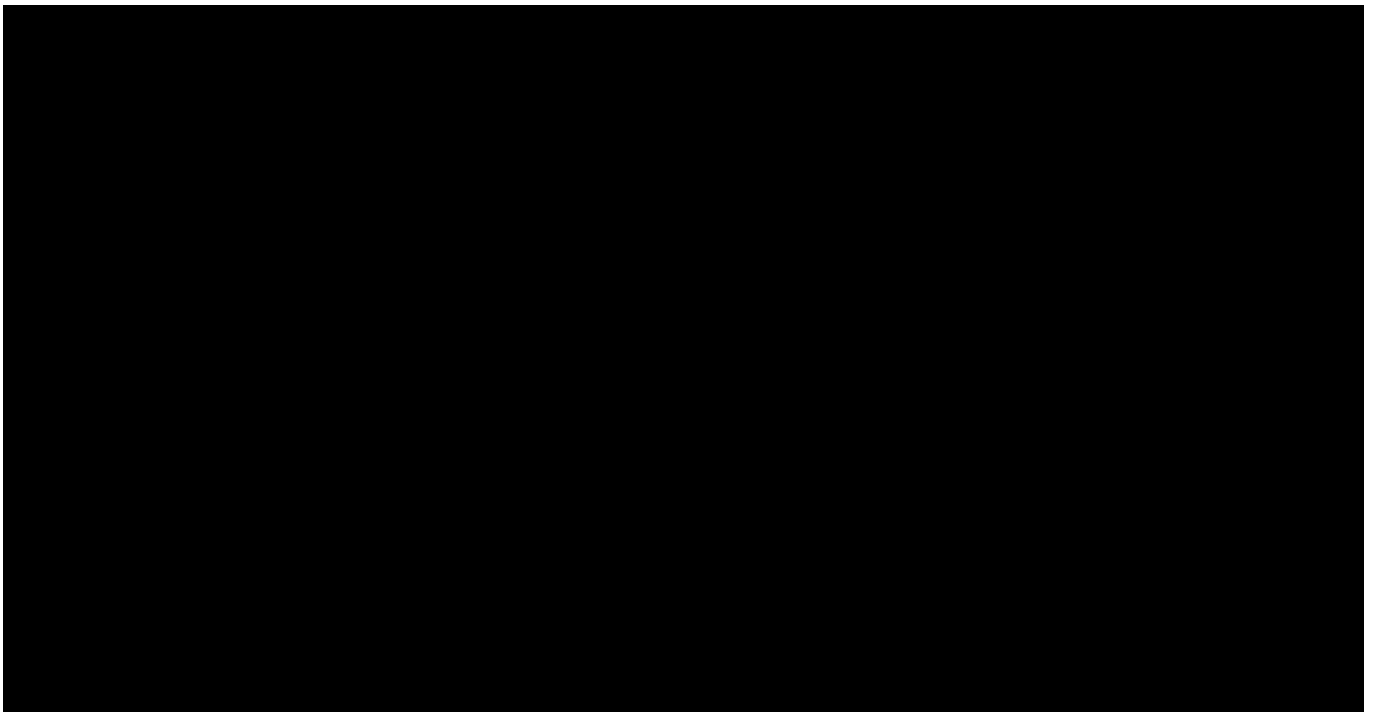
1.0 Program Description

This program aims to construct or refurbish buildings to house the main and backup control centers and all ancillary support services. Since the current control centers have fallen into disrepair, this program will rebuild or relocate them and establish a designated backup control center. At the same time, the program will centralize more control center activities.

2.0 Program Rationale

*Confidential

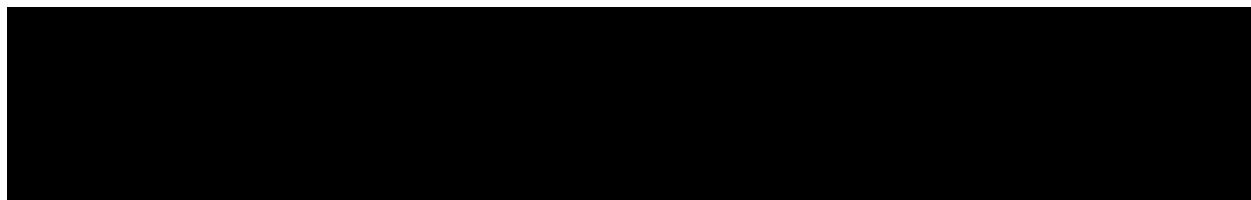
2.1 Initial State and Identified Gaps



2.1.1 Additional Gaps Identified Post Commencement

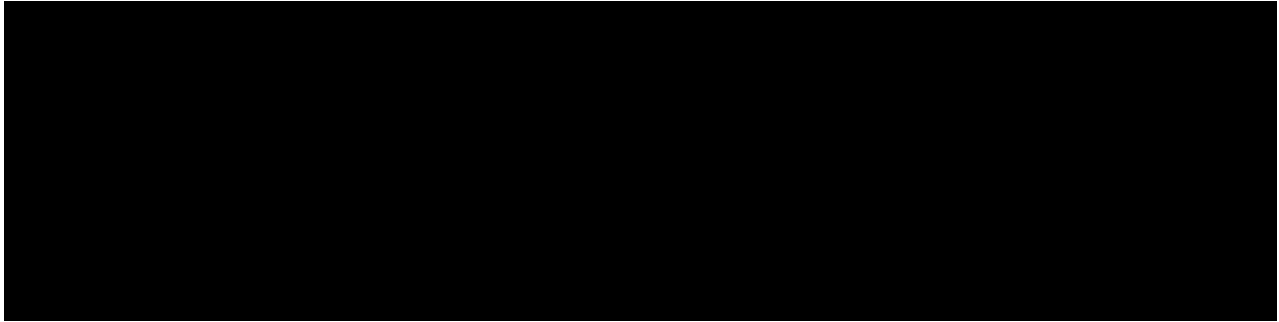


2.2 Description of Remediated State

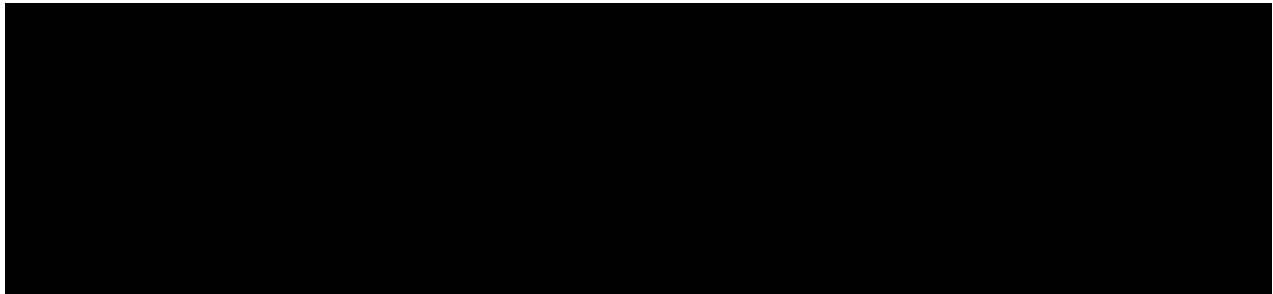


Control Center Construction & Refurbishment

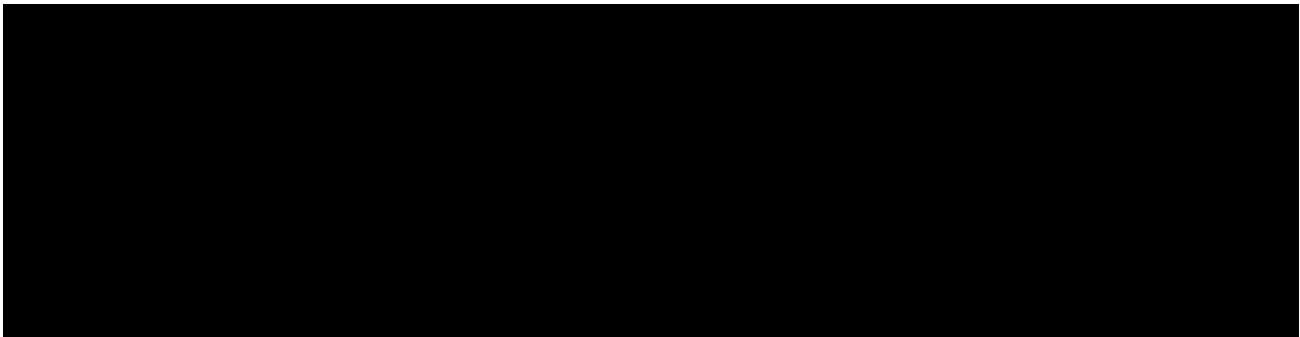
2.3 Description of Program Completed State



2.4 Program Activities



2.4.1 Additional Activities Identified Post-Commencement



2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT

Control Center Construction & Refurbishment

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT

PRIMARY GOAL: OPERATIONAL EXCELLENCE

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION



Control Center Construction & Refurbishment

2.6 Program Risks

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$5.7	\$16.2	\$42.1	\$151.9
SRP Expenditures	\$4.6	\$12.9	\$33.7	\$121.3

3.2 Program Resource Requirements

LUMA will need a project team and varied expertise throughout the project.

3.3 Estimating Methods and Assumptions

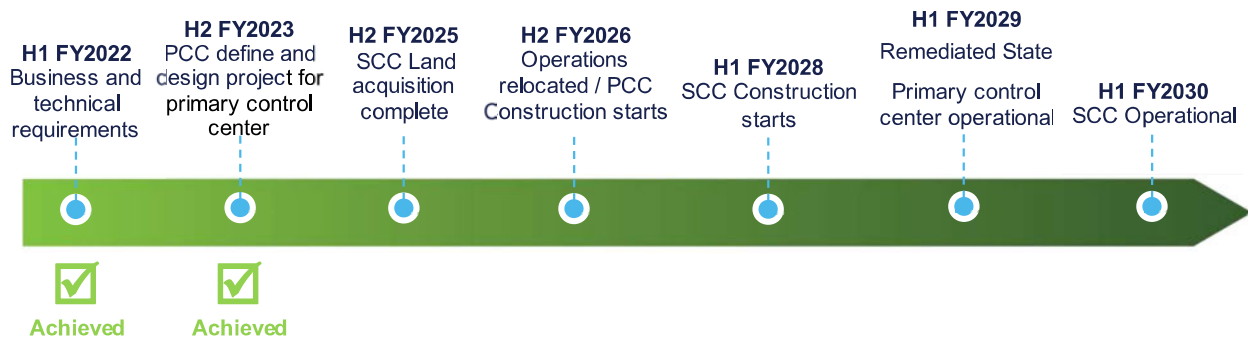
Initially, the estimation was performed by LUMA’s real estate group based on cost per square foot and general requirements. LUMA also obtained an order of magnitude estimate from a consultant that substantially agreed with internal estimates. As the project progressed, the project team updated the cost estimates.

This estimate is based on the construction of two new facilities (Primary control center and Secondary control center). LUMA is also looking at options to utilize existing buildings that will need renovation or remodeling, and/or renting existing buildings. These options could be less costly and will be part of the initial program assessment.



Control Center Construction & Refurbishment

3.4 Timeline and Milestones



Warehouse Security

Warehouse Security

1.0 Program Description

This program (Warehouse Security) will focus on providing CCTV, electronic card access and fencing at various warehouse locations. This program will replace and add new physical security technology and hardware to deter, detect and delay security incidents (e.g., intrusion, theft, damage, etc.) at warehouses.

2.0 Program Rationale

*Confidential

2.1 Current State & Identified Gaps

[Redacted content]

2.1.1 Additional Gaps Identified Post-Commencement

[Redacted content]

2.2 Description of Remediated State

[Redacted content]

2.3 Description of Program Completed State

[Redacted content]

2.4 Program Activities

[Redacted content]

Warehouse Security

2.4.1 Additional Activities Identified Post-Commencement

[REDACTED]

[REDACTED]

[REDACTED]

2.5 Program Benefits

Primary Goals	Objectives	Direct or Indirect Impact
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PRIMARY GOAL: PRIORITIZE SAFETY

[REDACTED]

[REDACTED]

Warehouse Security

PRIMARY GOAL: OPERATIONAL EXCELLENCE

[Redacted]

[Redacted]

[Redacted]

[Redacted]

2.6 Program Risks

[Redacted]

3.0 Program Funding & Timeline

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate ¹	FY2026 Estimate ¹	FY2027 Estimate ¹	FY2028+ Estimate ¹
Total Expenditures	\$0.6	\$0.6	\$0.0	\$0.2
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

The work will be carried out by contractors.

3.3 Estimating Methods & Assumptions

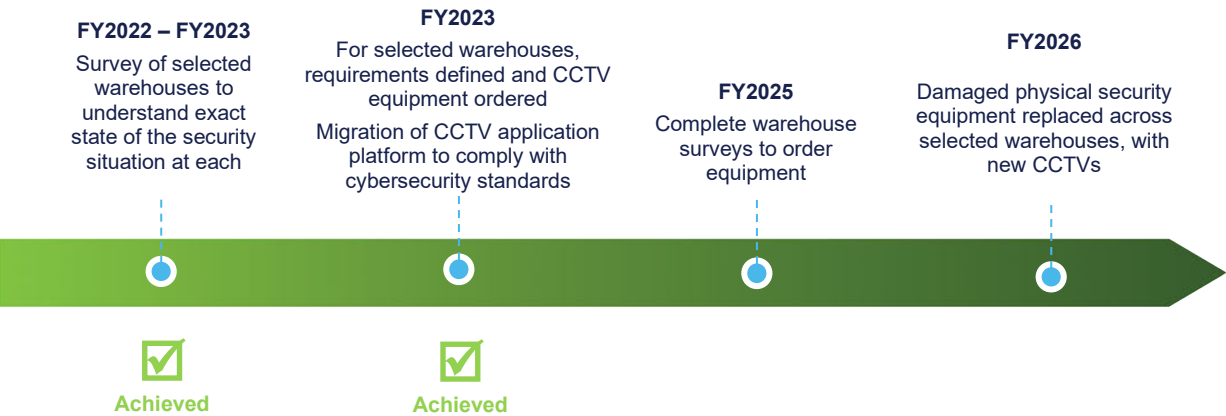
This program's costs were estimated based on a combination of vendor unit rates and experience. These estimates will be refined once the projects are approved, and the scope better defined.

¹ We will leverage facility projects' funds to include physical security requirements and costs.



Warehouse Security

3.4 Timeline & Milestones



Vegetation Management and Capital Clearing Implementation

Vegetation Management and Capital Clearing Implementation

1.0 Program Description

This program includes work to abate or mitigate immediate vegetation risk in the most critical locations, and an ongoing program to clear and re-establish rights of way (ROWs) to standard widths. The program also includes federally funded capital vegetation clearing and reclamation along transmission and distribution lines, in and around substations, and along facility access roads to achieve vegetation remediation as a key activity in LUMA's capital investment plan federally funded capital activity to be reimbursed by federal agencies. This vegetation management and capital clearing work includes an immediate response for the highest risk sites (those that pose hazards to public safety or routinely experience tree-caused service interruptions), and reclaiming rights of way corridors (especially those impacting the transmission and distribution systems). The program will also use a field-enabled IT tool to manage the vegetation management program, ongoing line clearance, pruning, tree removal, herbicides, etc., and vegetation management training. In addition, the program will evaluate and pilot an advanced artificial intelligence remote sensing project to improve the program's efficacy in vegetation management.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

There had been no centralized team with the responsibility and authority for maintaining vegetation and managing vegetation-related processes in the existing Transmission and Distribution System. Thus, there was no regular vegetation management program in place. In-house employees and contractors did not use the most up-to-date utility vegetation management industry standards and best management practices.

Vegetation maintenance and facility rights-of-way management had largely been deferred. The vegetation maintenance work performed by in-house personnel was predominantly reactive or corrective maintenance (a.k.a. "hot spotting"). Some preventive vegetation maintenance work was performed by contractors working under PREPA's PMO.

Pruning practices were not very effective, mainly resulting in excessive regrowth and wounding of trees, which increased the likelihood of structural failure.

Many personnel relied on machetes and did not have access to more useful tools. The equipment that the in-house personnel used was in poor repair, and personnel had no specialized vegetation management equipment. There was little use of herbicides and no use of tree growth regulators. The lack of appropriate tools and equipment contributed to the low productivity of in-house personnel.

Insufficient tree clearance and lack of vegetation maintenance, in general, are significant contributors to system unreliability, especially in extreme weather events such as hurricanes. This also creates a public

Vegetation Management and Capital Clearing Implementation

safety hazard- directly in the form of fallen wires or children climbing trees too close to energized lines and indirectly in power outages.

These findings indicate possible failure to meet applicable legal requirements, policies, or standards or the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement (T&D OMA) requirements, including Prudent Utility Practice. Specifically, these are:

- Act 57-2014, providing that PREB will oversee the compliance of the T&D operator with a vegetation plan following industry best practice
- Act 17-2019, whose objective is to establish priorities for the maintenance of the infrastructure of the electric system and create vegetation management plans
- The T&D OMA requires LUMA to implement a vegetation management plan per Prudent Utility Practice and applicable laws

2.1.1 Additional Gaps Identified Post-Commencement

Post-commencement, LUMA identified a series of additional challenges that it could not identify during the gap assessment conducted in 2020 during the Front-End Transition. Specifically, LUMA had used satellite imagery that led it to believe that there were significantly more clear and open spans in the system than existed. During fieldwork, they determined fewer clear spans than expected, and the vegetation was denser than expected.

Moreover, LUMA underestimated the large volume of critical and required requests for vegetation work in addition to the remediation work, which entailed much more reactive and corrective actions than planned clearing work. Additionally, in LUMA's efforts to pursue and maximize federal funding for vegetation work, the process to procure federal procurement compliant contracts has required additional time in order to fully execute federally funded work.

Finally, LUMA expected a more straightforward regulatory pathway. For example, LUMA has received notice that the Fish and Wildlife Service would require incremental vegetation and capital clearing permitting, which it had not expected.

2.2 Description of Remediated State

In the remediated state, the following will apply:

- A centralized vegetation management team will have been created and staffed by professionals who will establish procedures and practices to eliminate public endangerment and promote a safe and efficient work environment
- A capital program for vegetation clearing will have been created to implement the federally funded capital clearing work plan that will work in coordination with the planned vegetation management team but at an expanded and accelerated pace
- The maintainable tree-conductor clearances will have been re-established on the T&D System, including:
 - Initially, reactive maintenance response that will target specific locations that pose the most significant risk to public safety, reliability, resilience, and system capacity (i.e., address the “worst of the worst”)

Vegetation Management and Capital Clearing Implementation

- Reclamation of the ROWs that are currently overgrown and out of control and pose a risk to public safety, service reliability, and system capacity. This will include complying with Act 17-2019. In the remediated state, LUMA will set a baseline from which LUMA will establish reasonably maintainable conditions
- Establishment of steady state ongoing preventive vegetation maintenance practices (versus reactive response practices) as individual circuits are reclaimed (consistent with the principles of integrated vegetation management)
- Complying with Section 1.16 of Act 17-2019
- Meeting all requirements for federal agency reimbursement of vegetation-clearing activities

2.2.1 Tasks to Achieve Remediated State

LUMA's Vegetation Management Plan (VMP), submitted to PREB on April 11, 2021, lays out the specific approach LUMA will take in executing the remediation work. LUMA will utilize an industry best-practice, structured decision-making process known as Integrated Vegetation Management (IVM) to understand the dynamics of managing incompatible species and the ecosystem. By applying this approach, incompatible tall growing trees and woody plants are eliminated from rights-of-way to the extent possible to reduce interference with critically important power facilities. Low-growing plant communities are preserved, which "crowds out" taller growing species, thereby providing biological control. In urban areas, IVM can include planting compact plants in place of tall, growing landscape trees. The benefit of IVM is that the cost and intensity of vegetation work will reduce over time while system reliability and safety are improved.

In implementing an IVM approach, LUMA will restore overgrown rights-of-way to standard widths and maintainable tree-conductor clearances as specified in the VMP. LUMA will comply with all laws and regulations and incorporate appropriate industry standards and best management practices. Some of these include the National Electric Safety Code, American National Standards Institute (ANSI) standards, International Society of Arboriculture Best Management Practices, and Rights-of-Way Stewardship Council standards.

2.3 Description of Program Completed State

Oversight of vegetation-related practices will be centrally managed by a dedicated vegetation management (VM) team composed of utility vegetation management industry subject matter experts (SMEs) with the responsibility and authority to complete the work promptly and effectively. Capital vegetation clearing work will be managed by the capital organization, which operates separately but in coordination with the VM team. The VMP will guide the program based on current industry standards and in compliance with the requirements of Act 57-2014, Act 17-2019, and the T&D OMA.

The VMP will follow the principles of integrated vegetation management, an approach to sustainable vegetation management over the long term rather than simply controlling vegetation currently affecting overhead lines.

Transmission and distribution lines, substations, and access road vegetation clearing will be completed, consistent with federal agency requirements, to improve the public safety, reliability, and resilience of the infrastructure LUMA operates in Puerto Rico.

Vegetation Management and Capital Clearing Implementation

Technical specifications will establish vegetation work expectations, and process flows will be used to define standard approaches to manage the necessary types of work more efficiently. In managing vegetation work, we will use performance measurement, quality systems, and specialized vegetation services to complete the job.

2.4 Program Activities

The program includes two major elements. The first involves reclamation of the existing ROWs—through preventive maintenance activities and federally funded vegetation clearing work—during the remediation phase, depending on acquiring the necessary approvals, permitting, and resources. As individual facilities are reclaimed, they will transition to long-term preventive maintenance efforts. The second element is a program of rapid reactive response to address the most critical locations.

A field-enabled IT tool will be implemented and used to manage vegetation work, including planning, scheduling, executing, and evaluating the effectiveness of vegetation activities for both vegetation maintenance and capital vegetation clearing. The data collected with the tool will support defining resource requirements and budgets based on quantitative estimates of the vegetation workload to be completed. Performance measurement and quality-control systems will be established to manage vegetation work.

The VM and vegetation clearing program teams will be staffed with SMEs who will act as mentors, assisting in developing SME level of knowledge among the VM employees. A range of specialty vegetation services will be engaged in executing the work.

2.4.1 Additional Activities Identified Post-Commencement

In alignment with the Vegetation Management Plan scope and activities required for the operation of the utility, the following activities have been added to the scope of this program:

- “Reactive” vegetation support for outage, afterhours, and storm restoration along transmission, distribution, and substation facilities
- “Corrective” activities to support re-occurring system reliability needs, customer requests, access, and system patrols along transmission, distribution, and substation facilities
- “Maintenance” and control of vegetation at substations, material laydown yards, switchyards, and other company facility sites

2.4.2 FY2025 Activities

The focus of the upcoming fiscal year includes:

- Clearing all 230 kV ROWs and additional clearing and maintenance on other voltage levels
- Pursuing federal funding obligation with FEMA for vegetation clearance work

Vegetation Management and Capital Clearing Implementation

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a Safe Workplace	
	<input checked="" type="checkbox"/> Implement Effective Public Safety Practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a Positive Customer Experience	Indirect
	<input checked="" type="checkbox"/> Increase Service Reliability	Direct
	<input type="checkbox"/> Deliver Electricity at Reasonable Prices	
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable Systematic Management of the Business	Direct
	<input type="checkbox"/> Pursue Project Delivery Excellence	
	<input checked="" type="checkbox"/> Enable Employees to Execute Operations Systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Direct
	<input checked="" type="checkbox"/> Restore Damaged Grid Infrastructure	Direct
	<input checked="" type="checkbox"/> Improve Resilience of Vulnerable Infrastructure	Direct
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the Grid	Indirect
	<input type="checkbox"/> Enable the Digital Transformation	
	<input type="checkbox"/> Enable the Sustainable Energy Transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Implement Effective Public Safety Practices

Correcting the backlog of untrimmed trees and deteriorated rights-of-way will mitigate public safety risks due to power outages, fallen wires, and people climbing onto energized lines.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

Objective: Increase Service Reliability

Vegetation Management and Capital Clearing Implementation

The primary benefit of effective vegetation management and well-maintained rights-of-way is to reduce outages caused by vegetation-caused line faults. This is a substantial contributor to the current poor reliability of the system. Improved reliability will improve customer experience. Cleared ROWs will also make it easier to assess storm damage and access sites to make repairs, shortening the duration of outages and enabling efficient design and construction of electric infrastructure.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Objective: Enable Employees to Execute Operations Systematically

Current vegetation management practices are focused on reactive and corrective work, i.e., addressing problems after they arise. A well-functioning program will trim vegetation systematically, increasing the workforce's efficiency and the system's reliability. A clear VMP will also enable employees to work more effectively and efficiently.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively Deploy Federal Funding

The current poor conditions of ROWs hamper access to much of the T&D System. By reclaiming these ROWs, access will be improved, thus making Utility Transformation projects financed by federal funds easier and cheaper to build.

Objective: Restore Damaged Grid Infrastructure

Objective: Improve the Resilience of Vulnerable Infrastructure

Rights of way currently contain debris deposited during hurricanes, which will be cleared through a better vegetation management process. Reclaiming rights of way will reduce outages in future hurricanes or weather events.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the Grid

Clearing the ROWs of vegetation is necessary to facilitate the deployment of grid modernization programs. Reclaiming ROWs is an initial step toward modernizing the grid.

2.6 Program Risks

- The primary risk to delaying the program is that there will be no meaningful improvement in system reliability and perhaps a further decline resulting in an exceedingly poor level of service for customers. Resources would continue to be wasted on disorganized reactive or corrective maintenance, such as hot spotting
- Inability to meet contractual performance requirements
- Inability to meet requirements of Vegetation Management Plan required under Act 57-2014, as amended, and standards under Act 17-2019, as amended, and meet other legal requirements, policies, and T&D OMA requirements, including Prudent Utility Practice

Vegetation Management and Capital Clearing Implementation

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$208.2	\$397	\$397	\$696.4
SRP Expenditures	\$158.2	\$347	\$347	\$346.4

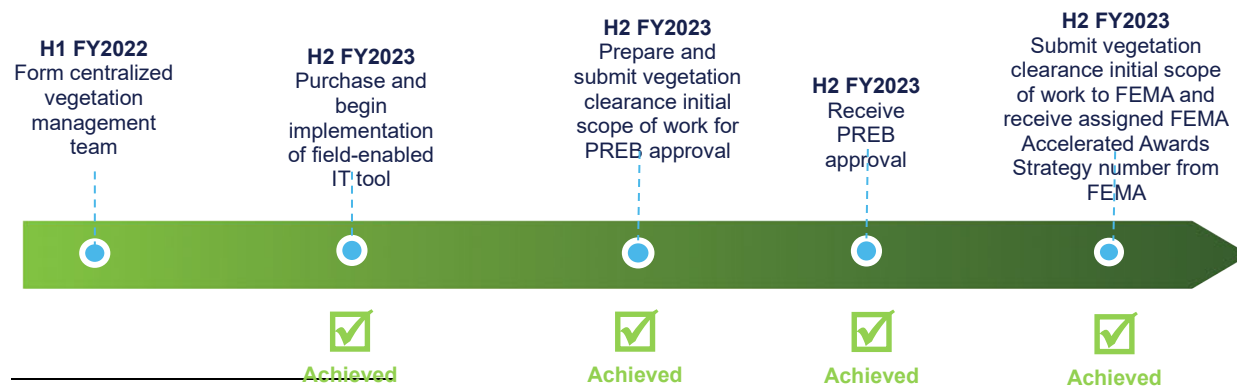
3.2 Program Resource Requirements

- Recruitment and inclusion of experienced VM SMEs in LUMA's VM and capital clearing teams to address any gaps in knowledge and skills to support the development of an effective program based on industry standards and best practices
- To the extent dictated by workload and system performance, engagement of experienced providers of core and specialized vegetation services
- IT Tool to support the application of performance management techniques across the VM and capital clearing programs
- Training of vegetation workforce on industry standards and best management practices to build required knowledge and expertise

3.3 Estimating Methods and Assumptions

The cost estimate is based on spatial analysis and actual experience to define the vegetation workload. Satellite imagery (at two-meter resolution) and other remote sensing data sets were used to develop an initial assessment of vegetation-related field conditions. This was supplemented with high-resolution, near real-time satellite images of the entire T&D System, which were used to refine the estimate and to evaluate the need for “boots on the ground” field validation, which is ongoing.

3.4 Timeline and Milestones ¹



¹ Achieving milestones is dependent on the process to receive federal funding obligation from FEMA, receiving timely Environmental and Historic Preservation approvals from FEMA, and timelines associated with other legal or regulatory requirements. LUMA will continue to update this timeline and provide further detail as the federal funding process continues. With the information currently available, LUMA is unable to achieve a remediated state prior to the second half of FY2027.

Vegetation Management and Capital Clearing Implementation


Achieved



T&D Fleet

T&D Fleet

1.0 Program Description

The T&D (transmission and distribution) Fleet program includes various activities and investments to bring the current fleet up to industry standards, including vehicles and equipment. Additionally, activities will be focused on initializing and improving processes for data collection, repair, and maintenance of these assets.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

LUMA will be in charge of the overall management of approximately 3,230 vehicles. The following table breaks down the fleet of light and heavy-duty vehicles and equipment used for construction and material handling.

CATEGORY	DESCRIPTION	COUNT
0	Small SUV	7
1	Jeeps, Medium, Large SUV	429
2	Small/Med Pickup	363
3	Large Pickup, Other	513
4	Platform Truck, Other	379
5	Pickup w/ Bucket	349
6	Bucket Truck, Digger Derrick	400
7	Trailers, Other	485
8	Small/Medium Pickup	304
9	Heavy and Other Equipment	1
Total		3,230

There are also 25 land maintenance and repair shops distributed across the island. Based on LUMA's gap assessment, the current state of facilities and the maintenance and operation of the fleet reflects an overall maturity rating ranging between "unfocused" and "aware." The "aware" maturity rating, at the upper end of the current assessed range, means that, in some cases, PREPA exhibits a basic understanding of the need to address these areas and may or may not be in the process of deciding how best to or starting to apply them. While some of these maturity ratings are due to underinvestment, many are related to processes and controls that are not in place. In several areas (most notably those related to compliance with the Puerto Rico Commission on Public Safety [CSP]/US Department of Transportation [US DOT], Occupational Safety and Health Administration [OSHA], or American National Standards



T&D Fleet

Institute [ANSI] requirements), there is currently no evidence of plans to implement processes and controls to meet the required standards.

The current fleet is mainly comprised of aging and deteriorating assets and facilities. Ninety percent of the fleet exceeds the industry standard for expected life (e.g., six to seven years for trucks and 10 years for heavy-duty vehicles). This has led to ineffective and increasingly costly maintenance, exacerbated by poorly maintained or missing tools, inadequate and inconsistently applied practices and standards, and increased employee training requirements. Its maintenance has also suffered due to an outdated and unused management information system, leading to a need for more information regarding the vehicles' conditions, maintenance needs and records, inspections due, and additional difficulties in meeting regulatory mandates for maintenance inspections and record keeping. Gaps exist in all areas of fleet management.

Of critical concern are:

- Currently, most, if not all, of the assets in the fleet do not meet Puerto Rico CSP / US DOT or OSHA / ANSI requirements
- Maintenance and inventory management practices, processes, and procedures are inadequate, outdated, and require significant overhauls
- Short- and long-range fleet capital lifecycle planning is ineffective, both in process and execution.
- The general level of training for basic fleet management activities is low or non-existent
- Annual fleet inspections are not current; therefore, data regarding the condition of specific fleet assets (i.e., inspection and maintenance records) are broadly inaccurate and, in most cases, missing
- PREPA also reports an urgent need for more trained mechanics. Based on the Utilimarc Standard for maintenance or repair hours required per vehicle, the number of mechanics within the PREPA fleet management organization totals only 70 percent of the average for other North American utilities. At least in the short term, there is no indication that the requisite number of qualified mechanics will be engaged to make up this shortfall, nor does it seem that the appropriate workers will be outsourced to undertake the work needed to provide maintenance of all equipment properly

LUMA notes that the above statements are based on a high-level review (i.e., not a detailed inspection) of approximately half of PREPA's fleet assets. Lacking any thorough testing and maintenance records, LUMA has determined the general state of these assets from a condition and operability perspective and projected estimated repair versus replacement percentages across PREPA's entire fleet. LUMA will continue reviewing these projections/assumptions as it revitalizes the fleet.

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

The following parameters define the remediated state for fleet operations, addressing the activities required to comply with applicable laws and regulations and assure the safe operation of fleet assets:

- Compliance with all of Puerto Rico's Department of Transportation and Public Works (DTOP), CSP, and federal requirements, including US DOT, OSHA, and ANSI regulations or standards
- Related to the above, the performance of all applicable inspections and maintenance following manufacturer recommendations
- Verification of successful dielectric testing on all operating boom trucks



T&D Fleet

- Full implementation of inspection and maintenance records collection and storage procedures per US DOT requirements. This includes using a fleet management information system (FMIS) that stores the records but also enables communication with fleet cost coding and a digital connection with telematics, fuel purchasing, and other fleet management systems
- Completion of applicable training and qualification of all mechanics and operators maintaining, driving, or using fleet assets. Mechanic training will include hydraulic maintenance certifications
- Reduction of maintenance backlog to where less than 10 percent of the trucks are in the shop at any given time

2.3 Description of Program Completed State

The fleet program addresses the significant deficiencies identified in the gap assessment and expands upon the operational plan. The plan includes funds for replacing and refurbishing an aged fleet in poor condition, projects to enhance data acquisition, and tools to support better decision-making and management in the future.

In the completed state, the fleet will operate according to industry norms. This includes conforming with all applicable laws and regulations, regular inspections and maintenance of fleet equipment, full training of all mechanics and refresher training for operators, implementation of fuel management practices, and owning assets that operate within their useful lives (i.e., a steady and consistent replacement cycle for aging fleet assets).

2.4 Program Activities

Fourteen key activities comprise the overall fleet program.

The T&D Fleet program includes activities to implement regimented testing and inspection processes for all fleet assets, assuring compliance with Puerto Rico's DTOP, CSP, US DOT, OSHA, and ANSI standards and equipment manufacturers' recommended inspection and maintenance requirements. This project will address practices for daily inspection and testing activities (preventive maintenance) and develop/apply criteria and practical steps for major repairs.

Additionally, we require capital to acquire new vehicles to replace those that have passed the point where we can operate them reliably, safely, and cost-effectively. This is the most significant cost activity in response to a substantial backlog of vehicles beyond end-of-life expectations. This program must spread replacements over ten years to make this expenditure feasible. PREPA's current expenditure levels are less than \$3 million per year. We estimate that capital acquisitions of about \$42 million per year over ten years are required to bring the current fleet makeup up to industry standards.

We must suspend the use of all deteriorated or aging fleet assets that are untested or uninspected or in an otherwise analogous state until they can be thoroughly inspected, tested, and repaired in a manner that brings them into the minimal legal requirements outlined in regulation by DTOP, CSP, US DOT, OSHA, and ANSI. There would be an ongoing unacceptable risk associated with operating such assets before all testing and inspections are completed and all aged or deteriorated fleet assets are repaired or replaced.

Additional near-term projects in the T&D Fleet program include:

T&D Fleet

- Improvement of the current process for sourcing parts, approving third-party repairs, approving purchase orders for parts and repairs, and the usage of third-party vendors that will reduce the current maintenance backlog
- Implementation of a regimented fleet fuel management and purchase program
- Full deployment of a regimented fleet telematics system
- Implementation of programs and associated processes for handling vehicle and equipment waste
- Installation and repair of hoists, mechanics' tools, and equipment at fleet shops
- Assessment of all fleet shops to identify deficiencies and perform facility and structural improvements at all fleet shops (Complete)
- Ensure compliance with DTOP, CSP, US DOT, OSHA, and ANSI standards and the equipment manufacturers' recommended inspection and maintenance requirements (Complete)
- Deployment of an FMIS to track maintenance records for all fleet vehicles and preventative maintenance programs (Complete)
- Removal from fleet shops of end-of-life fleet, obsolete inventory, all other non-functional equipment, hazardous waste, and other detritus
- Rebranding PREPA fleet to identify it as part of LUMA, as specified by US DOT (i.e., that commercial motor vehicles display the company name and US DOT number) (Complete)
- Installation of double-walled fuel tanks at all 25 fleet shops to serve as an emergency supply for day-to-day operations, aimed at improving efficiency for line workers and reducing the risk of theft at the retail. This will also allow for additional fuel to be stored for use during stormy seasons

2.4.1 Additional Activities Identified Post-Commencement

No additional activities have been identified at this time.

2.4.2 FY2025 Activities

Implementing telematics, fuel management, and the purchase program will be the focus for the upcoming fiscal year.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
☒ Prioritize Safety	☒ Promote a safe workplace	Direct
	☒ Implement effective public safety practices	Direct
☒ Improve Customer Satisfaction	☒ Deliver a positive customer experience	Direct
	☒ Increase service reliability	Indirect
	☒ Deliver electricity at reasonable prices	Indirect
☒ Operational Excellence	☒ Enable systematic management of the business	Indirect
	☒ Pursue project delivery excellence	Indirect

T&D Fleet

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Direct
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Indirect
	<input type="checkbox"/> Improve resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

Safety-related incidents will be reduced since we will routinely inspect vehicles, provide them with proper maintenance, improve operator and mechanic training, and remove the oldest and worst condition fleet assets.

Objective: Implement Effective Public Safety Practices

Fewer accidents and equipment malfunctions will occur due to better-maintained fleet assets and well-trained operators.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

Customer service will receive an improved response time due to more efficient routing via telematics (e.g., routing the closest available crew to address a customer outage).

Objective: Increase Service Reliability

There will be reduced service restoration times, measured by SAIDI (average customer minutes out of service), and improved fleet responsiveness, particularly during major events.

Objective: Deliver Electricity at Reasonable Prices

Proper maintenance and fleet lifecycle replacement practices will reduce fleet maintenance spending and decrease line crew labor downtime associated with inefficient means of transportation.

T&D Fleet

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Implementing an FMIS provides visibility to key elements that define fleet assets' operability (current state).

Objective: Pursue Project Delivery Excellence

The crew's operating efficiency will improve by providing the right vehicle and equipment for the job.

Objective: Enable Employees to Execute Operations Systematically

There will be reduced overtime due to the availability of functioning fleet assets during regular working hours. Current work rules allow line workers to go home with pay when their trucks are undergoing repairs since spares are not available to use while trucks are in repair. By bringing vehicles up to industry standards, truck downtime will be reduced, thereby increasing the efficient use of standard working hours for line crews.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively Deploy Federal Funding

Objective: Restore Damaged Grid Infrastructure

Improve crew operating efficiency by providing the right vehicle and equipment for the job.

2.6 Program Risks

Absent this program, the current condition of fleet assets, lack of basic staff training, and inconsistent and ineffective maintenance practices pose a substantial and continuing risk of safety-related incidents. Given the need to continue to operate poorly maintained assets over an extended replacement and repair period, provisions for improved basic training and industry-standard operating and maintenance practices can partially mitigate these risks. These provisions will be substantially reduced over time once the fleet and its associated maintenance and repair practices are aligned with the US DOT regulations regarding driver/operator safety and applicable ANSI or OSHA Standards for testing and inspecting major equipment have been met.

The necessary continued operation of a deteriorating fleet over a phased implementation period also has risk implications. However, as stated before, we will mitigate the risk by replacing the aging fleet assets, providing adequate maintenance, and implementing the corresponding repair practices.

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$34.6	\$47.0	\$53.2	\$418.0



T&D Fleet

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
SRP Expenditures	\$8.0	\$22.2	\$29.2	\$230.0

3.2 Program Resource Requirements

LUMA anticipates a shortage of mechanic trainers in Puerto Rico. In the short term, LUMA plans to import trainers while exploring the option of establishing courses and certifications needed for mechanics at a local mechanic college.

For equipment with long lead times, we are working with Materials Management and Procurement to determine optimal approaches for ordering and maintaining inventory of such equipment for our most critical fleet assets.

3.3 Estimating Methods and Assumptions

The ongoing capital replacement and refurbishment project, which represents the bulk of this program, is estimated using a Lifecycle-Based Replacement Forecast by asset class. LUMA's estimates assume economically valuable life for various fleet asset classes based on standard industry practice. The replacement values originate from Appendix G1 of Sargent and Lundy's Conceptual Transmission and Distribution 10-Year Capital Investment Plan for Reliability.

3.4 Timeline and Milestones



Compliance & Studies

Compliance & Studies

1.0 Program Description

The Compliance & Studies program is divided into three sections, each with its own specific scope, objectives, and set of activities as follows:

1. Transmission and Distribution (T&D) System studies
2. Renewable and distributed energy resource (DER) interconnection studies
3. T&D System safety studies.

The following subsections describe each of these three sections.

1.1 Transmission and Distribution (T&D) System Studies

T&D System Studies consist of computer simulations that include power flow, short circuits, transient stability, and other technical assessments using digital models of the physical grid. The ideal digital model perfectly matches the characteristics of the physical grid, where every electrical device is modeled with its electrical characteristics, maximum capacity, and all connected elements accurately represented. Therefore, in the ideal model, the power flow, short circuit, transient stability or other technical assessment matches values observed in the real world with minimal error.

Studies verify that the expected performance of the transmission line, substation, and distribution line equipment adheres to codes, standards, and industry best practices for load forecasts, equipment capabilities and settings, generation dispatch, and system configurations under various conditions. These digital models allow for simulations of expected conditions –like summer peak, or minimum load– and enable system planners and operators to run scenarios to predict how the grid will behave. When a constraint is identified, mitigation options are investigated, and upgrades are first simulated to ensure the safe, reliable, and efficient operation of grid assets.

The program activities involve establishing and implementing study standards and procedures for Puerto Rico by adapting national and international standards, and industry best practices. The North American Electric Reliability Corporation (NERC) planning criteria inform transmission planning studies with standards informed by NERC planning criteria that include facility ratings, modeling, voltage and reactive power, transmission planning (TPL), and critical infrastructure protection (CIP) standards. Distribution “Area Plans” are being performed where power flow models allow simulation and planning solutions to ensure distribution circuits operate within the thermal limits of the distribution transformers and line conductors, and that acceptable voltage can be maintained everywhere along the circuit.

Both T&D protection and short circuit studies are performed to ensure that circuit breakers, fuses, and protective relays are set appropriately to clear faults at the correct location and that the operation of a protective device impacts the minimum number of customers.

In summary, the studies include, but are not limited to:

- T&D system power flow, transient stability, and protection coordination studies are performed to assess the performance of the T&D system according to industry best practices and standards-based performance criteria

Compliance & Studies

- T&D system deficiencies can be identified, and projects proposed to address thermal, voltage, system frequency, peaking capacity, and reliability issues, driving the continuous improvement of the T&D infrastructure
- Distribution area plans are being performed to identify thermal, voltage, and reliability performance violations and to propose new projects to mitigate these issues. The new projects are expected to be performed in the Distribution Line Rebuild program scope
- Transmission area plans are being performed to identify thermal, voltage, and NERC TPL criteria violations and to propose new projects to mitigate these issues. The new projects are expected to be performed in the Transmission Line Rebuild program scope
- Short circuit and protection coordination studies are being performed to ensure that transmission protection equipment is adequately designed to detect and isolate faulted transmission network sections while only operating the devices needed and thereby minimizing interruption to unaffected customers
- Distribution short circuit and protection coordination studies are being performed to ensure that feeder breakers coordinate with downstream protective devices like reclosers and fuses to isolate only those faulted sections of the distribution circuit, thereby minimizing interruption to unaffected customers

1.2 Renewable and Distributed Energy Resource (DER) Interconnection Studies

Renewable and DER interconnection studies involve a similar scope to the T&D System studies but with a few notable distinctions. Transmission studies are performed specifically for proponents requesting interconnection to the transmission system (for example, renewable tranche request for proposals run by PREB) to determine the scope of interconnection facilities required to integrate the request, as well as system impact studies and facilities studies to determine the scope of grid upgrades required on the nearby transmission system to ensure that the adjacent transmission system facilities can operate within applicable codes and standards like the NERC TPL planning criteria. Distribution renewable integration studies follow applicable codes and standards like Act 17 and others to determine the hosting capacity of distribution feeders and the system impacts from both the individual and aggregate interconnections on a distribution circuit and substation transformer.

Typically, project developers pay for all or a portion of these interconnection studies as detailed in regulations. The net cost of the interconnection studies is reflected in the program budget. Pending changes to regulations can impact how these studies are funded and performed.

In summary, the studies include but are not limited to:

- Analysis of the T&D system with proposed or interconnected generators to evaluate the impact on the thermal, voltage, protection and coordination, and transient stability of the T&D system
- Identification of DER interconnection required safety, system, and reliability upgrades
- Performance of hosting capacity studies and assessments that support publishing of publicly available hosting capacity maps as required by regulation

1.3 T&D System Safety Studies

T&D system safety studies consist of substation grounding and civil site studies to assess the condition and identify necessary mitigations for these critical safety systems. Grounding studies and tests will be conducted to ensure the T&D substations comply with proper grounding requirements for safety purposes, per NESC and Institute of Electrical and Electronics Engineers (IEEE) Std 80-IEEE Guide for

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Safety in Alternating Current (AC) Substation Grounding. Civil site studies will be conducted to ensure the insulating gravel is adequate.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

2.1.1 T&D System Studies

A thorough review of PREPA's T&D System planning and operational practices indicated that industry codes, standards, and best practices were not being followed. Asset data collection, storage, and the calculation of equipment and facility ratings were inadequate. This is being addressed by the adoption of applicable NERC facility ratings standard elements for rating facilities and documenting methodologies for transmission equipment. The construction and maintenance of a digital transmission power flow model was also a gap that is being addressed by adopting applicable NERC modeling standard elements for transmission models.

Study practices were not consistent with applicable Puerto Rico energy law or policies and/or the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement requirements. This is being addressed by the adoption of applicable NERC TPL standard elements for performing steady state and transient stability assessments, and by incorporating reliability criteria into planning and designing upgrades for the transmission grid. The same gaps and issues exist in distribution, and applicable planning criteria and industry best practices guide the development of models, studies, and proposed solutions.

Similarly, the routine review of protection and coordination settings, or area protection and coordination studies were not historically performed. The lack of protective coordination on the T&D system can lead to widespread, cascading outages, as well as increased public safety risk. The potential issues include cascading outages from mis-coordinated devices, slow fault clearing, or failure to clear high impedance faults on downed powerlines. These increase the risk of serious public safety hazards, fire ignitions, and/or catastrophic equipment failure. These are being managed by performing system transmission protection and coordination studies, updating transformer and line impedances and constants in asset records, and validating simulation results with field information.

Initial assessments also revealed the lack of software simulation models for power flow analyses of the transmission system. Utility best practices involve having updated and detailed models for the transmission system, including from the current year through a 10-year planning window. In addition, transient stability models are inadequate to perform dynamic simulations to allow planners to assess changing system dynamics to faults for renewable energy system integration, including system stability, generation, and rotor angle stability, and investigate generation response to grid disturbances.

2.1.2 Renewable and Distributed Energy Resource (DER) Interconnection Studies

Studies and assessments with updated DER forecasts, including small-scale and large-scale solar photovoltaic and virtual power plant resources, are required to evaluate the renewables' impact on the grid. There has been a significant backlog of DER interconnections requiring evaluation, particularly for residential and small commercial systems with capacities less than 25 kW, for which an expedited interconnection process is mandated by law. In response, LUMA is performing expedited interconnection

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evaluations and feeder cluster studies of all feeders with large aggregations of small-scale solar photovoltaic interconnection.

Improving access and visibility, the LUMA website includes a page to enable customers and developers to see hosting capacity at the neighborhood and circuit level to assess the viability of connecting distributed generation systems in their homes or businesses. LUMA continues to work towards enabling the growth of residential and small-scale renewable interconnections while maintaining grid reliability and power quality.

2.1.3 T&D System Safety Studies

The grounding condition at transmission line structures, transmission substations, and distribution substations is poor. As proper grounding at transmission line structures and all substations is critical to protect against shock or electrocution during fault conditions, induced voltages due to overhead electrical circuits, or insulation failure of any electrical equipment along the line or within the substation, this condition can cause a step potential or touch potential hazard to the public and employees. Grounding system deficiencies were also noted for switches and ground mats. Luma's gap assessment, performed before commencement, identified a few key gaps related to grounding:

- Substation fencing is inadequate, with corroded or stolen grounding connections
- Substation ground surfaces were identified as having insufficient gravel as required by applicable industry codes and standards for limiting step potential hazards
- Inadequate grounding exists throughout the transmission grid, though more precise data needs to be obtained

LUMA estimates that approximately 30 percent of the transmission and distribution substation ground grid systems fall in the high-risk category and require safety and hazard mitigation to achieve remediation. Field inspectors will categorize assets according to their health based on estimates of condition (likelihood of failure). Engineers will assess criticality (consequence of failure) and assign an asset score from 0 (worst) to 4 (best). Within 60 days of identification, risk mitigation related to only the highest-risk assets will be incorporated into a remediation plan. These will be assets that exhibit an extreme likelihood of failure, or that already failed and are likely to cause:

- Public or workforce safety risk
- Failure to meet applicable legal requirements or policies, including IEEE 80 and NESC, which includes requirements related to safe and reliable utility designs
- Potential for a widespread outage affecting critical customers and of long duration with potential for associated public safety risk

2.1.4 Additional Gaps Identified Post-Commencement

Additional gaps identified include the ongoing developments in legislative and regulatory proceedings that could modify current regulations on interconnection application and/or study fees. Additionally, as defined in the regulations, distribution upgrades are the responsibility of the developer, but no enforcement mechanisms exist to require payment of grid upgrade charges, while simultaneously, the law mandates interconnection of residential and small commercial systems regardless of grid impact. This is an unacceptable technical outcome that requires policy action for resolution. The risk to public safety of not rectifying this disparity include equipment like customer transformers that could catastrophically fail and lead to hazards like service interruptions, fire and explosion, equipment safety, and poor customer reliability, especially for the non-participating neighbors of DER adopters.

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While not previously identified, the performance of transmission protection and coordination standards, and the performance of distribution protection and coordination standards had to be switched in an execution timeline. The transmission system is the major highway that connects generation from large central-station power plants to customer loads; therefore, technical requirements necessitate transmission short-circuit models and studies to be completed first since they also are the source of short-circuit current to the distribution system. Once completed, the accurate transmission system fault-current contributions are used as the input to distribution protection and coordination studies. These have been updated in the System Remediation Plan timeline graphic.

2.2 Description of Remediated State

2.2.1 T&D System Studies

In the remediated state, industry-standard T&D system planning and operational studies will be performed using appropriate standards, methods, and tools and refreshed consistent with industry standards or regulatory requirements.

2.2.2 Renewable and Distributed Energy Resource (DER) Interconnection Studies

This is not part of the SRP.

2.2.3 T&D System Safety Studies

In the remediated state, transmission line facilities, transmission substations, distribution substations, equipment, fences, gates, and metal objects at these sites will be effectively grounded as required for step-and-touch potential hazards in IEEE standards. Corroded or missing fence grounding will have been replaced. The risk of people encountering inadequately grounded surfaces will have been substantially reduced in alignment with prudent utility practices. Substation site surfaces will also have sufficient insulating gravel to eliminate hazardous step potentials for utility workers by IEEE standards.

In the remediated state, approximately 30% of the transmission line, transmission substation, and distribution substation facilities estimated to be in high-risk condition (0 and 1) relative to grounding will comply with IEEE standards.

2.3 Description of Program Completed State

2.3.1 T&D System Studies

In the completed state, the following will apply beyond that which has already been noted:

- T&D system analysis standards, planning criteria, and industry standard practices are successfully developed and implemented to ensure compliance with codes and regulations and support the electrical system's orderly, cost-effective deployment
- Planning, protection, and control studies are coordinated across LUMA
- Periodic protection coordination review is implemented

2.3.2 Renewable and Distributed Energy Resource (DER) Interconnection Studies

In the completed state, the following will apply beyond that which has already been noted:

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- Interconnection studies are completed consistent with regulatory requirements following accepted industry standards and procedures
- Completed feeder hosting capacity studies for every feeder where distributed generation/DERs can be installed, a hosting capacity map will be available. These maps will be updated as required by regulation
- Publicly available hosting capacity tools and resources will be available for customers and developers

2.3.3 T&D System Safety Studies

In the completed state, the following will apply beyond that which has already been noted:

- Grounding studies are completed: 100% of the transmission and distribution substations have ground grid studies and soil resistivity tests completed to meet the minimum acceptable limits of step-and-touch potentials and substation ground potential rise
- Identified gaps are addressed: Restoration of fencing and ground grid integrity, required gravel to mitigate step potential risks added. LUMA anticipates that 30% of transmission and distribution substation sites will need this work expected to be completed over a 5-year period

2.4 Program Activities

2.4.1 T&D System Studies

- T&D planning criteria development and performance of T&D planning studies:
 - Transmission line, substation, and distribution feeder capacity
 - Acceptable voltage and VAR performance, including voltage unbalance
 - Generator commissioning standard
- Transmission system studies and transmission infrastructure plans to address deficiencies:
 - Transmission system studies follow industry best practices – NERC standards TPL-001, CIP-014, FAC-008 for thermal, voltage, and protection performance, where the system is N-1 secure and designed to withstand a range of common failure modes
 - Flood/storm mitigation
 - Transient stability studies are performed, and issues are mitigated
 - Proposed projects, including undergrounding to address reliability and resilience needs
 - Achieve efficient operation of the transmission system
 - Renewables are integrated into the grid to support decarbonization goals
- System-wide protection coordination in the T&D System
 - Protection and coordination studies are routinely performed
 - Guidelines, validated models, validated coordination, and verified settings data are available
- Distribution coordination and fusing criteria are developed

2.4.2 Renewable and Distributed Energy Resource (DER) Interconnection Studies

- Review and update generator interconnection standards consistent with industry practices and regulatory requirements
- Investigate and employ generation and load forecasting capabilities to enable increased DERs, electric vehicles, demand response, and virtual power plants
- Hosting capacity maps are now available on the LUMA website

Compliance & Studies

2.4.3 T&D System Safety Studies

- Thorough review of current applicable PREPA standards and comparison with industry codes, regulations, and best practices, including IEEE standards
- Identification and prioritization of the changes to current practices as applicable, including the development and implementation of a plan to use the new standards. This will lead to identifying and prioritizing the infrastructure changes that may be required
- Engineering studies as covered in these programs, such as grounding studies
- Correction of grounding at identified substations
- Procurement of required gravel and deployment across facilities
- Completion of grounding studies and identification of issues
- Prioritization and completion of repairs/corrections based on the level of hazard
- Placing of additional gravel occurs within one year of completing the studies for the specific substations

2.4.4 Additional Activities Identified Post-Commencement

Completed a backlog of studies in FY2024 for Rooftop Solar PV Interconnection customers requiring supplemental studies. Going forward these studies will continue on a more regular cadence to keep pace with the application volume. Engaged with PREB and stakeholders to develop alternative routes to supplemental studies, system upgrades required to accommodate DER and manage high volumes of customer interconnection notifications.

2.4.5 FY2025 Activities

The focus for the upcoming fiscal year will be on continuing T&D system studies, renewable and DER integration studies, and continuing safety, grounding and civil site studies and mitigations.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
☒ Prioritize Safety	☒ Promote a safe workplace	Direct
	☒ Implement effective public safety practices	Direct
☒ Improve Customer Satisfaction	☒ Deliver a positive customer experience	Direct
	☒ Increase service reliability	Direct
	☒ Deliver electricity at reasonable prices	Indirect
☒ Operational Excellence	☒ Enable systematic management of the business	Direct
	☐ Pursue project delivery excellence	
	☒ Enable employees to execute operations systematically	Direct
	☒ Effectively Deploy Federal Funding	Direct

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<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Direct
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Direct
	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input checked="" type="checkbox"/> Enable the sustainable energy transformation	Direct
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a safe workplace

The T&D System Safety Studies identify the need for improved grounding, including grounding of substation fencing, and adding gravel will directly impact the shock and electrocution risk caused by the present condition of insufficient grounding inside the substation.

The T&D System Studies inform protection practices to develop protective device settings to maximize their effectiveness, remedy situations where protection equipment cannot effectively detect faults along a line section, and reduce the incident energy at a fault by properly and quickly detecting and clearing faults.

Objective: Implement effective public safety practices

In addition to the previously described safety benefits, the studies in this program also directly impact the public by keeping them safe when they come into contact with fences.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

The Renewable Integration Studies enable transparent, customer-centric tools like the publicly available hosting capacity maps that allow customers and developers to quickly access information on adding renewable generation to their home or business. These studies also enable safe integration of large-scale renewable generation and ensure that resources can operate and contribute to grid reliability.

Objective: Deliver electricity at reasonable prices

T&D System Studies, including area plans, identify existing bottlenecks, grid constraints, unbalance, and voltage violations. Studies allow planners to optimize the grid, reducing losses, improving power quality, and improving the utilization of grid infrastructure and assets. Studies lead to more optimal grid planning, which produces a T&D system that operates more efficiently, with fewer losses and service interruptions, and provides a better value for consumers at a reasonable price.

Objective: Increase service reliability

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T&D System Studies incorporate new industry codes and standards into planning and system design. These standards directly impact the grid's service reliability. For example, the implementation of NERC planning standards ensures that the loss of a single transmission line or a substation element does not result in a consequential load loss. In addition, the protection and coordination studies ensure only those facilities required to clear a fault condition respond, thereby improving service reliability by reducing or eliminating interruption to lines or line segments that are not faulted.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

Renewable Integration Studies and improved DER and load forecasts will enable more effective and proactive grid planning to address deficiencies and maintain grid reliability.

Objective: Enable employees to execute operations systematically

Planners and designers will have better processes and guidelines for planning activities such as constructing new lines, interconnecting new loads and DERs, and enabling decarbonization while maintaining grid reliability.

Ensuring digital grid models reflect the physical condition of the grid allows for improved operability by proactively studying load transfers, conducting system protection and coordination reviews, and identifying and mitigating over- and under-voltage to manage safe and reliable system operations.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Restore damaged grid infrastructure

Asset information is used to build the T&D simulation models, which in turn inform the planning studies and assessments. Hurricane-damaged infrastructure is prone to frequent failure and constitutes a large share of existing out-of-service transmission, distribution, and substation equipment. The models, studies, and assessments performed here are essential to prioritizing and guiding the system rebuild for enhancing Puerto Rico's grid reliability and driving resilient T&D investments that will prevent the devastation experienced in similar future events like Hurricane María or Fiona. Planning and designing equipment to withstand the expected wind speeds from strong storms will provide a major improvement in reliability and resiliency. An outcome of this program's deliverables is to plan and design the grid optimally, in order of priority, and with the infrastructure that has the most significant impact on keeping customer load energized.

Objective: Improve the resilience of vulnerable infrastructure

Repaired grounding and additional gravel will correct problems caused by hurricanes.

The enhanced T&D system research standards and studies will improve resiliency as they are implemented in the field by reducing the frequency and duration of outages.

The enhanced T&D system standards and studies will help restore damaged infrastructure and improve resiliency.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid



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Using state-of-the-art standards and procedures to plan distributed generation, DERs, electric vehicles, energy storage, and virtual power plants

Objective: Enable the digital transformation

Streamlining the planning and information to customers will improve the current processes and shorten timelines to interconnect renewables.

Objective: Enable the sustainable energy transformation

As discussed with Renewable Integration studies, data, and models are essential for the safe, reliable, and efficient integration of both customer small-scale and utility-scale renewable interconnections. This facilitates the sustainable energy transition to a decarbonized and renewable energy supply.

2.6 Program Risks

- LUMA cannot meet applicable legal requirements, policies, or standards
- Improperly protected T&D systems can cause dangerous step and touch potential hazards during electric system faults and other system abnormalities
- There is the risk of injury, possibly fatal, to anyone adjacent to deficient facilities during severe weather and other hazardous conditions
- Substations whose grounding is not corrected can cause an immediate risk to the public and employees under faulty conditions. Induced voltages and phase-to-neutral load imbalances can also create this hazard
- Operating with obsolete and antiquated practices and tools will negatively affect grid planning and operations and delay some improvements in system performance
- There is the risk of potential incidents impacting worker and public safety and damage to equipment and facilities

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$31.2	\$30.9	\$25.7	\$67.5
SRP Expenditures	\$20.1	\$20.1	—	—

3.2 Program Resource Requirements

3.2.1 T&D System Studies

- Internal resources and external contractor resources will conduct extensive engineering and operational studies, prepare documentation, and develop mitigation plans and functional specifications

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- Wide area protection and coordination (Distribution) – We require 15 full-time senior-level employees for the first 2 years of development and 0.5 full-time senior employees on an ongoing basis
- Wide area protection and coordination (Transmission) – We require 16 full-time senior-level employees for years 3 and 4 and 0.5 full-time senior employees on an ongoing basis
- Distribution coordination and fusing criteria – We require one full-time senior-level employee for the first year and 0.5 full-time senior-level employees on an ongoing basis
- Distribution planning criteria: We require eight full-time senior-level employees for the first two years of development and 0.5 full-time senior-level employees on an ongoing basis

3.2.2 T&D System Safety and Environmental Protection Studies

- Internal and external contractor resources will be used to develop the required documentation and studies
- Three engineers (two engineering technicians and one surveyor) will be assigned for each program year (carry out studies and plan the work)
- Both internal and external contractors will be used to make necessary repairs
- There must be enough suitable gravel to fulfill program needs

3.3 Estimating Methods and Assumptions

3.3.1 T&D System Studies

- Estimates for engineering resources were prepared based on previous experience, which includes the development of similar standards for other utilities
- We are currently assuming the use of internal resources. If it becomes necessary to supplement with consultants, the average labor costs may increase

3.3.2 Renewable and Distributed Energy Resource (DER) Interconnection Studies

We anticipate using internal resources but may need to supplement these with consultants, which may increase average costs.

3.3.3 T&D System Safety Studies

For Distribution Sites

- Details of the current state of the grounding systems in the distribution system are unknown due to a lack of recorded information. An evaluation of electrical facilities will be required to determine the actual state before remedial plans can be implemented. The standards to be used are those outlined in IEEE Std 80- IEEE Guide for Safety in AC Substation Grounding which provides industry guidance on best practices for substation grounding

For Transmission Sites

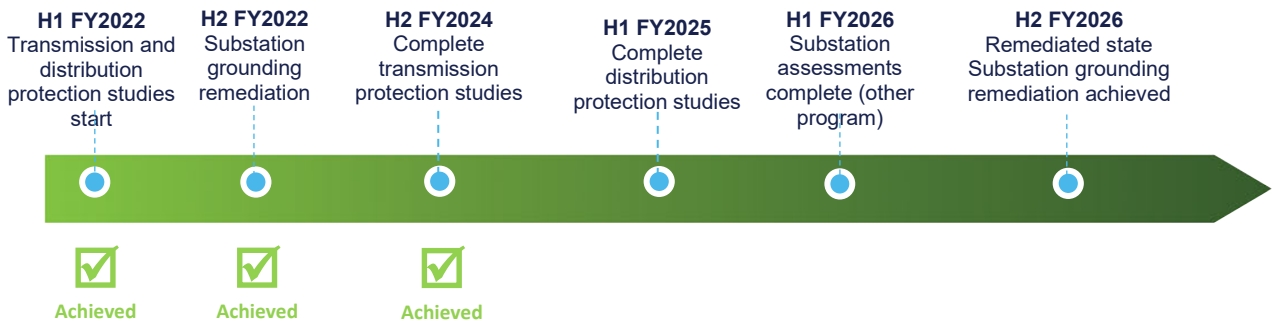
- Estimates are based on previous experience, adjusted for local conditions

3.4 Timeline and Milestones

As discussed previously, earlier versions included distribution protection studies being completed before transmission protection studies. However, practical execution requires transmission protection studies to be completed first since the transmission is the source of both generation and short-circuit current to the

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distribution system. The transmission studies have been completed (in the timeline it was expected to take to complete distribution studies); therefore, the distribution studies are underway and will be completed in the time it was expected to complete all T&D protection studies.



Microgrid, Phasor Measurement Units (PMU), and Battery Energy Storage Installations and Integration

Microgrid, Phasor Measurement Units (PMU), and Battery Energy Storage Installations and Integration

1.0 Program Description

This program includes the activities necessary to install and integrate PMUs, battery storage, and microgrids safely, reliably, and effectively.

The microgrids in this program contain more than one customer (i.e., more than one facility and involve utility-owned infrastructure such as poles, conductors, fault interrupters, and transformers). Federal Government Agencies and other project partners will fund the microgrid projects. This program is not part of the SRP. Building block components such as electricity generation in the microgrid projects included herein will be owned and operated by an entity other than LUMA. Other elements, such as energy storage, may be owned and operated by either LUMA or another entity. For all the microgrid projects included in this program, LUMA plays an active role in developing, designing, and ultimately operating aspects of the microgrid facilities after construction.

LUMA will identify the location of the PMUs, develop the installation procedures, design the communication platforms, and ultimately operate the PMUs after construction. LUMA will own these battery storage facilities and play an active role in developing, designing, and ultimately operating them after construction.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Initial assessments of the electric system in Puerto Rico have identified opportunities to install and integrate microgrid systems to provide reliability and resilience and integrate clean energy generation for electric customers and electric system operation. Microgrids are also an opportunity to demonstrate advanced capabilities that can then be more easily scaled across the grid. Microgrids are an increasingly important element of modern electric systems in the U.S. and globally providing unique capabilities to address myriad issues and provide potential benefits. LUMA is uniquely positioned to partner with entities interested in developing and operating microgrid projects in Puerto Rico due to its technical capabilities, role in managing the electric system on the island, engineering and construction capabilities, and familiarity with funding entity requirements.

PMU technology is instrumental in modernizing and optimizing the operational framework of power systems. By deploying PMUs and integrating their data in a central location, LUMA will have access to real-time, high report rate synchrophasor measurements that can substantially enhance situational



Microgrid, Phasor Measurement Units (PMU), and Battery Energy Storage Installations and Integration

awareness, network management, stability monitoring/control, post-event analysis, and offline studies. The synergistic integration of PMUs with Supervisory Control and Data Acquisition/Energy Management System (SCADA/EMS) represents a pivotal advancement in fortifying power systems. PMU's ability to provide a comprehensive, real-time view of the grid's state, coupled with its wide-area protection and control features, allows for swift detection and mitigation of potential disturbances. When harmoniously combined with EMS, which orchestrates optimal energy management and resource scheduling, the tandem deployment creates a dynamic framework for heightened power system security, reliability, and resilience.

The Battery Energy Storage Systems (BESS) project addresses the need to increase reliability and resiliency, restore system functionality, and mitigate safety hazards by interconnection of BESS at four locations across Puerto Rico. Hurricanes Maria, Irma, and Fiona have been significant reminders that increased grid resiliency is needed to serve Puerto Rico. Over the past five years, the experience of multiple island-wide blackouts has wrought intense impacts on the economic life and communities in the territory. These disasters have made it clear that enhanced redundancy and resiliency are required, including alternatives for providing power, like renewable resources at major load centers to re-energize the grid and facilitate black-start operations. This resiliency will become ever more relevant as natural hazards through major weather events such as hurricanes occur with increased regularity in Puerto Rico and the United States.

2.1.1 Additional Gaps Identified Post Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

This program is not part of the SRP.

2.3 Description of Program Completed State

The program will achieve a completed state when it successfully establishes:

- The installation and integration of microgrids, PMUs, and BESS on the grid are consistent with the requirements established by project developers, owners, funding entities, and LUMA
- Modifications to the planning, design, operation, and infrastructure to effectively install and integrate microgrids, PMUs and BESS onto the grid
- The integration of microgrid, PMUs, and BESS operational information into the control center for those involving portions or entire distribution feeders
- The identification and tracking of benefits of the installations to customers and electric system operations

2.4 Program Activities

- Studies to determine optimal locations for microgrid, PMUs, and battery storage installations from a system-wide perspective

Microgrid, Phasor Measurement Units (PMU), and Battery Energy Storage Installations and Integration

- Studies to determine general interconnection requirements and regulatory engagement for microgrid, PMUs, and battery storage installations
- Engineering studies that include load balancing and management, load flows, safety, and performance grounding, among others, as needed
- Studies to support the installation and integration of specific proposed projects
- The design and engineering of deliverables to support funding requests involving LUMA as approved by LUMA's regulators
- Design, engineering, and procurement of PMUs, BESS, and microgrid controllers
- Installation of approved microgrid, PMU, and BESS projects involving LUMA
- Integration of microgrid, PMUs, and BESS operational information into the control center
- Tracking of LUMA project plans, milestones, and costs
- Tracking performance improvements required for LUMA

2.4.1 Additional Activities Identified Post-Commencement

No additional gaps were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

Complete agreements with project partners and confirm funding availability. Refine the project scopes consistent with approved funding. Start Phase 1 –Planning studies, permits, final engineering design, and drawings for the funded projects.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	<input checked="" type="checkbox"/> Implement effective public safety practices	Indirect
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Direct
	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Indirect
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Indirect
	<input type="checkbox"/> Enable employees to execute operations systematically	

Microgrid, Phasor Measurement Units (PMU), and Battery Energy Storage Installations and Integration

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Direct
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Direct
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Direct
	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input checked="" type="checkbox"/> Enable the sustainable energy transformation	Direct
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMAY GOAL: PRIORITIZE SAFETY

Objective: Implement effective public safety practices

Improves reliability of critical public safety systems and facilities during normal and extreme event conditions by providing back start capability, as well as electric service separate from the grid in localized areas.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

Objective: Increase service reliability

This program enables critical customers and local community facilities to access reliable electric supply by creating standalone electric systems to mitigate power outages and leveraging local energy resources to meet electrical requirements.

Enable black start capability after a power system blackout.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

Objective: Pursue project delivery excellence

Microgrid, PMU, and BESS installations and integration improve the electric system. Developing and deploying the capabilities necessary to perform the installations and integration support the organization's

Microgrid, Phasor Measurement Units (PMU), and Battery Energy Storage Installations and Integration

ability to manage the business systematically and demonstrate LUMA's capacity to execute complex projects.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively deploy federal funding

Objective: Improve resilience of vulnerable infrastructure

Microgrid, PMUs, and BESS installation and integration effectively deploy federal and other funding to meet critical customer and community needs for electricity and support infrastructure resilience to natural disasters that are likely to increase in frequency in Puerto Rico as the Earth's climate changes.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the grid

Objective: Enable the digital transformation

Objective: Enable the sustainable energy transformation

Microgrids, PMUs, and BESS installation and integration are part of the modernization and digitization of the grid to achieve sustainable energy transformation. Implementing the activities included in this program demonstrates Puerto Rico's commitment to achieving these objectives on the island.

2.6 Program Risks

The primary risk of delay or lack of implementation involves the possibility that project funding could become unavailable.

Potential causes of delay include the complexity of microgrid installation and operation, unclear performance objectives, and availability and cost of required equipment and technology.

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$70.0	\$143.3	\$144.1	\$57.4
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

- Distributed energy resource equipment



Microgrid, Phasor Measurement Units (PMU), and Battery Energy Storage Installations and Integration

- Microgrid operation and management systems
- Grid operation visibility and control systems
- Human resources highly in engineering, planning, technology, construction, and operations

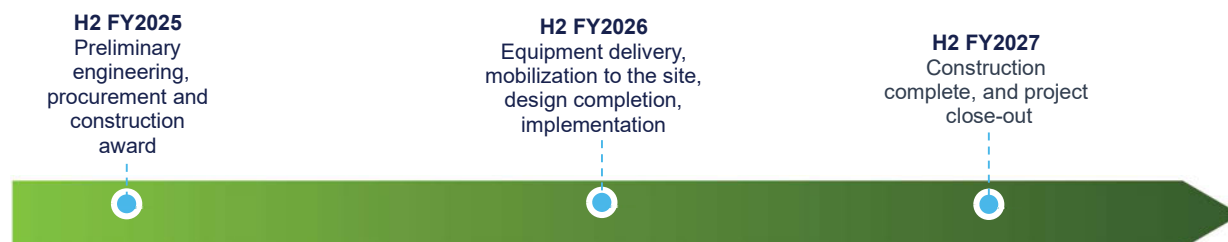
3.3 Estimating Methods and Assumptions

Microgrids, PMUs and BESS projects are unique and require project-specific estimating methodologies and assumptions.

3.4 Timeline and Milestones

These installations are not part of the SRP. The program is comprised of individual microgrid, PMU, and BESS projects that involve multiple stakeholders and have unique characteristics, project scopes, and implementation schedules. The milestones and timeline provided here represent the plans for the initial set of projects. They will likely evolve as the program matures.

Here are the proposed milestones and timelines for the first proposed set of projects.



HSEQ & Technical Training

1.0 Program Description

This program provides health, safety, environment, and quality (HSEQ) and technical training to field personnel. During the initial stage, the LUMA College¹ will provide basic technical training, and internal subject matter experts and external providers will conduct HSEQ training. Personnel will gain technical skills training to become fully qualified to complete their work safely and efficiently.

Subsequent enhanced technical training will be provided through LUMA College. Enhanced training modules will be developed and administered based on operational needs for the type of technology being implemented but could include areas such as the operation of smart grids, work on energized lines (e.g., hotline and barehand programs), splicing of conductors and helicopter work for transmission repairs.

This program will help instill a new safety culture across the Transmission and Distribution (T&D) System, thus reducing safety incidents, bringing the T&D System into compliance with contract standards (including, but not limited to, Occupational Safety and Health Administration (OSHA) and broader industry standards), and improving overall employee efficiency.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Gap assessments have uncovered the following:

- HSEQ training provided to employees is minimal. Many current safety processes are not OSHA-compliant
- There is a need to improve the overall safety culture, with existing practices leading to many safety incidents that could have been avoided
- Expectations and requirements for employees are unclear, contributing to a lack of accountability
- Currently, a lack of workforce development measures contributes toward non-compliance with industry standards
- The skilled labor workforce (line workers, fleet mechanics, power system electricians, techs, etc.) is undertrained
- A framework of technical training standards does not currently exist, including a lack of apprentice programs, competency assessment programs, and in-house training experts:
 - No line worker apprenticeship program exists, generally a four-year program with 8,000 hours that is registered with the US Department of Labor
 - Since basic technical training is lacking, employees do not have the prerequisites for enhanced technical training, and such programs do not currently exist
- No continuing education is completed

¹ LUMA College for Technical Training, LLC will be a separate entity from LUMA but will work in close alignment with LUMA.

HSEQ & Technical Training

- Current practices may not meet requirements, policies, or standards under Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement, Act 57-2014, as amended, or Act 17-2019, and Prudent Utility Practices

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

The primary characteristic of the remediated state is that all field personnel will have received basic HSEQ and technical training to be able to perform their respective functions safely and effectively. Additionally, the following will apply:

- Field practices across LUMA will comply with OSHA standards
- An Apprentice 1 program will have been established and registered with US Department of Labor. All line workers will actively participate in it or have received the equivalent journey level by grandfathering. This program would include entry-level training, and the program would be filled on a regular basis to replace the turnover workforce
- Initial onboarding to LUMA safety and work practices for all skilled trade employees will occur

2.3 Description of Program Completed State

In addition to the characteristics noted for the remediated state, the completed state will include the following characteristics:

- Safe work processes are in place, and employees are trained and execute work safely and efficiently
- Employees are more engaged and safety conscious, resulting in a reduction in incidents and OSHA recordable rates, meeting performance metric targets
- Accurate data is reported, analyzed, and used to identify leading indicators and support ongoing HSEQ campaigns
- Basic technical training will be administered continuously across field employees
- LUMA would be consistently filling pre-apprentice, apprentice, and advanced/continuing education and training, with all line workers and field personnel continuing to be active in or having completed an apprenticeship
- LUMA would have successfully implemented continuing education to meet regulatory requirements and improve workforce safety and efficiency
- Enhanced technical training programs will be available for employees continuously. The administration of these programs will be agile, meaning that the pieces of training can be upgraded, modified, and tailored to employee functions, technology requirements, and the organization's needs as new technologies are added and implemented. Potential training modules include the operation of smart grids, control/operation of advanced metering infrastructure (AMI), splicing of conductors, energized line operations (e.g., hotline and barehand programs), and helicopter work for transmission. Most of these programs will be administered through the LUMA College and supplemented by subject matter experts (SMEs) based on training needs

HSEQ & Technical Training

2.4 Program Activities

- Initially establish a process to select employees for priority HSEQ training and subsequently train those employees
- Ensure work processes align with training objectives (Complete)
- Implement documented work processes
- Develop an HSEQ standard training curriculum, including criteria, objectives, and outcomes that meet industry standards and best practices
- Training of employees according to the new HSEQ training curriculum
- Determination of internal groups' HSEQ and technical training needs and expectations as determined by working closely with them
- Identify, prioritize, and complete onboarding training (year one) (Complete)
- Consistently fill pre-apprentice program by recruitment throughout Puerto Rico (Complete)
- Develop, register, and operate US Department of Labor apprenticeship (Complete)
- Register and complete apprenticeships for line workers (Complete)
- Prioritize training with internal campaigns
- Commit internal resources toward refresher training and continuing education; run programs continuously
- Develop coursework for enhanced technical training across LUMA functions, including technical services, vegetation management, fleet, and material management
- Develop specific training programs for enhanced technical training for line workers and other field personnel
- Administer both basic and enhanced technical training on an ongoing basis for employees based on their functional requirements

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The upcoming fiscal year will prioritize enhancing compliance training and onboarding for LUMA employees and contractors, leveraging innovative instructional technologies and techniques to boost engagement, knowledge retention, and adherence to LUMA safety standards. This approach will cultivate a safer and more efficient work environment for everyone.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
☒ Prioritize Safety	☒ Promote a safe workplace	Direct
	☒ Implement effective public safety practices	Indirect
☒ Improve Customer Satisfaction	☒ Deliver a positive customer experience	Direct
	☒ Increase service reliability	Indirect
	☐ Deliver electricity at reasonable prices	



HSEQ & Technical Training

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Indirect
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Direct
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively Deploy Federal Funding	
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Indirect
	<input checked="" type="checkbox"/> Improve resilience of vulnerable infrastructure	Indirect
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

Objective: Implement Effective Public Safety Practices

Basic HSEQ training across the workforce leads to a safer workplace. Improving safety culture reduces incidents and reportable claims to OSHA.

Technical training programs will increase safe work processes and efficiency by upskilling all skilled labor employees through delivering training focused on LUMA employees' knowledge, skills, and behaviors. Courses include grounding, bucket truck rescue, OSHA, and others. A better-trained workforce will also allow for more timely identification of public safety issues.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

Objective: Increase Service Reliability

This program will enable employees to respond to outages, and customer needs more efficiently, delivering both better service and an improved customer experience.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Objective: Pursue Project Delivery Excellence



HSEQ & Technical Training

Objective: Enable Employees to Execute Operations Systematically

Properly trained employees will be able to deliver higher-quality project work more systematically. Better-trained employees through this program will also reduce downtime and overtime requirements, increase employee productivity, and reduce errors and rework. Training programs will further help improve work quality, which will translate into better project delivery.

Increasing data tracking and reporting on HSEQ training will increase the accuracy of performance metrics. Clarifying training expectations and requirements will increase accountability and contribute to better causal analysis and follow-up. Improving workforce development will allow LUMA to comply with industry standards.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Restore Damaged Grid Infrastructure

Objective: Improve Resilience of Vulnerable Infrastructure

Better trained employees will help to restore damaged infrastructure and allow for greater resilience in the event of an emergency.

2.6 Program Risks

An unskilled workforce is a danger to itself and others working near them. Providing training for all employees, from novice to skilled personnel, is essential to ensure the safety of employees and the general public. With current health and safety metrics far worse than industry averages (nine times worse than average utility standards) and the lack of basic HSEQ training being a primary contributor to this situation, continuing with the status quo poses a major safety risk likely to result in serious injury or fatality. Reducing safety incidents and meeting performance targets will be difficult at best without a trained and competent workforce.

Correct training will allow LUMA employees to be better prepared to respond to outages and make the necessary repairs to restore service to customers quicker than in past events. Without this program, employees could remain underprepared for such an emergency.

Additionally, statutory and OSHA regulatory compliance may be adversely affected.

Lack of training would also prevent LUMA and its employees from making much-needed customer service gains, and customers would continue to see extended wait times for outages. Not pursuing a strong training program will also increase service costs due to employee downtime and contractor costs.

There is also a substantial downside risk of failing to pursue enhanced technical training (i.e., top quartile) programs. As new technologies are implemented throughout the LUMA system, employee needs will continue to evolve, and enhanced training will be required to adapt.

HSEQ & Technical Training

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	—	—	—	—
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

Employees will use their personal tools, equipment, and Personal Protective Equipment (PPE) for training. Training managers and coordinators (internal and external) will administer training programs. LUMA College will provide technical training. Particular training modules will require trainers, writers, consultants, and training-specific materials, props, and technologies. Specific training modules may have dedicated location requirements, with overnight stays and travel depending on the training location.

3.3 Estimating Methods and Assumptions

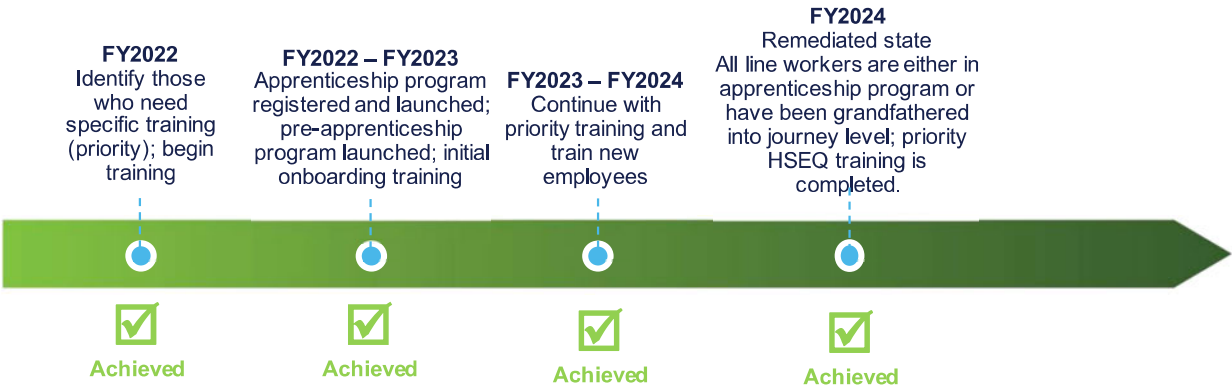
These programs and estimates were developed by comparing LUMA's completed future state to a typical US utility training program. Approximately 2,000 employees need HSEQ and technical training, and all remaining LUMA employees will require a basic level of training and orientation. Costs were updated based on operational data for FY2022.

Based on costs at other campuses, these estimates were developed using the number of LUMA employees, the LUMA College's expected capacity, and typical costs for training services at parent companies and outside vendor costs. Estimates were also informed by applicable standards and codes, including OSHA, the Institute of Electrical and Electronics Engineers, prudent utility industry standards, manufacturer recommendations, and planned LUMA safety practices, programs, and work methods. Training frequency was based on industry standards or regulatory requirements.

HSEQ and technical training requirements may change over time, and shifting priorities could potentially result in the development or removal of course content.

HSEQ & Technical Training

3.4 Timeline and Milestones



Asset Data Integrity

Asset Data Integrity

1.0 Program Description

This program aims to ensure the integrity of key asset data, focusing on Geospatial Information Systems (GIS) and computerized maintenance management systems (CMMS). The program works with stakeholders to identify data requirements, determine processes and templates for storing data, and update asset data systems with data gathered from asset assessments. These systems and the integrity of their information are fundamental for accurate modeling, operations, and planning of the Transmission and Distribution (T&D) System.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

There are significant gaps in PREPA's existing geographic information system (GIS) and associated processes. A large backlog of work stretching back a decade has not been captured in the GIS. The accuracy of some of the existing GIS assets and connectivity data is in question. This negatively affects the function of downstream systems that depend on this data, such as outage tracking, planning models, protection coordination models, reporting, and mapping requirements. The GIS database is the key data source for all other modeling programs. Without accurate data, the ability to effectively plan, coordinate, and protect the transmission and distribution system is compromised. Key processes, automation, and integrations are not in place, greatly reducing work efficiency. The lack of accurate GIS data and maps can result in incorrect mainline switching or improper identification of circuits leading to safety issues.

PREPA currently lacks a CMMS for tracking assets and maintenance. The company has performed this through manual informal processes and an unreliable MS Access database with outdated information. Asset practices are running to failure with no systems in place to enable preventive maintenance programs. There is no evidence of asset costing being tracked.

Overall, there is no central repository to manage assets and compatible units, and the data in the existing repositories are not considered reliable.

Act 17-2019, as amended, requires the modernization of the T&D System to be achieved through specific improvements, which will require obtaining system data through an effective and accurate GIS system. This, in turn, provides information for accurate modeling, operation, and planning. Additionally, safe operation of the T&D System is not possible without a fully functioning GIS system. The GIS system will ensure that the correct asset and connectivity data will be available for accurate system analysis, safe operation, and maintenance of the grid.

2.1.1 Additional Gaps Identified Post-Commencement

The post-commencement analysis identified additional gaps:

Asset Data Integrity

- Incomplete documentation of projects in the backlog list requires additional asset verification work in the field to verify the projects in question
- Initial asset verification work identified greater data discrepancies than initially anticipated, including entire urbanizations missing from GIS

While these gaps are identified, and mitigation to address them is necessary, proper funding mechanisms still need to be performed to achieve this as part of the remediated state.

2.2 Description of Remediated State

This program will follow the requirements set forth in the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement, Act 17, and Act 57. The remediated state will be reached when a CMMS has been implemented and when GIS and CMMS data have been validated and entered for the transmission system and the priority distribution circuits as determined by the assessment work. This includes all critical asset information, including asset identifiers, switching, line length, conductor size, structure type, etc., which is required for accurate modeling, operation, and planning of the T&D System.

2.3 Description of Program Completed State

The program's completed state will be reached when key standards, processes, templates, and tools have been implemented and when one hundred percent of the validated data from switchable assets and main lines have been entered into the GIS and CMMS. This includes all critical asset information, including asset identifiers, line length, conductor size, structure type, etc. This information is required for accurate modeling, operations, and planning for the T&D System.

2.4 Program Activities

- The configuration of an enterprise asset management solution for transmission and distribution assets – leverage a phased approach to implementation based on asset criticality and then extend to other asset categories such as substations and telecom
- The development and tracking of asset management programs to enable the transition from run-to-failure to preventive maintenance based on asset criticality
- Working with stakeholders of downstream systems to determine data requirements for the GIS and CMMS
- The development of processes, templates, and tools for verifying and storing this data in alignment with the GIS and CMMS plan
- The entry of all GIS and asset data gathered in the line and pole assessment programs and the rebuilding and distribution automation programs into the GIS and CMMS using these new processes, templates, and tools
- Integrating various GIS systems to ensure the integrity of asset data in the GIS and asset information systems of record

2.4.1 Additional Activities Identified Post-Commencement

- The development of processes, templates, and tools for engineering design

All assets, including those in the SRP, will go into a planning process to achieve the objectives defined in LUMA's Recovery and Transformation Framework. The system will be field-verified for downstream

Asset Data Integrity

modeling required for the execution of other programs. The most severe safety risks will be flagged at the assessment time for immediate mitigation and pushed to the top of the priority list.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be split into multiple work streams:

- The verification of assets and associated data for downstream modeling required for the execution of other programs
- The continued execution of solution design through initialization of asset data into CMMS and execution of integration between CMMS, GIS, and other trusted data sources
- The configuration of substation and telecom data and alignment of asset lifecycle within CMMS and GIS systems

2.5 Program Benefits

Primary Goals	Objectives	Direct Or Indirect Impact
☒ Prioritize Safety	☒ Promote a safe workplace	Direct
	☐ Implement effective public safety practices	
☒ Improve Customer Satisfaction	☒ Deliver a positive customer experience	Indirect
	☒ Increase service reliability	Indirect
	☐ Deliver electricity at reasonable prices	
☒ Operational Excellence	☒ Enable systematic management of the business	Direct
	☒ Pursue project delivery excellence	Direct
	☒ Enable employees to execute operations systematically	Direct
☒ System Rebuild and Resiliency	☒ Effectively Deploy Federal Funding	Indirect
	☐ Restore damaged grid infrastructure	
	☒ Improve the resilience of vulnerable infrastructure	Indirect
	☐ Modernizing the grid	

Asset Data Integrity

Primary Goals	Objectives	Direct Or Indirect Impact
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a safe workplace

This program directly promotes a safe workplace through the accurate representation of T&D System elements and their locations.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

Since up-to-date GIS data is a key input to public-facing applications, this helps ensure a more complete/accurate view to the public. Additionally, better GIS data enables employees to respond more quickly to requirements, thereby improving service and, as a result, the customer experience.

Objective: Increase service reliability

This program improves service reliability by accurately identifying assets that serve customers, thereby speeding up the service restoration process.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

Accurate GIS data results in accurate system representations in the EMS, the OMS, the ADMS, (as planned), and system planning models designed to improve the operation, service restoration, maintenance, and planning processes. It also directly enhances operational excellence by allowing operations to be executed systematically.

Accurate CMMS data allows for the systematic management of assets.

Objective: Pursue project delivery quality

Project delivery quality is also enhanced because having accurate data is key to ensuring that projects consider all relevant factors during planning and design. Asset data is a key input into various analytics and reports that support business decisions.

Objective: Enable employees to execute operations systematically

Asset Data Integrity

The GIS connectivity model is a key input into employee applications, such as an up-to-date outage map. As such, this allows employees to execute operations more systematically.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively deploy federal funding

Accurate GIS data results in accurate system representations in the EMS, the OMS, the ADMS, (as planned), and system planning models, which are used to plan and design the federally funded distribution, transmission, and substation rebuild efforts across the island.

A fully functional and accurate CMMS enables the systematic management of assets across the entirety of the asset lifecycle, beginning with the design of new assets as part of the federally funded rebuild efforts.

Objective: Improve resilience of vulnerable infrastructure

The configuration of CMMS and GIS with verified asset data is foundational for a resilient electrical infrastructure because it enables an efficient and timely response to future disasters and improves the effectiveness of the current and future rebuild.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Enable the digital transformation

Accurate GIS with fully functional integrations to linked applications enables the utilization of real-time GIS data throughout the organization and protects the integrity of the asset location data.

A fully functional and accurate CMMS with integrations to other applications enables a fully digital asset lifecycle through engineering design and construction as assets are constructed, retired, and salvaged.

2.6 Program Risks

The main risk of not utilizing accurate and flexible GIS and CMMS systems is that a lack of data negatively impacts the planning, operation, maintenance, and service restoration processes of the whole T&D System, which affects its overall reliability. Not implementing GIS and CMMS standards and data verification impacts multiple other programs, which may not function correctly without GIS data.

Without this program, assets will continue to be maintained ad hoc and manually, limiting LUMA's ability to monitor, maintain, and replace assets prudently and efficiently. These manual processes will negatively affect performance levels and increase the risk of human error. This will directly affect LUMA's reputation in the marketplace through its inability to respond to customer requests promptly and appropriately.

An additional secondary risk is that the continued use of non-supported software and methods increases the T&D system's vulnerability to security breaches and prolonged outages.

Asset Data Integrity

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$26.2	\$27.3	\$6.9	\$5.9
SRP Expenditures	\$24.9	\$26.7	\$6.2	\$3.7

3.2 Program Resource Requirements

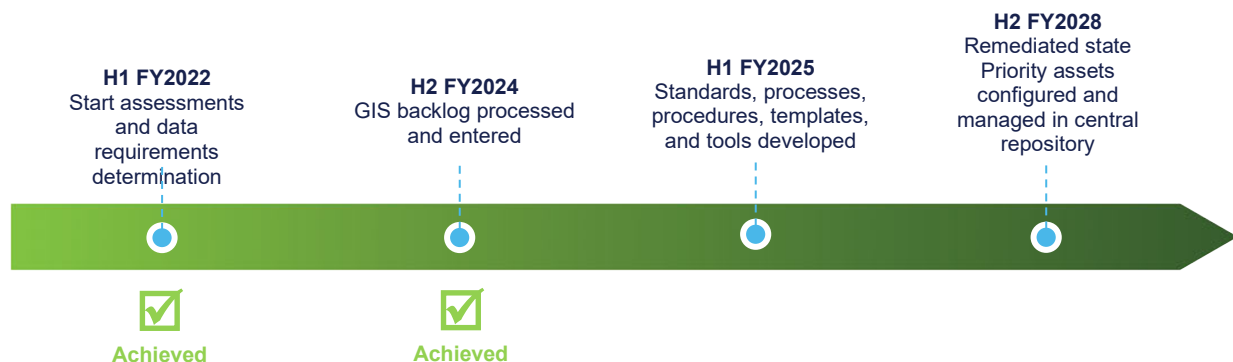
- Adequate resources to complete the fieldwork, back-office analysis will be necessary and likely require a combination of internal and contractor resources
- Continued IT/OT lifecycle funding (beyond what is included in the funding table above) to upgrade/replace systems as they come to the end-of-life

3.3 Estimating Methods and Assumptions

Estimates were based on SRP items and key prerequisites in starting years. Because of a lack of existing data, these estimates are subject to change as data is collected and recorded.

- The total number of poles/structures and manholes was obtained from current GIS reporting, including stand-alone streetlights and transmission and distribution structures
- Additional time will presumably be required in the first year to complete critical activities, such as developing standards, processes, tools, training, etc.
- The costs associated with implementing asset management and work order management processes and tools are estimated using the IBM Project Cost Estimator for implementing a Gartner-recognized and industry-leading Information Technology Service Management (ITSM) solution. Pricing assumptions are based on implementing Asset Suite for a medium to large-sized enterprise as this solution is currently implemented at PREPA to support the generation of assets and work order management

3.4 Timeline and Milestones



Tools Repair & Management

Tools Repair & Management

1.0 Program Description

This program focuses on personal protective equipment (PPE) and tooling plans to address safety needs and implement a better PPE and tools management system. In addition to acquiring the needed PPE and tools, this program includes implementing a centralized tool and equipment crib system to improve inventory management, tool maintenance, tool supply, and coordination and oversight of tool and equipment use.

2.0 Program Rationale

2.1 Current State and Identified Gaps

LUMA is responsible for the safe operation of the Puerto Rico Transmission and Distribution (T&D) Electrical System, including the safety of employees and the general public. Through our gap assessment and site observations, we identified that PREPA's current T&D Operations tooling system is well below the Occupational Safety and Health Administration's (OSHA) and Institute of Electrical and Electronics Engineers' (IEEE) prudent utility safety standards. This wide gap leaves employees and the public at risk of injury or fatality. PREPA lacks an adequate tool maintenance program and a dielectric insulated tool program, an essential requirement to be OSHA compliant and keep employees safe. PPE and tools are a foundation for all workers in safety-sensitive positions, and current PPE and tools are insufficient to keep LUMA employees safe.

LUMA's new T&D Operations organization will consist of approximately 1,100 field-based employees who require safe PPE and tooling for about 80 fleet units. Some examples of PPE and tools are fire-retardant clothing, rubber gloves, potential indicators, metering testing equipment, live line sticks, and rubber goods, ground chains, jacks, grips, tampers, and jackhammers.

LUMA plans to purchase all the highest safety priority PPE and tools to ensure the employees can work safely and follow all OSHA rules as early as possible in the commencement period and then every year after, targeting worn-out / failed tools or lower priority tools.

PREPA operates its dielectric testing facility to provide dielectric testing of rubber gloves, rubber goods, live line tooling, and fleet equipment (booms). This department currently operates well below the needs of the organization due to factors such as the following:

- Lack of adequate employee training and testing equipment
- Inadequate size of facilities
- Inadequate processes, practices, and inventory

In August 2020, the recertification of the dielectric testing equipment expired. This prevented the recertification of all rubber gloves throughout PREPA. Personnel could not work on the system until the situation was rectified. This situation led to increased costs, negatively affected employee morale, and more customer outages, all due to an inability to carry out planned maintenance.



Tools Repair & Management

PREPA uses significant tools and fleet resources for capital, operations, and maintenance programs. Currently, field personnel in Puerto Rico's workgroups are responsible for the initial supply, ongoing maintenance, and testing of their tools. Each workgroup also manages a significant inventory of equipment with specialized items required to perform specific work on an ad hoc basis but are only sometimes used in day-to-day activities.

The lack of a department/function to oversee and manage the tools department is a leading cause of current inefficiencies, added costs, and inability to respond to customer needs. Due to a lack of inventory management and control, tools are frequently lost, stolen, misplaced, hoarded, and poorly maintained.

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

This PPE and tooling plan will address the major safety deficiencies and OSHA standards non-compliance issues identified in the gap and site assessments. Included are funds to replace aged and purchase missing PPE and tooling that will allow LUMA to meet Prudent Utility Practice and OSHA standards.

In the remediated state, T&D field employees will have the necessary PPE and tools that comply with LUMA's and OSHA's standards to operate the complex and hazardous electrical system safely. This includes conforming with all applicable laws and regulations and regularly inspecting, testing, and completing annual certifications on tools that will keep employees safe and increase the life expectancy of those tools. This will reduce the need for replacements, lowering operating costs. The PPE and tools will also be critical for LUMA to respond quickly to large-scale events or disasters affecting the electrical utility system.

As part of the remediated phase, LUMA will implement a dielectric testing program for testable tools to ensure all rubber gloves, rubber goods, live line tools, and fleet equipment (booms) will be ready and available for LUMA teams. This program will include a requirement to migrate the physical testing of these goods to a third-party vendor.

2.3 Description of Program Completed State

In addition to the aspects of the remediated state above, the completed phase will include the implementation of the tool inventory and tracking management program, which proposes implementing a centralized tool and equipment crib system to improve:

- Management of inventory levels
- Tool maintenance programs
- Tool supply and coordination
- Use of specific tools and equipment

This program will develop a tool and equipment management system that promotes cost efficiencies by securing competitive pricing for tool purchase, delivery, maintenance, refurbishment, and testing. It will also implement new initiatives, such as barcode scanning and inventory management systems (IMS), to track these items and their maintenance programs. The program will introduce efficiency and improve



Tools Repair & Management

utilization factors for common-use items by implementing a centralized system to manage inventory levels and maintenance programs for tools and equipment.

The first phase of implementation will focus on inventorying all tools and prioritizing the purchase of required tooling.

The introduction of a tool inventory management system will allow for the following:

- 10% improvement to General Plan and Elevation (GP&E, i.e., capital) budgets
- Improved use of high-criticality tools
- Improved visibility of low-use tools
- Reallocation of some tasks from field workgroups to the dedicated tool and equipment crib
- Reduced cost for testing (~50% reduction)
- Development of a purchasing agreement for new tools
- Tracking of assets using a barcode scanning program
- Regular pickups and deliveries to the field locations

The introduction of an equipment inventory management system will allow for the following:

- Improved visibility and use of specialized equipment (low-use equipment)
- Coordination and dispatch of equipment to field locations as required
- Single point of contact with LUMA Fleet Services for specialty equipment maintenance

2.4 Program Activities

- Complete a current employee PPE inventory and health assessment (Complete)
- Complete a current equipment tool inventory and health assessment (Complete)
- Compare current PPE and tool inventory against LUMA's new requirements (Complete)
- Prioritize damaged or missing PPE and tools (Complete)
- Implement a dielectric test program on all dielectric tools and equipment. Immediately test all tools not tested to LUMA's standard required timelines (Complete)
- As per OSHA, ensure all rated equipment meets manufacturers' recommendations
- Purchase all high-priority PPE and equipment necessary for the employee to work safely
- Replace worn-out or missing equipment to increase further employee safety and increase worker productivity (Complete)
- Implement a training program to operate and maintain PPE and tools safely
- Develop tool work methods
- Track and inventory all tools
- Purchase fire-retardant clothing uniforms for all field-based employees (Complete)
 - Purchase of a tool management program (Complete)
 - Inventorying of all tools, which includes barcoding certain types of equipment
 - Completing an analysis of current and future work to determine tooling needs versus the number of trained personnel, followed by comparing this to industry best practices
 - Setting up and hiring a team to manage the program (Complete)
 - Competitively tendering a contract for a third-party organization to complete all required dielectric testing needed for LUMA (Complete)
 - Development of a required list of dielectric tools for annual certification programs and purchasing them (Complete)

Tools Repair & Management

- Relocation of specialized/less frequently used tools and equipment to central locations for maintenance, storage, and redeployment (Complete)
- Set up vendors for high-volume / low-cost tools
- Development of efficiency metrics such as the amount of deployment, transportation, lost or missing and damaged tools (including the cost of repair)
- Develop an annual tools maintenance, replacement, and additions budget

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Continue to acquire live substation, lines tools, and testing equipment
- Implement tool management to support tracking, maintenance, calibration, and deployment parallel to the tool crib launch
- Complete dielectric testing of all appropriate tools and equipment
- Implement standardized equipment inventories by crew and work type

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Direct
	<input checked="" type="checkbox"/> Increase service reliability	Indirect
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Indirect
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Direct
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Indirect
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Indirect
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Direct

Tools Repair & Management

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

- Acquiring safe and proper employee PPE and tools will enable compliance with laws and regulations and LUMA's and OSHA's rules
- This program will reduce the risk of incidents or fatalities to employees
- Using the correct tools will increase proper worker ergonomics and reduce numerous minor injuries
- By using appropriate PPE (e.g., fire-retardant clothing, fall arrest, rubber cover-up, among others), employees are better protected
- Dielectric tools and equipment tested to determine they meet LUMA's dielectric testing protocols will help improve employee safety

Objective: Implement Effective Public Safety Practices

- Appropriate PPE and tooling will allow employees to respond quickly and efficiently to downed lines, traffic accidents, etc.
- The correct PPE and tools will allow LUMA to be better prepared for a safer response to future emergencies or disasters

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

- Improved customer service helps improve the LUMA brand – the tool crib can dispatch required tools to personnel upon request, allowing them to complete customer jobs faster
- Reduction of third-party damage due to climbing on customer's property
- Increased positive visibility through appropriate PPE, uniforms, and employees not borrowing customers' tools to complete work

Objective: Increase Service Reliability

- Better tools lead to better, longer-lasting repairs, reducing faults and improving service reliability
- Having the correct tools at the right time will allow employees to deal with situations such as outages more quickly
- In an emergency, disaster, or catastrophic event, correct tooling will aid the LUMA employees to be better prepared to respond to outages and make the necessary repairs to restore the customers quicker than in past events



Tools Repair & Management

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

- Decreased O&M maintenance budget as tools are maintained in a controlled environment
- Decreased amount of stranded tool assets (every location has a specific tool that is only used a few times a year)
- Less downtime for employees due to inadequately operating tools

Objective: Pursue Project Delivery Excellence

- Decreased capex tooling budget for replacements and end-of-life equipment

Objective: Enable Employees to Execute Operations Systematically

- Reduced overtime due to availability of tools, employees having the right tools with them, or being able to find them quickly
- Increased productivity due to tools working better; reduced time wastage due to lack of correct tooling or timely certification of equipment life

PRIMARY GOAL: SYSTEM REBUILD & RESILIENCY

Objective: Effectively Deploy Federal Funding

- An added benefit of correct and available tooling is their deployment on projects that use federal funding
- Increased productivity of employees, reduced time wastage, and work done more effectively improve the efficiency with which funding is deployed by reducing waste and inefficiencies

Objective: Restore Damaged Grid Infrastructure

The adequate and approved live line PPE and available tooling will also help decrease the number of planned outages customers will face as crews repair the system

Objective: Improve the Resilience of Vulnerable Infrastructure

Correct and available tooling will assist LUMA in responding to outages quicker and making the necessary repairs, lowering SAIDI

2.6 Program Risks

There is a substantial downside risk to failing to pursue this program. Employees will not have the PPE and tools to operate and maintain the electrical system safely. LUMA will not be able to comply with current laws and OSHA regulations. In this scenario, LUMA anticipates the following specific outcomes:

- Increased customer wait times for outage resolutions
- Increased O&M costs due to employee downtime and lack of repairs
- Increased cost of contractors due to higher demand
- Dielectric tools not being tested as per LUMA's dielectric testing practice and OSHA's rules
- Purchasing of duplicate tooling due to inadequate inventory tracking

Tools Repair & Management

- Increased failure of specialized tools due to lack of training and poor maintenance

Furthermore, lacking safe and correct PPE and tooling will hinder LUMA's emergency response readiness. Therefore, in a large-scale event, the time to make critical repairs to the system will not improve.

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$6.0	\$7.0	\$9.2	\$38.5
SRP Expenditures	\$6.0	—	—	—

3.2 Program Resource Requirements

Funding to purchase tools and conduct the necessary training.

3.3 Estimating Methods and Assumptions

- Applicable Standards and Codes:
 - OSHA
 - IEEE
 - LUMA's Safety Practices, Programs, Work Methods
 - Prudent Utility Industry standards
 - Labor law
 - State Law
 - Manufactures recommendations
- In-Service Date:
 - Two weeks after commencement, then prioritized spend over the calendar year. Then annually, at the beginning of the fiscal year.
- Program Standards or Requirements:
 - LUMA's safety standards
 - LUMA's Safety Management Systems
 - LUMA's work methods
 - LUMA's training programs
- Contract or internal resources:
 - Approximately 1,134 field/technical employees
 - 800 pieces of the fleet that will need to be properly tooled
- Historical program information:
 - PREPA tool inventory (waiting on RFI)
- Support from scheduling and estimating

Tools Repair & Management

3.4 Timeline and Milestones



Project Management Software & Tools

Project Management Software & Tools

1.0 Program Description

LUMA will introduce new specialized project management, schedule management, and project analysis software to ensure the efficient execution of capital projects. This includes setting up an information technology (IT)-based project, program and schedule management tool, a cost management and project analysis/reporting tool, a tool for workforce planning, scheduling, resource leveling and resource management and a tool to develop, manage and control PMO processes and flowcharts.

2.0 Program Rationale

2.1 Current State and Identified Gaps

The PREPA Project Management Office (PMO) currently uses Excel spreadsheets for scheduling and cost monitoring. This process is as such very basic, with an inadequate tool to conduct project management or construction management work.

The current Excel tool the PREPA PMO uses would be unable to manage the large-scale project management work, construction, and commissioning functions of the large-scale capital program outlay for the upgrading the T&D infrastructure.

NEED/ISSUE

Most major utilities follow Project Management Institute (PMI) standards. An IT-based project management tool is standard practice for establishing schedule-based work breakdown structures (WBSs), developing project schedules, monitoring schedules, and evaluating and forecasting project progress.

This tool is also used for earned value management and analysis. This is done by establishing a WBS, establishing a cost baseline, and then tracking and evaluating the progress of the project. This allows monitoring of how well a project's actual expenditure is following its budget. The tool can evaluate corrective actions required for the project schedule and task budget in order to adhere to the project plan as closely as possible.

Project management IT tools (e.g., MS Project/Primavera P6, Unifier/Power BI) are invaluable as well as being industry standard practice. Such tools are critical to managing large and complex capital project programs of the type and scale that LUMA will be handling.

MAJOR GAPS

- The PREPA PMO uses Excel for project scheduling and management, which is poorly equipped to manage large and complex capital programs
- The PREPA PMO has not developed any WBS and does not have any of the appropriate IT tools to develop this for project scheduling

Project Management Software & Tools

- PREPA PMO does not prepare cost and schedule baselines (integral parts of industry-standard project plans) against which project progress can be monitored and controlled. This can be easily done with IT-based specialized project management tools rather than a general tool like Excel
- PREPA PMO does not have schedule controllers, which implies the need for scheduling tools such as MS Project or Primavera P6 was missed
- Under the current PREPA PMO process, the project manager uses Excel to develop rudimentary schedules and track progress manually. This method of scheduling and tracking is too cumbersome for large-scale projects and program management, for which dedicated schedulers are needed
- PREPA PMO does not use any project management analysis IT software tools; for example, Power BI, or Unifier, which are used to generate project analysis and project key performance indicator dashboards and document current project status and forecasts
- PREPA PMO currently uses an Excel-based (cut-and-paste type) dashboard for project reports. These reports only compare actuals vs budget and do not provide detailed forecast analysis, future costs, productivity calculations, and efficiencies
- PREPA PMO does not use earned value analysis (EVA) for managing their projects
- There are no internal IT-based tools for workforce planning, scheduling, or management tools. Such tools would make it easier to assign internal resources based on resource availability graphs, resource scheduling, and resource leveling
- PREPA PMO does not have tools to develop, control, and monitor PMO processes and flowcharts (for example, Visio or iGrafix)
- PREPA PMO does not use project KPIs, except for actuals vs budget, and spending on contractor resources. They do not have a tool to collect data on project progress that could be used to develop and analyze such KPIs

2.1.1 Additional Gaps Identified Post Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

This program is not part of the SRP.

2.3 Description of Program Completed State

In the program completed state, LUMA would have completed the setup of:

- An IT-based project, program, and schedule management tool such as Microsoft Project (MS Project). MS Project is the leading industry-wide project and schedule management tool
- A cost management and project analysis and reporting tool Microsoft Project's Power BI
- A tool for workforce planning, scheduling, resource leveling, and resource management to manage work and resources related to construction and commissioning
- A tool to develop, manage, and control PMO processes and flowcharts, e.g., Visio or iGrafix
- A full PMO website and Document Control System that can be used by the Capital Programs department and all other LUMA departments to document and disseminate PMO processes, templates, forms, checklists, etc.

Project Management Software & Tools

2.4 Program Activities

- Coordinate with end users (Capital Programs department) to ensure the needs of the software implementation have been met. (Complete)
- Implement all required project management IT tools, including all required end-to-end testing

2.4.1 Additional Activities Identified Post Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Integrate project schedule and financial tracking such that changes to schedule are automatically reflected in the forecast.
- Compress the current WBS to a more manageable list of activities that better reflects the level of resolution required
- Integrate and improve the two tools that are currently being used for project cost estimation and project cost forecasting
- Roll out a streamlined project delivery lifecycle framework
- Implement improved project, program and portfolio level reporting
- Implement Portfolio level project governance

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	<input type="checkbox"/> Implement effective public safety practices	
<input type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input type="checkbox"/> Increase service reliability	
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Direct
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively Deploy Federal Funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	

Project Management Software & Tools

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

The IT tools set up under this program will enable the Project Controls office to:

- Set project baselines
- Closely track and monitor the physical work progress and cost spend
- Ensure that projects come in on budget and systems are in place to track risks/issues and record variances/justifications

Objective: Pursue Project Delivery Excellence

The new tool will be used by the Project Controls office, which will be well-staffed and equipped to manage the large number of projects that will be planned and executed every year. In this way, the project scheduling and cost control team will gain experience and skills.

Objective: Enable Employees to Execute Operations Systematically

The IT software and tools will enable employees to take on more responsibility tasks, improve their system skills, and comply more fully with required procedures.

2.6 Program Risks

If the project management-related IT tools (MS Project) are missing or delayed, there will be no tool to enable scheduling work, meaning that the Capital Programs department cannot effectively plan and execute projects.

If project management IT tools (e.g., MS Project, Power-BI) are lacking, baselines cannot be set, leading to an inability to monitor and evaluate project progress against a baseline. This is particularly true for large and complex T&D projects that are crucial for rebuilding the T&D infrastructure. Projects will run the risk of delays and budget overruns. The Capital Programs department would also be unable to report project performance properly without the correct tools.

Project Management Software & Tools

Similarly, individual program teams would not know how well their projects are progressing on time, budget, and scope. Nor would they be able to effectively prescribe corrective actions if deviations from timelines, budget, or scope are found.

In short, without these IT tools, project management activities would essentially be manual, much like the current PREPA PMO process, rendering it impossible to manage the capital programs that LUMA has committed to executing.

IT/OT department support for the execution of this program is critical and will be required. Delays in IT/OT support will delay the standing up of all offices under the Capital Programs department, which in turn will affect project delivery.

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$0.1	\$0.1	\$0.1	—
SRP Expenditures	—	—	—	—

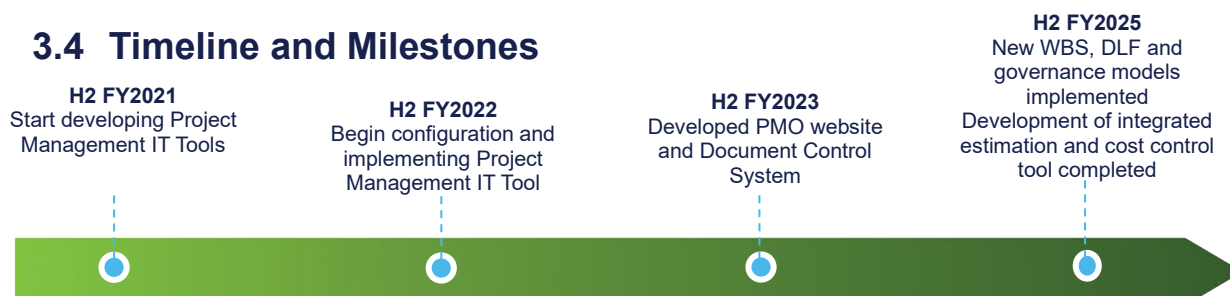
3.2 Program Resource Requirements

- Support from LUMA IT/OT staff will be required to coordinate and manage
- Capital Programs team members will be supporting the program as end users (indirect resources)
- Third-party vendor who will provide the software tool, implementation, and training

3.3 Estimating Methods and Assumptions

- Overall implementation is expected to be a minimum of 18 – 20 weeks, and any delays (e.g., in the implementation of financial integration with Oracle Financials, MS Project, Power BI integration) may increase costs
- The cost of bringing in an external expert to develop an IT SharePoint user site for PMO has been included
- Office facility, IT hardware, furniture, and associated expenses are not included in this estimate

3.4 Timeline and Milestones



Project Management Software & Tools



Achieved



Achieved



Achieved

Permit Processes & Management

Permit Processes & Management

1.0 Program Description

LUMA will introduce new systems for managing operational permits to enable the system to comply with permit obligations and to provide support for federal funding requirements. The program will develop new procedures so that responsible parties have the tools to meet permit obligations and identify additional necessary permits, along with introducing training programs to allow those procedures to be implemented effectively. As part of this program, LUMA will continue to engage with government agencies to adhere to any adjusting permitting procedures or requirements to be implemented.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Compliance with permit obligations for operational permits is required and currently may not be consistently met. A centralized permit system for the LUMA organization will allow for more consistency and standardization of practices.

LUMA's gap assessment has shown that:

- There does not appear to be a quality management system in effect
- There is a reliance on worker experience in performing tasks, and there are no documented systems or procedures in place
- Job procedures and training programs are lacking
- The documentation of work completed is not sufficient to demonstrate compliance with permit obligations. LUMA needs to mitigate the risk of non-compliance with requirements, which could result in fines, potential work interruptions, and other adverse impacts

2.1.1 Additional Gaps Identified Post-Commencement

- Lack of processes for permit applications and compliance management relating to Construction Projects and/or system improvements
- A lack of understanding regarding permit requirements for Federal regulation

2.2 Description of Remediated State

Act 17, Article 1.5(6)(a), and Article 1.10(g) of the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement (T&D OMA) establish as public policy that LUMA is required to comply with applicable environmental laws and regulations.

Section 5.6 (b) of the T&D OMA requires LUMA to make all filings and applications and submit all reports necessary to obtain and maintain all Governmental Approvals in the name of PREPA, or if required by Applicable Law. In addition, LUMA must:

Permit Processes & Management

- Prepare the application and develop and furnish all necessary supporting material, data and information that may be required
 - Familiarize itself with the terms and conditions of such Governmental Approvals
 - Attend all meetings and hearings required to obtain such approvals; and
 - Take all other action necessary or otherwise reasonably requested by the P3 Authority in order to assist and support PREPA in obtaining, maintaining, renewing, extending, and complying, as may be relevant, with the terms of such Governmental Approvals

Finally, according to Annex I, Section I(G)(2) of the T&D OMA, LUMA is responsible for environmental compliance, maintenance of documentation, and acquisition of permitting required for T&D operations.

As defined in the above conditions and under the T&D OMA, in the remediated state, LUMA will have a system in place to obtain the required permits to operate in compliance with the law. Areas of noncompliance will have been identified, with a remediation plan underway to solve critical issues in a timely manner.

The organization will have established a basic understanding of the permitting requirements. Training programs to improve work practices will be in development, but implementation of such training programs will not yet have fully occurred.

2.3 Description of Program Completed State

At program completion, the organization will have implemented a quality management system, developed job procedures, and completed training programs related to obtaining and managing permits. This will ensure that work is completed in compliance with permit obligations and that consistent documentation of such work can prove this compliance. Ongoing activities include ensuring that the permits are obtained, renewed, and amended on time, ensuring that associated reporting to regulators is made on time, and ensuring that activities covered under the permits (e.g., construction, vegetation management, etc.) are carried out in accordance with the permit requirements, and other permit requirements are met, to minimize non-compliance.

2.4 Program Activities

- Obtaining, maintaining, renewing, extending, and complying with necessary permits as quickly as possible, including maintaining a full list of operational permits (Complete)
- Defining obligations for operations to meet permit compliance and full requirements to obtain new permits (Complete)
- Continuing engagement with government agencies to adhere to operator permitting procedures and requirements implemented post-commencement (Complete)
- Evaluating current facilities and operational practices to ascertain new additional necessary permits in obtaining, maintaining, renewing, extending, and complying with permit requirements (Complete)
- Establishing basic operational performance levels relative to required standards as quickly as possible (Complete)
- Documentation of procedures and distribution to work groups (Complete)
- Developing training programs (Complete)
- Establishment of a quality management system

Permit Processes & Management

- Development of job procedures and training programs in accordance with the guidelines of the quality management system and as necessary to address work practices required to demonstrate compliance
- Implementation of a records system such that documentation of work completed will demonstrate compliance with requirements

2.4.1 Additional Activities Identified Post-Commencement

Establish permit applications for all necessary permit requirements and conditions for construction permits and system improvements.

2.4.2 FY2025 Activities

Due to delays in the procurement process, the focus for the upcoming fiscal year will be the implementation of a new records system and to establish a quality management system, including job procedures and training programs as necessary to address work practices required to demonstrate compliance.

2.5 Program Benefits

Primary Goals	Objectives	Direct or Indirect Impact
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Indirect
	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Direct
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Indirect
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	

Permit Processes & Management

Primary Goals	Objectives	Direct or Indirect Impact
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

The development of a quality management system supported by work procedures is integral to a safe workplace. Such a system forms the foundation of a safety program.

Objective: Implement Effective Public Safety Practices

More consistency of permit practices will improve the quality of related work, thereby improving public safety for any installation.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

Strict compliance with permit obligations will reflect positively upon the company with the agency issuing a permit.

Objective: Increase Service Reliability

Improved work practices will lead to a superior quality product or installation, thereby improving the reliability of the system.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Objective: Pursue Project Delivery Excellence

Objective: Enable Employees to Execute Operations Systematically

The quality management system, supported by detailed work procedures, forms a foundation for the systematic management of the business. This system is also essential to the pursuit of project delivery excellence as these measures provide the baseline from which to evaluate the performance of work. The quality management system will also enable employees to consistently complete work to the necessary standards while complying with permit obligations.

PRIMARY GOAL: SYSTEM REBUILD & RESILIENCY

Objective: Effectively Deploy Federal Funding

Proof of compliance with permit obligations will contribute to evidence that requirements for federal funding have been met.

Permit Processes & Management

2.6 Program Risks

The risk of not proceeding with the program is to continue with the present system, which is inadequate. The present system does not meet compliance requirements and generates noncompliance fees. Current practices are insufficient to meet contractual requirements for the operation of the system. Current methodologies could put contractual arrangements at risk and could result in a loss of federal funding due to the inability to demonstrate compliance with permit obligations. Without this program, LUMA runs the risk of being in violation of permits and not maintaining awareness of ongoing changes to permitting requirements, which could result in further fines, potential work interruptions, and other adverse impacts.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$0.9	\$0.7	\$0.7	\$4.6
SRP Expenditures	\$0.3	—	—	—

3.2 Program Resource Requirements

The permits program will require IT support to evaluate the proposed records system.

3.3 Estimating Methods and Assumptions

LUMA pay scales have been assumed for internal employee resources.

Previous rates for external contractors have been assumed.

APPLICABLE STANDARDS AND CODES

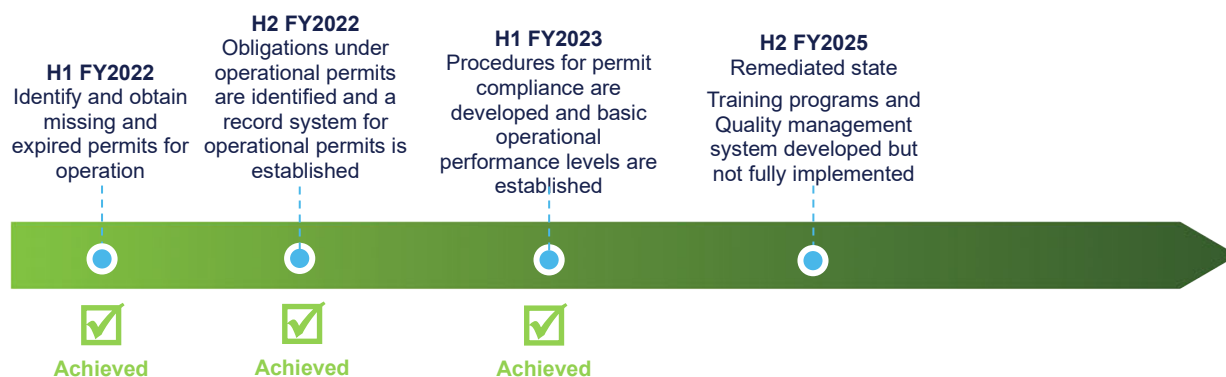
Federal legislation, local legislation, industry best practices, international and local codes.

SUPPORT FROM SCHEDULING AND ESTIMATING

Operational permits will require scheduling support to complete and file reports, renew existing permits, and complete applications for permits. Different fees are associated with each permit. In the case of non-compliance with permit obligations, fees may be payable. Estimating fees will also be required in this case.

Permit Processes & Management

3.4 Timeline and Milestones



Materials Management

Materials Management

1.0 Program Description

This program covers all aspects of materials management and includes management of:

- Asset recovery
- Oil containment
- Inventory management
- Asset suite reconfiguration
- Demand training
- Implementation and measurement of KPIs related to materials
- Capital plans for material handling and warehousing storage and facility improvements
- Logistics function and related equipment
- Material evaluation and disposition

2.0 Program Rationale

2.1 Current State and Identified Gaps

PREPA manages a warehousing network consisting of one central distribution center, six regional, and 16 district warehouses to support Transmission and Distribution (T&D) operations across the island. They also manage four warehouses that support generation plants located in Costa Sur, Aguirre, Central San Juan, and Palo Seco. Their inventory distribution uses a hub-and-spoke model, essentially a decentralized approach. They manage their own transportation fleet and distribute their own internal/external mail.

Looking across the entire materials management function, significant deficiencies were identified during the gap assessment:

- PREPA lacks the critical experience, tools, equipment, and infrastructure to serve operations adequately, efficiently, and safely
- The organization lacks the processes, programs, procedures, structure, and assets to adequately serve the operational materials management needs of the transmission, distribution, and generation systems
- There is a visible lack of support from the executive level of the organization to make improvements
- Each region of the organization operates in a siloed manner leading to disparities in how company resources are managed across Puerto Rico
- There are no standardized training programs, and formal documented processes are generally not available or have not been effectively implemented across the organization
- Existing facilities, materials, and equipment are significantly damaged from the hurricanes or well past usable life, creating unsafe working conditions
- There is an overwhelming amount of surplus and scrap material as well as general garbage/debris in every facility
- Safety is not embedded in the responsibilities of each employee and part of their working environment

Materials Management

- Warehousing storage equipment is not properly installed, labeled, or supporting safe operating conditions

Examining each of the four functional areas that define Materials Management, the following gaps substantiate our overall view that standardized and formal inventory management, asset recovery, warehousing, and logistics functions do not currently exist at PREPA:

INVENTORY MANAGEMENT

- Current inventory management practices tend to be sub-optimal
- Lack of forecasting/integration with upstream demand
- Inventory balance does not accurately reflect usable physical inventory
- Inventory controls do not conform with industry best practice
- Critical spares do not exist
- Inventory management decisions/strategies are made informally and can be influenced by political considerations
- Long-term supply agreements/relationships are non-existent, leading to spot procurement for all material purchases
- Material is purchased at Delivered Duty Paid without sufficient regard to the cost of material vs. freight and any other hidden costs
- Material lifecycle is not a consideration in standards/procurement decisions
- Puerto Rico-wide material strategy/control is lacking, without clear strategies and direction across the warehouse network since inventory standards are separately managed at each location
- KPIs have not been developed
- There is a large volume of non-standard material that is spread across Puerto Rico

ASSET RECOVERY

- Surplus material is not returned to inventory and remains with Operations personnel. This leads to non-standard material being used in the field, lack of inventory control, inaccurate material forecasting, and demand management
- Scrap/salvage/recyclable/garbage is managed with a fragmented approach. There is no contract management function to address performance deficiencies, reconcile invoices, perform audits, etc.
- The approach to salvaged/burnout oil-filled equipment does not comply with Federal/Commonwealth regulations and, in some cases, will require a significant and costly cleanup effort to remediate
- There is a significant amount of salvage/scrap/garbage/debris in most facilities and yards that presents, at best, an extremely negative view to the public, at worst, a safety and environmental hazard
- PREPA lacks the equipment and materials to manage the waste stream, such as mobile and stationary secondary containment, crates, bins, etc.
- PREPA lacks the knowledge, training, and experience to manage the waste stream

WAREHOUSING

- The existing facilities and equipment are aged, damaged, and largely inadequate for the needs of most sites. Significant damage from Hurricane María and the earthquake still exists at some facilities rendering them:
 - Unusable

Materials Management

- Usable, but causing damage to material and infrastructure due to rain/flooding and introducing safety hazards into daily operations
- There are no existing standards for storage of goods by category (such as cable reels, copper, transformers, etc.). This presents a safety hazard and leads to wasted material due to physical/environmental damage (rust/rot). As a result, storage equipment/infrastructure varies by location and is insufficient for safekeeping of the material in most locations
- Storage equipment is either unavailable, improperly installed, or improperly used, leading to safety hazards and process inefficiencies
- Processes are poorly defined and not implemented across the organization
- Standardized training programs are not in place (e.g., for forklift/transportation of dangerous goods, etc.). The same applies to specialized training needs (e.g., for lifting, rigging, or tele-handling)

LOGISTICS

- The existing transportation equipment is aged/damaged and doesn't comply with Department of Transportation (DOT) regulations. Most transportation equipment would not be considered "road-worthy" by North American standards, and some present a serious safety risk to both PREPA personnel and the public
- There is no dispatch or management for the transportation of materials or other freight, leading to poor utilization of resources across the island
- Both standardized (e.g., safety, forklift, and transportation of dangerous goods) and specialized (e.g., load securement, rigging, and lifting) training programs are not in place
- Formalized documentation procedures are not in place (e.g., pre-trip inspections, bills of lading, packing slips, trip logs, etc.)

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

- In the remediated state, LUMA's material management capability will:
 - Meet the daily operational requirements of the organization in steady state and emergency operations, complying with local, state, and federal regulations (DOT/ Federal Motor Carrier Safety Administration (FMCSA) and OSHA/ANSI, particularly the applicable parts and section of CFR 49 and CFR 27)
 - Have safety embedded in the organization's operating procedures and have most of the equipment required to support a safe working environment
 - Have facilities that adequately and safely support the needs of the organization
 - Carry an inventory of material that is ordered, processed, stored, and delivered in safe and efficient manners
 - Utilize existing systems and controls to support accurate transaction of data, complying with internal and external policies and regulations
 - Manage material salvage/scrap/return in a process that complies with local and federal regulations
 - Have a management and training program regarding oil-filled equipment management and spill containment in place per environmental requirements. The minimum required equipment and structures will be in place and regularly used and maintained. Contracts for equipment repair, refurbishment, and disposal will be in use

Materials Management

2.3 Description of Program Completed State

In the completed state, LUMA's material management capability will:

- Contribute toward an efficient, professional, and safe organization that fully complies with all local, state, and federal laws and regulations
- Exceed the service requirements of the organization in steady state or emergency operations while remaining fully compliant with all local, state, and federal laws and regulations
- Be lean, agile, accurate, and able to meet the forthcoming changes required in order to meet Law 17 Renewable Energy targets
- Have safety embedded in the organization's operating procedures and have all equipment supporting/enhancing a safe working environment
- Have facilities that adequately support the needs of the organization, are hurricane-ready, and are scalable to future demands
- Have the systems and controls in place that support efficient and accurate transaction of data, as well as compliance with all internal and external policies and regulations
- Collect data on all key processes, monitoring, reporting, and increasing performance through continuous improvement initiatives
- Carry the optimum amount of Inventory that is ordered, processed, stored, and delivered with care and attention, maximizing organizational investment while adhering to all specifications and quality requirements
- Manage material salvage/scrap/return in a process that is efficient and environmentally and fiscally responsible and complies with local and federal regulations
- Fully manage the transportation of all organizational freight from point of shipment to final site receipt, maintaining visibility and control through all carriers and transportation modes
- Have a culture of responsibility and institutional knowledge regarding oil-filled equipment management and spill containment. All relevant equipment and structures will be in place and regularly used/maintained. Effective contracts for equipment repair, refurbishment, and disposal will be in place

2.4 Program Activities

- Set up and implementation of Asset Recovery function –
 - Development and implementation of processes and facilities for a fully functioning Asset Recovery department – Salvage/scrap/return of materials, training for warehousing and field construction personnel
- Implementation of Warehouse Oil-Filled Equipment and Oil Containment Management Program –
 - Procurement of spill cleanup/containment equipment and oil containment structures where required.
 - Development and implementation of a training program for all personnel handling or transporting oil-filled equipment, responsible for cleanup of spills and spill reporting
 - Program will include examination of and potential retendering of existing agreements to obtain the best service and value
 - Engagement of ATCO / Quanta knowledge and expertise as required to determine the best path forward for the construction/implementation of mitigation measures
- Asset Suite Reconfiguration Assessment –

Materials Management

- Procurement of services to assess existing utilization of asset suite inventory and recommend configuration changes to align with upcoming strategic plans for materials management and LUMA overall
- Addition of bar code scanners for warehouses coordinating with Asset Suite Inventory
- Asset Suite Reconfiguration Execution –
 - Reconfiguration of asset suite to utilize all relevant features and maximize operational efficiency, including bar code scanner technology
 - Ensure segregation of duties issues are removed, and minimum checks/balances are in place to maintain efficiency and protect LUMA
- Planned Demand Training Program –
 - Development and implementation of processes for requisition and request of materials using asset suite - program includes process design, training package development, training of field engineering and construction personnel, training of field warehousing personnel, standardizing communication methods
- KPI implementation and measurement –
 - Implementation of a program and associated processes, for regular measurement and reporting of KPIs and auditing of key processes
- Material Handling Equipment Capital Plan –
 - Procurement of materials handling equipment to resolve deficiencies in existing equipment within the warehousing network - reach lifts at L1, and L2 warehouses where applicable, indoor counterbalance forklift replacements, rough terrain forklifts at all warehouses handling poles
- Warehousing Storage Equipment Capital Plan –
 - Procurement of materials storage equipment to resolve deficiencies within the warehousing network - heavy grade plastic pallets for all locations to replace wooden pallets, racking improvements (floor bolted bumper guards on all legs, weight ratings on all crossbeams, leg replacements, all legs bolted to the floor), pole bunks in all warehousing locations with poles, outdoor/indoor labeling for all stock items and indoor hazardous materials cabinets
- Warehousing Facility Improvements Capital Plan –
 - Procurement of services to perform repairs/improvements to existing warehouse facilities and to erect covered storage and numerous locations that have deficient/damaged covered storage. Deficiencies include repairs to roofs, walls, overhead cranes, replacement of lighting, air conditioning units, installation of overhead fans or lighting
 - New installation of covered storage to provide protection for material from the elements i.e., wood reels, transformers, crates of miscellaneous material. Installation of flood prevention measures at specific sites, loading docks at sites with high volumes of cube vans/highway vans
 - Addition of WI-FI to all warehouse locations and amplifiers to ensure full coverage of warehouse and yards
- Logistics Equipment Capital Replacement Program –
 - Assessment and replacement of logistics equipment to align with LUMA logistics strategy. Examples of equipment to be procured: flat deck trailers, tractors with knuckle-boom pickers, cube vans
- Logistics Function Implementation –
 - Procurement and implementation of a logistics management tool to receive requests, track and dispatch the fleet of logistics equipment
 - Procurement and installation of GPS tracking units on all existing equipment to align with the implementation of the tool

Materials Management

- United States Army Corps of Engineers (USACE) Material Evaluation and Disposition –
 - Evaluation of USACE’s material across the warehousing network for alignment for existing and future LUMA standards

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Implement mobile portal/access to Asset Suite for warehousing activities, which is critical for tracking material for federally funded programs
- Continue to deploy spill containment, mobile and site-specific, required to mitigate spills and environmental risk at key facilities and enable transport of salvaged oil-filled equipment (focus on mobile containment solutions)
- Continue to replace aged racking and materials handling equipment
- Begin logistics equipment replacement initiatives
- Begin Asset Suite reconfiguration initiatives

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input checked="" type="checkbox"/> Increase service reliability	Indirect
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Indirect
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Indirect
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Indirect
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Indirect
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy	<input type="checkbox"/> Modernizing the grid	

Materials Management

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
Transformation	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

Objective: Implement Effective Public Safety Practices

Standardized procedures for inventory management, asset recovery, etc. will help to ensure safe working practices across the organization, both for a safer workplace and better public safety practices.

The availability of equipment and tools ensures that work tasks can be performed effectively and efficiently and with reduced safety risks.

Effective materials management and asset recovery processes support rapid restoration in the event of a major event such as a hurricane, thereby reducing the safety impacts of power outages.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Increase Service Reliability

Objective: Deliver Electricity at Reasonable Prices

Better processes for logistics, inventory management, asset recovery, etc., will help streamline internal operations, thus improving service reliability. These processes will also help to make spending on these areas more efficient, thus allowing for electricity to be delivered at more reasonable prices.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Objective: Pursue Project Delivery Excellence

Objective: Enable Employees to Execute Operations Systematically

Standardization of processes will help to systematize business operations, both for overall management and as applied to how employees conduct themselves within functions under Materials Management. As a whole, this will help to improve major outage event readiness and emergency materials management, thus contributing to improved project delivery.

Measurement of process efficiency will track progress to performance targets and identify gaps in the process, fostering continuous improvement and improving project delivery.

Materials Management

PRIMARY GOAL: SYSTEM REBUILD & RESILIENCY

Objective: Effectively Deploy Federal Funding

A robust Materials Management framework will ensure that all material purchases and deployment to federally funded projects will be at the lowest possible cost while maintaining quality and service, utilizing existing materials agreements established for regular operations requirements.

Objective: Restore Damaged Grid Infrastructure

The improvements in materials management supported under this program will help to restore damaged grid infrastructure by ensuring construction materials are available for use, follow specifications and quality requirements, and are efficiently and effectively deployed to project sites.

2.6 Program Risks

Risks to delaying the program:

- Non-compliance with Federal and Commonwealth regulations (e.g., Occupational Health and Safety [OHS], DOT, EPA)
- Increased risk to employee safety in daily operations
- Risk to upcoming project demands on the Materials Management organization (unable to support increased workload, affecting project schedules/completion)
- Risk to meeting fiscal control metrics and external audits: no visibility of spend, material requirements within the organization, lack of material accuracy (write-offs)
- Lack of readiness for Major Outage Events

Risks related to commencement and execution:

- Non-compliance with Federal and Commonwealth regulations (e.g., OHS, DOT, EPA)
- Safety risks exist for employees and the public
- Material availability for projects
- Material adherence to newly implemented design standards
- Lack of relationships with suppliers (supply agreements)
- Sub-standard service contractors on-island within certain categories

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$1.2	\$1.0	\$1.0	\$5.7
SRP Expenditures	\$1.1	\$0.5	—	—

Materials Management

3.2 Program Resource Requirements

A number of people will be required from within the Operations department to implement these improvements, as well as support from IT/OT, HR, and Utility Transformation.

3.3 Estimating Methods and Assumptions

Estimating methods/assumptions (estimating template available if required):

- Assumed loaded hourly rates x full-time employees per activity
- Researched materials and equipment costs (market quotes)
- Historical information from ATCO program

3.4 Timeline and Milestones



Emergency Response Preparedness

Emergency Response Preparedness

1.0 Program Description

This program is focused on emergency response preparedness. It supports the implementation of the Emergency Response Plan (ERP) and establishes the Emergency Preparedness Department. Also included are the establishment of a primary and alternate LUMA Emergency Operations Center (EOC) and the development and elaboration of plans, processes, and procedures to be enacted in the event of an emergency.

These will include measures to be put in place before, during, and after a disaster. Additionally, the program supports the acquisition of damage assessment software and other emergency awareness software. This Program is interdependent with the following Programs:

- PBIT4 - IT OT Asset Management program –Initiatives to improve the connectivity model, GIS data, and the capability of the outage management system to capture and resolve outages will improve LUMA's responses to any emergency-related outages
- PBOP3—Workflow Processes & Tracking program—Implementing and using a modernized work planning and tracking software system will improve the coordination, dispatch, and oversight of field crews responding to emergency-based outages and simplify the administration of emergency events
- PBUT27 - Asset Data Integrity – LUMA's Emergency Response Preparedness can only be successful if LUMA assets and their attributes are known to develop an emergency plan. Current asset data is incomplete. Asset Data Integrity will improve asset data as projects are executed while also collecting additional missing asset data in the field

The funding associated with those activities is included in the budgets for those programs. Emergency response preparedness is a shared responsibility across LUMA, but this program does not include funding for preparedness activities from across the organization. This funding for this program is limited to the costs associated with supporting the organization to implement the ERP and establishment of the EOC and alternate EOC. Each of LUMA's departments conducts emergency preparedness activities annually and ongoingly, and the funding for this work is included in LUMA's operating expenditures.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

LUMA is responsible for the safe operations of the Puerto Rico Transmission and Distribution Electrical System, which includes responding quickly and efficiently to any emergency or natural disaster. Through a gap assessment, interviews, and observations, LUMA has identified that the current emergency response preparedness and readiness is well below Prudent Utility Practice. This large gap leaves employees, the electrical system, and customers unprotected.

The gap assessment included the following high-level event-specific observations:

- Major challenges in predicting the severity of storm damage and ensuring adequate resources (staffing and material) are on-site and ready to go in advance or immediately after the storm.



Emergency Response Preparedness

- A poorly functioning outage management system (lacking current connectivity information) and lack of proper IT visualization and analytic tools add to the difficulty of prioritizing and reporting on restoration efforts, along with adjusting regional staffing levels to match damage levels across the system.
- The restoration process does not have formal operating procedures and checklists, resulting in inconsistencies in service restoration protocols. This also leads to potential safety and operational hazards.

The overall emergency response uses a manually intensive approach from initial damage assessments to coordinating/deploying crews, to using logbooks to track system operations, to verifying/confirming service restoration places. All of this creates undue strain on the management of the service restoration process. Other gaps identified outside of event-specific responses include:

- Though the current EOC function is centralized (and then distributed to functions and then regions), it resides in two locations. When combined with technology constraints, this setup inhibits the capability to gain integrated and comprehensive situational awareness of the entire event. Constraints suggest the need for an incident management platform to display and share information; this will create more transparency that includes general incident overview, damage assessment data, status of transportation routes and inventory, incident command priorities, safety information, and overall situational awareness to ensure a common operating picture
- Varying levels of competence and familiarity with implementing the Incident Command System (ICS) suggest the need for training, exercises, and a formal certification process. This would start with available online training modules and targeted onsite training to fill gaps in the online modules.
- Resource planning needs to be further strengthened despite recent improvements. This includes developing more strategic relationships for mutual assistance, and materials, and addressing gaps around specific skills and competencies
- PREPA currently lacks major event management software, which is required to automate and integrate field-provided damage information into a full-scale management system (including assessments, generation of work orders, field team locations, restoration timelines, and justification for FEMA support)
- Manual damage assessment process: This affects the timeliness of and ability to integrate information from the field
- Siloed approach to emergency response and business continuity plan development and implementation

As required under the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement (T&D OMA), LUMA prepared the ERP during the Front-End Transition Period. (T&D OMA, Section 4.2 [g]). The ERP includes measures for appropriate and timely notice to PREB and other agencies, measures to coordinate effectively with other responders, measures for outage minimization and restoration (to be established in the Restoration Annex), and timely availability of emergency resources.

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

This program is not part of the SRP.

Emergency Response Preparedness

2.3 Description of Program Completed State

Upon commencement of operations, LUMA will immediately implement the ERP developed during the Front-End Transition Period. LUMA will also have established a fully operational Emergency Preparedness Department to ensure compliance with federal requirements and industry standards while managing the comprehensive emergency management and business continuity program as it pertains to the LEOC. A NIMS-compliant ICS structure will be in place with staff trained in their roles and responsibilities, permitting a safe and timely response and restoration process. Mutual aid agreements will be in place for external resources to promote collaboration and successful response and restoration on Level 1, 2, and 3 Emergency Event responses. The ERP will be based on best practices and standards from the utility industry, FEMA, and NIMS. LUMA will evaluate opportunities for accreditation and certification in line with the objectives of this program.

LUMA's ERP will continue to enhance emergency operations, enabling LUMA to restore service to their clients as quickly and safely as possible. Maximum support from across LUMA will be provided to the Emergency Preparedness Department and to EOC when activated, and restoration efforts will be managed in accordance with the Major Outage Restoration Annex. To ensure alignment, the ERP will provide direction, control, and coordination while the Restoration Annex provides the guidance necessary for restoration prioritization and operational details for response.

LUMA will have a fully functional primary EOC established in a permanently fixed location with an alternate EOC location implemented. All equipment, technology, and staff will be in place and fully implemented with the necessary training.

LUMA will have an incident management platform in place to enable real-time information sharing, situational awareness, and documentation collection. Outage Event Management software will also be in place that allows daily operations staff to visibly see outages in real-time, relay information and enable the EOC to dispatch response crews to areas across the island. This will help to:

- Implement base restoration priorities
- Restore generation, then critical transmission, then substations, critical or priority customers, large volume customers, then individual residences

2.4 Program Activities

- Identification and establishment of primary EOC location, including acquisition/upgrading of equipment, technology, etc. (Complete)
- Identification of alternate EOC location that can be utilized, staged, and activated
- Establishment of the Emergency Preparedness Department (Complete)
- Implementation of FEMA-approved training modules, exercises, and a published LUMA policy for formal certification for employees to assume key ICS roles.
- Development of an adequate resource plan to be implemented in emergencies, including the development of more strategic relationships, and materials, addressing skills/competency gaps, etc., and identification and reallocation of key system spares so that they are available and staged in strategic locations
- Development and implementation of a communications strategy to educate stakeholders (e.g., Puerto Rico residents, government agencies, etc.) and engage local support for major outage events (Complete)

Emergency Response Preparedness

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be improving employee training and exercises, establishing additional prepositioned emergency contracts, and enhancing the Emergency Response Plan. Additionally, will formalize the memorandum of understanding/coordination for the alternate LUMA's Emergency Operations Center and identify the equipment needed and information technology infrastructure, emergency power, and other utilities.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Direct
	<input type="checkbox"/> Increase service reliability	
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input checked="" type="checkbox"/> Operational Excellence	<input type="checkbox"/> Enable systematic management of the business	
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Direct
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively deploy federal funding	
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Direct
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

Objective: Implement Effective Public Safety Practices



Emergency Response Preparedness

Better emergency response training will help reduce the risk of injury or fatality to employees, along with enabling them to meet LUMA and OSHA safety rules and required laws and regulations.

This program will also enable LUMA to respond more quickly and efficiently to outages and emergencies such as downed lines and traffic accidents, thereby reducing public safety risks.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

It increases satisfaction due to better communication regarding outages, including being able to reach the call center, automated messaging, and up-to-date estimated time of restoration.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Pursue Project Delivery Excellence

Objective: Enable Employees to Execute Operations Systematically

This program will help to reduce employee overtime requirements due to better planning and more focused actions to prioritize restoration. This will also lead to less employee downtime and higher employee satisfaction.

Better emergency preparedness will also help to improve both system and employee productivity. Systematic processes and procedures reduce the probability of error and ensure employee resilience.

PRIMARY GOAL: SYSTEM REBUILD & RESILIENCY

Objective: Restore Damaged Grid Infrastructure

Objective: Improve Resilience of Vulnerable Infrastructure

In the event of an emergency, disaster, or catastrophic event, this program will aid LUMA employees to be better prepared to respond to outages, restore damaged infrastructure and make the necessary repairs more efficiently and expediently.

A robust ERP, the Major Outage Restoration Annex, and highly trained and qualified employees promote resilience and ensure the system's success.

This program will enable LUMA to follow best practices, comply with industry standards, and increase the reliability of response and recovery efforts across the organization.

2.6 Program Risks

There is a substantial downside risk to failing to pursue this program. An ERP and Restoration Annex are basic requirements for all utilities. These are particularly critical given the fragile current state of physical T&D assets. Given this, a well-organized approach to an event is of utmost importance. LUMA is also contractually obligated to deliver on this project as per the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement.

Furthermore, the current lack of proper plans and a preparedness training and exercise program severely limits LUMA's emergency response capability. Another large-scale incident, such as Hurricane María,



Emergency Response Preparedness

would result in major outages occurring without a coordinated, efficient, and timely emergency response, bringing detriment to the island.

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	—	—	—	—
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

Office space, equipment, and resources to operationalize the Office of Emergency Preparedness and Business Continuity for the Emergency Operations Centers to include funding for the annual budget; however, the budget but does not include the software and hardware acquisition for:

- Incident management platform
- Event outage management platform
- Damage assessment platform
- Business continuity

3.3 Estimating Methods and Assumptions

Cost estimates are compiled based on estimated vendor costs and parent companies' experience. These estimates assume the following applicable standards and codes:

- OSHA
- IEEE
- LUMA's safety practices, programs, and work methods
- Prudent utility industry standards
- Labor law
- State law

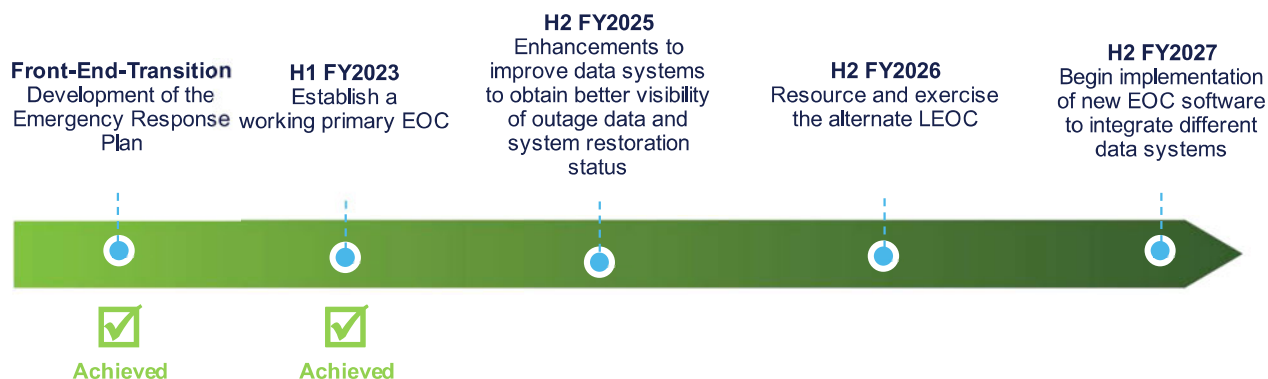
Program Standards or Requirements include:

- FEMA
 - Comprehensive Preparedness Guide (CPG) 101: Developing and Maintaining Emergency Operations Plans
 - Comprehensive Preparedness Guide (CPG) 201: Threat and Hazard Identification and Risk Assessment Guide
 - National Preparedness Goal (NPG)
 - National Response Framework (NRF)
 - National Disaster Recovery Framework (NDRF)
- Presidential Policy Directive (PPD) 8 – National Preparedness

Emergency Response Preparedness

- Homeland Security Presidential Directive 5 (HSPD-5) – National Incident Management System
- Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended
- Post-Katrina Emergency Management Reform Act (PKEMRA), 2006
- Housing and Economic Recovery Act of 2008
- The National Security Strategy, May 2010
- Emergency Management and Assistance, Code of Federal Regulations, (CFR) 44
- Price-Anderson Amendments Act of 1988, Public Law 100-408, as amended
- Emergency Management Assistance Compact, Public Law 104-321
- National Incident Management System (NIMS), December 2008
- Homeland Security Presidential Directive (HSPD) 7: Critical Infrastructure Identification, Prioritization, and Protection, December 2003
- Executive Order 13347, Federal Register, Individuals with Disabilities in Emergency Preparedness
- Americans with Disabilities Act (ADA) of 1990
- ADA Guide for Local Governments, U.S. Department of Justice, July 2005
- Guidance on Planning for Integration of Functional Needs Support Services (FNSS) in General Population Shelters, November 2010
- Developing and Maintaining Emergency Operations Plans: Comprehensive Preparedness Guide (CPG) 101: Version 2.0 November 2010
- Sandy Recovery Improvement Act (SRIA) of 2013
- Disaster Relief Appropriations Act of 2013

3.4 Timeline and Milestones



Workflow Processes & Tracking

Workflow Processes & Tracking

1.0 Program Description

This program includes several initiatives that address gaps between the current state and standard industry methods, practices, and processes to manage, track, and report progress on fieldwork performance. Specific areas include:

- Establishing proper and safe maintenance regimens (preventive, planned and unplanned corrective, and emergency repairs)
- Adhering to design, maintenance, and construction standards
- Implementing proper inspection and testing procedures
- Implementing KPI / metric performance management with a focus on measuring and driving improvements in work quality, effectiveness, and efficiency
- Establish work methods, corresponding training, and continuous development process to provide employees with information and training to complete their jobs safely
- Establish a work management and dispatch system to effectively manage work. Including implementing necessary technologies, processes, training, and monitoring
- Establish a workforce management system to effectively manage the workforce, including implementing necessary technologies, processes, training, and monitoring

2.0 Program Rationale

2.1 Initial State and Identified Gaps

The Workflow Process & Tracking program is intended to improve the performance of the critical Transmission and Distribution (T&D) assets and approximately 2,000 employees assigned to T&D Operations¹. More specifically, it is targeted at addressing those workflow-related gaps that are required to address deficiencies noted in the 2021 gap assessment, namely:

Work Planning and Execution with 21 gaps, summarized as follows:

- Work is largely reactive, overriding any attempt to implement a properly prioritized work plan
- Virtually no preventive maintenance is performed, resulting in a “run-to-failure” mode of operation and subsequent focus on emergency maintenance
- There is a lack of a strong work planning and scheduling cadence that “protects the schedule” on a daily/weekly basis
- Current systems cannot address the requirements of an effective work management program
- There is an inability to accurately measure/implement initiatives to improve worker productivity
- Outside contracting lacks clarity in scope and any semblance of quality assurance

¹ Note that similar challenges, prevalent in Fleet and Materials Management / Warehousing, are addressed within other Programs.

Workflow Processes & Tracking

There are significant shortfalls with respect to public and employee safety. Employees lack appropriate communications and reporting tools: Laptops, cell phones (including data plans), mobile data collection devices, radios, satellite phones, and vehicle GPS for visibility

Technical Services with 11 gaps, summarized as follows:

- Employees do not document lockout / tagout procedures and protocols or do not know how to do it well
- The training approach is inconsistent, largely on the job, and dependent on the expertise and priorities of each supervisor
- There are no mapping documents / single-line diagrams to facilitate the work

Reliability (Service Restoration) with 21 Gaps, summarized as follows:

- Repairs, be they partial, provisional, or permanent, are rarely revisited post-outage
- Line crew staffing is rigid in terms of size (typically 4-person crews independent of the task) and location (strong regional focus)
- Twenty-four/seven coverage applies in only two of the seven regions
- There is a general lack of technology, both at the system level, to restore service more rapidly to large pockets of customers and at the administrative/managerial level to expedite the processing of damage assessments from initial review to final closeout of repairs
- The restoration process is not substantiated with formal operating procedures and checklists

System Performance Management with 6 Gaps, summarized as follows:

- Complete and accurate data in key performance domains are unavailable, and the capability to perform advanced analytics is limited
- To the extent that corrective action plans are implemented, there is a high dependence on intuition and gut feeling in choosing among options
- There is skepticism regarding PREPA's willingness to take decisive action should an analysis of data indicate a clear performance improvement opportunity

These gaps, combined with a general lack of technology enablement noted above, have several implications:

- Work requests are delayed weeks or months before finally making their way to field personnel to complete the work
- Missing, inaccurate, or out-of-date records create gaps regarding the system's state, impacting worker productivity at the least with a high likelihood of creating an unsafe environment for the public and employees
- Undocumented or inconsistently applied work methods result in varying levels of quality and completeness and potentially create unsafe working conditions
- An antiquated work management system (no longer vendor-supported) creates the need for workarounds and provides partial automation in generating work orders and performance reporting

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

Workflow Processes & Tracking

2.2 Description of the Remediated State

In the remediated state, compliance with the relevant articles of Act 17 and Act 57, and the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement provisions specified in Contract Standards, Annex I will require that:

- A work planning and execution process and tracking system is in place, driving the use of scheduling to align the organization around the performance of work
- Procedures and training exist to address the safety deficiencies identified in the review of Distribution Operations, contingent measures are in place to offset the effects of outdated and inaccurate documentation, and a plan is developed and underway to produce a more permanent solution
- A quality management system is in place to ensure compliance with applicable regulations or standards: Inspection and Test Plans (ITPs) have been created, and quality control documentation has been developed for critical T&D assets, with full compliance to quality control/quality assurance requirements
- Preventive maintenance programs are established for all critical substations, transmission and distribution lines, and T&D Operations achieves an overall 75 percent completion rate
- Systems and processes are in place to track, monitor, and report test and inspection completion rates for those activities required by the above-listed regulations and standards
- Sufficient communications and reporting tools (e.g., laptops, cell phones (including data plans), mobile data collection devices, radios, satellite phones, and vehicle GPS) are purchased and distributed to ensure worker safety

2.3 Description of Program Completed State

In the completed state, interval preventative maintenance plans will be scheduled and executed regularly. Implementing regular preventative maintenance will help steer the organization from a predominantly reactive approach to one that operates in a more planned fashion.

Concurrently, more formalized work management processes and procedures will ensure resources are dispatched in an organized, prioritized, and planned approach, focused on regulatory and legal compliance, while providing safe and reliable electric service to all customers. LUMA work methods will equip employees with systems and processes to work efficiently and safely across the system. Completed work will be performed to the correct standards and specifications, as monitored, and guaranteed by the implemented quality program, ensuring that the system is built and operated as designed and intended.

The above systems and processes will be the norm rather than the exception, and minimal oversight and enforcement will be required to achieve compliance with targeted outcomes.

2.4 Program Activities

WORK METHODS

- Define a template and list of required work methods across Operations (Complete)
- Develop a process for new work methods to be identified and developed and make changes to existing work methods. This process will ensure all the required work methods in English and Spanish
- Implement a work method electronic document storage solution, likely on existing document management software or procure software (Complete)



Workflow Processes & Tracking

- Develop site training material for critical work methods, likely through a third-party vendor
- Perform training on work methods for all employees in Operations

PROCESS, PRACTICES, DOCUMENTATION AND PROCEDURES — QUALITY

- Define the ITP template and a master list of all required ITPs within Operations (Complete)
- Implement a document storage solution, management process, and supporting software, likely through the procurement of a commercially available software solution (Complete)
- Identify and develop procedures and processes required to address potential safety gaps and conduct training, as appropriate, to ensure proper implementation
- Develop a process for Operations to gain access to available drawings and information (Complete)

PRODUCTIVITY TRACKING

- Develop a consistent work management and dispatch system by improving functionality in existing systems (OMS, in-service, Storms, iNET, etc.) or procuring a new software solution
- Develop and roll out training on the new software and processes
- Define and implement scheduling protocols and regimens to drive organizational alignment around the performance of work
- Develop KPIs / metrics and reporting regimen to increase the transparency of worker productivity and resulting system performance

GENERAL TECHNOLOGY WORKFORCE MANAGEMENT

- Define business requirements and assess available software solutions against business requirements, technical fit, and cost
- Define work priorities and associated competencies for the tool
- Perform initial implementation of workforce management solution (18 months) and establish competencies for performing transmission, distribution, and substation work
- Purchase and distribute the balance of communications and reporting tools (e.g., laptops, cell phones [including data plans], mobile data collection devices, radios, satellite phones, and vehicle GPS) to support worker productivity

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be the following:

- Development of a procedure for new work methods to be identified, developed and changes made to existing work methods.
- Development of KPIs/metrics and reporting regimen to increase the transparency of worker productivity and resulting system performance
- Create a process to train LUMA operations employees on work methods that are relevant to their work
- Standardize and increase accessibility to access of work methods

Workflow Processes & Tracking

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Indirect
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Indirect
	<input checked="" type="checkbox"/> Increase service reliability	Indirect
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Indirect
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Indirect
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Indirect
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Indirect
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Indirect
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

This program will reduce the risk of incidents and fatalities in work performance by building work methods and employee training interwoven with LUMA's emphasis on safety (including proper use of PPE), limiting injuries, and avoiding fatalities

Objective: Implement Effective Public Safety Practices

Overall improved work methods and quality will create a better-constructed and maintained system, contributing to public safety. In essence, the public will be safer because the overall system operates as

Workflow Processes & Tracking

intended and any maintenance is planned to account for any interface with other facilities and the public at large.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

Objective: Increase Service Reliability

Objective: Deliver Electricity at Reasonable Prices

A well-orchestrated work management process will alleviate several sources of customer-related issues: third-party damage, unplanned intrusions onto a customer's property, and rework resulting from poor quality. Better maintained assets, including those that support fieldwork (e.g., fleet), and improved work planning and execution translate directly to shorter, less costly outages and an overall improved customer experience.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Objective: Pursue Project Delivery Excellence

Objective: Enable Employees to Execute Operations Systematically

Software solutions will support a more systematic approach to work management, thus improving quality, shifting the emphasis from reactive corrective maintenance to better planned preventive maintenance, and enabling the tracking of and resulting improvements in productivity.

Clarity of expectations with respect to work methods and mandatory standards, all part of an effective work management process, inevitably leads to improved productivity. Improved work planning leads directly to the availability of equipment and tools (including less downtime on material and fleet), thus improving efficiency / increasing the effectiveness of field personnel in the normal performance of work. In doing so, the organization can also better respond to emergencies (including system outages) with reduced reliance on overtime.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively Deploy Federal Funding

Objective: Restore Damaged Grid Infrastructure

Objective: Improve the Resilience of Vulnerable Infrastructure

Work methods, vehicles, and equipment will be used to complete FEMA work more safely and efficiently, one of the outcomes of which is improved outage response and system restoration timelines.

Efficient workforce deployment will improve worker productivity, leading to better use of federal funding (i.e., increased productivity).

Workflow Processes & Tracking

Control of the workforce and efficient dispatch of available resources will assist LUMA in responding to outages quicker, thus reducing the time required to restore damaged infrastructure and, as a result, service (as measured by SAIDI or CAIDI).

In the event of an emergency, disaster, or catastrophic event, control of the workforce (planning and dispatch) and proper fleet and equipment (the result of effective preventative and corrective maintenance practices and enabling software) will aid LUMA employees in being better prepared to respond to outages and effect repairs to restore power quicker than previously experienced. Adherence to consistent quality standards, part and parcel to a more robust work management process and system is consistent with and a prerequisite to LUMA's objective for a more resilient grid.

2.6 Program Risks

There is a substantial downside risk in failing to pursue this program. Without it, employees will not have established work methods, quality standards, safe equipment, or coordinated dispatch to safely operate and maintain the electrical system as a prudent utility. Workforce management will continue to be managed in an ad hoc and inconsistent manner limiting LUMA's ability to actively manage the maintenance and replacement of assets. Manual processes are too cumbersome to consistently identify and trend performance. As such, risks of not pursuing this program include issues related to the realities of human error, possible degradation of LUMA's reputation (particularly if deemed out-of-compliance with applicable laws and regulations), difficulties in meeting customer service expectations (during "blue sky" or major storm events) and higher than acceptable T&D O&M costs.

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	—	\$10.0	\$0.5	—
SRP Expenditures	—	\$10.0	\$0.5	—

3.2 Program Resource Requirements

Several people will be required from within the Operations department to implement these improvements and support from IT/OT, HR, and Utility Transformation.

3.3 Estimating Methods and Assumptions

Applicable Standards and Codes considered included:

- OSHA
- IEEE
- LUMA's safety practices, programs, work methods
- Prudent Utility Industry standards
- Labor law



Workflow Processes & Tracking

- Puerto Rico law
- Manufacturer recommendations

We assumed an in-service date of two months from commencement, followed by prioritized spending over the balance of the calendar year and then annually at the beginning of the fiscal year.

Applicable program standards and requirements included:

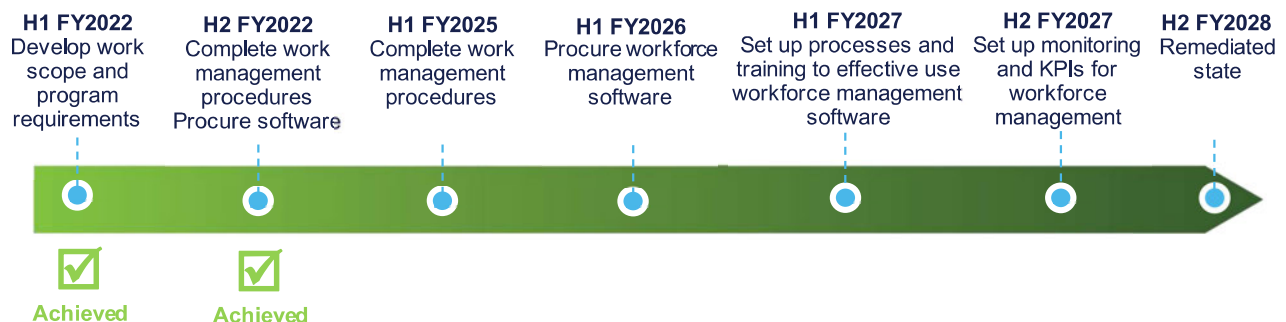
- LUMA's safety management systems and standards
- LUMA's work methods
- LUMA's training programs
- LUMA's engineering and design specifications and standards
- LUMA's system operations, switching, and outage guidelines
- LUMA's Operations department standard operating procedures manual

Assumptions on contract or internal resources:

- Approximately 1,000 field / technical employees
- Executive and senior management staff, dozens of supervisors and over approximately 1000 technical employees who will require training on dispatch and the work management system, any new work methods and LUMA's quality and preventative maintenance programs

Historical program information is based on the following systems: STORMS, OMS and iDispatcher, iNet and existing customer care and billing software.

3.4 Timeline and Milestones



IT OT Asset Management

IT OT Asset Management

1.0 Program Description

LUMA will introduce industry-standard Information Technology/Operational Technology (IT OT) asset management procedures and provide the necessary system upgrades to ensure secure business operation and continuity, as well as improved customer responsiveness. The scope of the program includes assessing PREPA's application and infrastructure portfolio and beginning a series of software and infrastructure upgrades that drive toward a transition to cloud-based technology. IT OT resilience in this program also extends to the establishment of a new backup data center to ensure the reliability and resilience of technology systems.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

LUMA is charged with the overall management of over 200 enterprise and operational technology assets, including the safe and secure backup of technology assets. A significant number of the software solutions are customer standalone systems, and 90% of the infrastructure is at end-of-support/end-of-life. This includes substation RTU and SCADA-related equipment. Another significant gap and safety concern is the absence of a fully functional voice radio system for workforce management.

The current state of the IT OT Asset Management processes and the maintenance of technology assets corresponds to a low maturity score in the gap assessment. This indicates that PREPA is aware of the need to address the elements that define competent IT OT Asset Management and is starting to apply them in specific areas of critical IT OT assets that enable key business functions. Gaps requiring remediation exist in all areas of IT OT asset management. For example:

- There is no formal documented IT OT asset management strategy, nor are there processes or tools aligned to an industry best practice
- There is no centralized repository for tracking and managing software solutions and infrastructure, resulting in end-of-life assets and increased risk of security breaches. Additionally, there is an absence of IT principles (infrastructure refresh cycles, license policies, environment management, etc.)
- Mission critical systems are dated and not vendor-supported (e.g., SCADA, Energy Management System [EMS], work management [STORMS], fleet management [Fleetfocus])
- The connectivity model is outdated and not synchronized between the steady state and the operational state in the outage management system (OMS) and poses a liability and safety risk
- Current processes do not utilize the capability of the OMS to capture estimated times of restoration because the outdated connectivity model and lack of accurate geographic information system (GIS) data limit the accuracy of the estimated time of restoration output
- The capabilities provided by technology solutions are not fully leveraged or integrated (e.g., no integration between the automated meter reading system and outage management system to support the prediction of outage locations)

IT OT Asset Management

- The network infrastructure is dated and not supported. There is little telecom equipment integration present, which results in extended outages, possible equipment damage, and risk to employees and the public
- The controls in place to ensure identities and credentials are managed for authorized devices, users, and processes across assets/locations are inconsistent
- The disaster recovery site at Aguirre and the backup control center (Ponce) do not support critical functions due to environmental and security risks
- Current on-premises hardware is out of date
- Compliance and governance software to adhere to North American Electric Reliability Corporation - Critical Infrastructure Protection (NERC-CIP) requirements¹
- The IT OT department's ability to ensure secure business operations and deal with potential issues preemptively is severely limited due to:
 - End of life and non-maintained software and infrastructure assets
 - Immature IT OT asset management processes
 - A lack of IT OT asset management performance

2.1.1 Additional Gaps Identified Post Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

In the remediated state business-critical applications (i.e., hardware, software, databases, and infrastructure) required to keep the business operating will be upgraded to vendor-support level. The business-critical application and infrastructure portfolio will be vendor-supported to mitigate the risk of prolonged system outages. In accordance with Act 17, maintaining vendor support mitigates operational risk to technology assets and business operations.

The backup control center and technology disaster recovery capabilities will be relocated to a secure and resilient facility. The facilities and technologies are critical to the resilience and continuity of technology services. In accordance with Act 17, the remediated state will ensure secure and reliable controls are in place to prevent and manage the continuity of technology and business operations in the event of a disaster.

Enterprise architecture standards will be established along with the implementation of enterprise architecture capabilities within the organization.

Field mobile devices will be enrolled in the FirstNet First Responder system to improve response capabilities and resiliency by ensuring communications and access to systems, data, and electrical network maps during cellular connectivity disruptions.

LUMA's IT OT Asset Management procedures are compliant with the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement (T&D OMA) and ensure IT OT assets used to

¹ Though Puerto Rico does not fall under the jurisdiction of NERC, LUMA opts to apply the appropriate sections of NERC to the extent they are reflective of industry best practices.

IT OT Asset Management

operate and maintain the T&D system are managed and maintained in accordance with Contract Standards by using strategies and risk optimization to achieve combined technical performance, life cycle cost, safety, customer satisfaction and regulatory compliance (T&D OMA Annex I, Section II[A]).

2.3 Description of Program Completed State

The IT OT Asset Management program addresses the major deficiencies in enterprise and operational technology asset management identified in the gap analysis. Included in the program are:

- Funds for replacement of end-of-life hardware, software, databases, and infrastructure assets to mitigate the risk of security breaches
- Implementation of IT OT Asset Management, processes and practices
- Implementation of a secure and reliable backup data center
- Up-to-date cyber security systems and licenses for physical security monitoring
- Up to date DNP3 compatible substation controllers for controlling the electrical grid and supporting grid modernization

In the completed state, software, databases, and infrastructure will be upgraded in accordance with vendor lifecycles or decommissioned when no longer required. The application and infrastructure portfolio will be vendor-supported to mitigate the risk of security breaches. The backup data center facilities will be remediated to ensure the resiliency and reliability of technology systems to enable business continuity and disaster recovery in the event of an incident or natural disaster. Recovery time objectives (RTOs) and recovery point objectives (RPOs) will be defined for business applications and will be supported. The IT OT Technology and Infrastructure team, along with the Technology Enablement and Sustainment team, will operate according to industry best practices. This includes conforming with established enterprise architecture standards and a technology refresh cycle, the implementation of enterprise architecture practices, and the ownership and operation of technology assets only within their useful lives.

The electrically connected model will be up-to-date and visible to Operations, giving them the ability to monitor, control, and orchestrate field crews for emergency response and restoration efforts. Accuracy of the connected model is essential for public and worker safety.

2.4 Program Activities

There are 17 projects that comprise the overall IT OT Asset Management program.

The IT Application and Infrastructure Portfolio Optimization and IT Operational Systems projects represent the upgrade or replacement of enterprise and operational software applications as well as that of the underlying hardware or infrastructure to reach vendor-supported levels. Where possible, enterprise applications will be moved to cloud-based solutions, and end-of-life hardware will be replaced. These programs will see upgrades/replacements begin in 2022, with most of the upgrades/replacements occurring by 2025.

The remaining expenditure addresses requirements to remediate inadequacies of the current backup data center. This remediation will help to ensure the resiliency and reliability of technology systems for business continuity and disaster recovery in the event of an incident or natural disaster.

Activities to achieve remediation include:

IT OT Asset Management

- Design the IT OT Technology and Infrastructure team and the Technology Enablement and Sustainment team based on leading technology industry standards (Complete)
- Define business-critical systems (Complete)
- Recruit resources to operate and support business-critical systems
- Recruit enterprise architecture resources to define architectural standards and governance processes to ensure compliance with established standards
- Develop upgrades/replacements plan to upgrade/replace software and infrastructure for business-critical applications (Complete)
- Complete upgrade/replacement projects for business-critical applications and substations
- Assess available sites for the backup data center and establish a backup data center in the recommended location
- Relocate infrastructure supporting business-critical applications to a new backup data center location

The following approach is required to ensure success and completion of the program:

- People
 - Develop a training and certification program for resources (Complete)
- Process
 - Develop the capability to examine the application portfolio to develop a picture of long-term business and technical viability; establish a set of dispositions and criticality of action for transitioning the application portfolio (to cloud, for example, or for replacement) Complete
 - Identify the sequence of actions that should be pursued to "remediate" the application portfolio, ensuring that actions are sequenced and right-sized to optimize business value while minimizing the risk of application failure
 - Standup application environments to support development, testing, user acceptance testing, training, and disaster recovery testing
 - Develop processes and protocols to enable collaboration with field operations teams (Complete)
 - Ensure proper training for support staff (Complete)
- Tools and Technology
 - Define LUMA architecture standards and guiding principles
 - Use LUMA engineering standards for substation controller and RTU replacements
 - Extend the service management toolset to manage the application and infrastructure portfolio in accordance with the technology asset management strategy enabling lifecycle planning and supporting disaster recovery and business continuity planning
 - Establish a new backup data center and relocate all backup and disaster recovery infrastructure
 - Integrate siloed telecom management systems
 - Provide communication tools like cellular phones to field workers

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- Commissioning the workforce management
- Configure GIS to allow offline mapping



IT OT Asset Management

- Filling out the RFPs and CRFs for infrastructure replacement
- Building on ServiceNow to cover IT and OT systems
- Expand OMS Mobile functionality work to not be limited to outage events
- Commissioning of IT DR site

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Indirect
	<input type="checkbox"/> Implement effective public safety practices	
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Indirect
	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Indirect
	<input type="checkbox"/> Pursue project delivery excellence	
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Indirect
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively Deploy Federal Funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Indirect
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

This program reduces the risk of safety-related incidents by maintaining applications and the underlying infrastructure that provides access to business-critical information including the electrical network.

IT OT Asset Management

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

The program ensures customers have access to accurate and timely information provided by secure and reliable applications and infrastructure.

Objective: Increase Service Reliability

Replacement of end-of-life software, databases and other IT OT infrastructure assets will allow for better performance and monitoring of the O&M contract, improving reliability.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Objective: Enable Employees to Execute Operations Systematically

The use of more secure and reliable enterprise and operational applications and their supporting infrastructure will enable more systematic management of the business. These will also help employees to operate systems more efficiently and effectively.

This program reduces the risk of prolonged outages of critical business applications by maintaining the systems and infrastructure at vendor supported levels.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Improve Resilience of Vulnerable Infrastructure

The program provides the necessary system upgrades to ensure secure business operation and continuity of the T&D system, as well as improved customer responsiveness.

2.6 Program Risks

The primary risk of not proceeding with this program is that applications and integration will become unstable and vulnerable to security breaches. This allows for critical customer and asset data to be compromised with the potential for significant financial penalties. Not proceeding with the program will lead to an increased risk of prolonged system outages and the need to invoke emergency and manual processes as defined in the LUMA Business Continuity Plan. These manual processes will negatively affect performance levels and increase the risk of human error. This will directly affect LUMA's reputation in the marketplace through an inability to respond to customer requests in a timely and appropriate manner.

We cannot immediately upgrade/replace all unsupported software and infrastructure for commencement day so there will be an ongoing risk until all software and infrastructure supporting GridCo business functions are upgraded or replaced and GenCo specific systems are no longer operating on the network.

Key identified hardware pieces are critical to the operation of the electrical grid. Failure of these will result in losing control and visibility to the electrical network which can put employees and the public at risk.

IT OT Asset Management

Equipment damage can also occur during this time. The same risks are applicable to incomplete map migrations of the OMS system.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$21.3	\$6.4	\$5.4	\$5.7
SRP Expenditures	\$16.5	\$0.7	\$0.4	\$0.3

3.2 Program Resource Requirements

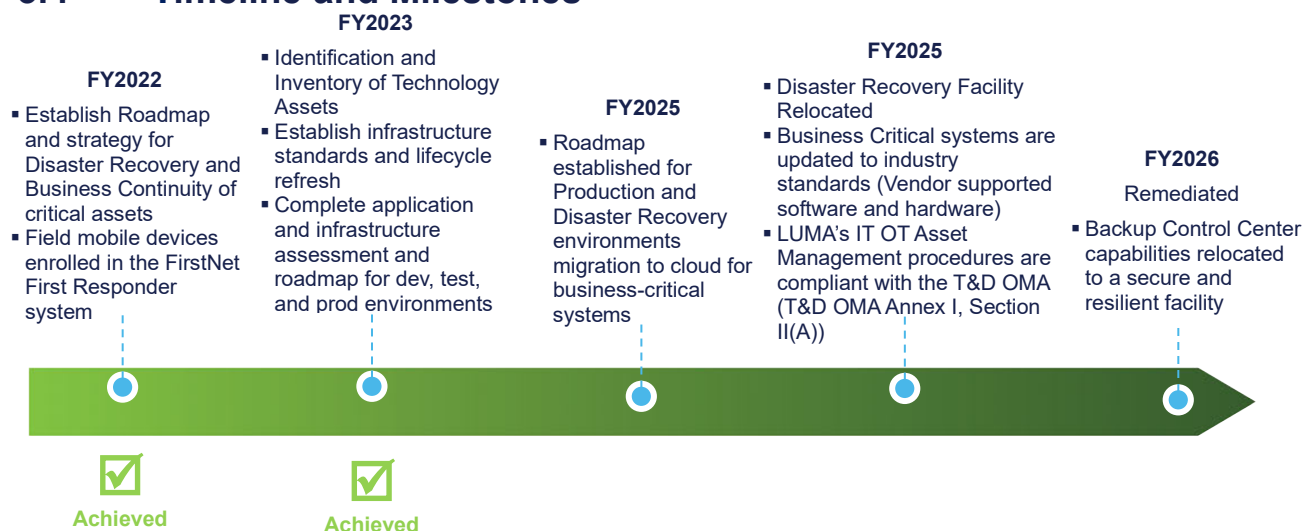
- System integrators
- Software and infrastructure vendors
- Software solutions and required infrastructure
- Data center building
- Control System vendors and integrators

3.3 Estimating Methods and Assumptions

The costs associated with implementation of this program is estimated using the IBM Project Cost Estimator for the upgrading/replacing utility business applications and the supporting infrastructure, based on Gartner recognized industry leading solutions in the specific areas and the use of cloud-based solutions (when possible).

ITOPS estimation was done based on the 2020 FEMA documentation presented by PREPA.

3.4 Timeline and Milestones



Critical Financial Systems

Critical Financial Systems

1.0 Program Description

This program covers technology projects for Finance and Facilities, including financial management systems and technology, risk management systems, and supply chain management technology. The initiatives cover areas within time tracking and labor costing, employee expenses, procurement, budgeting and forecasting, financial and operational reporting, risk management, and facilities management. These initiatives are required to address gaps identified in the financial management area.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

In our gap assessments, we have identified several gaps that impact the ability to produce accurate and timely financial results. Such financial results are required to meet an independent audit or management certification standard, provide data to support key business decisions, automate processes to lessen manual risk of fraud and error, track and report on enterprise risks, and provide support for requests for reimbursement to FEMA. The specific gaps identified were as follows.

TIME MANAGEMENT AND LABOR COSTING

- The data regarding hours worked by employees is disconnected from the information used to cost labor. This means that timecard data that is manually collected could have variances from the actual time employees worked. To ensure that no variance causes an overall misstatement, the timecard data is used to calculate percentages that are applied to actual pay. This gap is significant because there is a requirement that actual hours worked cost be traceable to a timecard for both FEMA-funded projects as well as for non-federally funded projects and expenses
- The current manual process to gather timecard data and cost employee time is cumbersome, requiring significant employee resources to complete for each period. The lengthy process inhibits the ability to provide timely information about labor costs to the business for decision-making. There is also a greater risk of error than there would be with an automated system, and making necessary corrections to employee time and related costing is onerous

EMPLOYEE EXPENSE REIMBURSEMENT

- The employee expense process was manual and relied on manual review and approvals, which exposed the organization to fraud and human error, something the use of automation could reduce. It also did not allow for the costing of expenses to a project or work breakdown structure. LUMA implemented Oracle's expense module to support automated approvals and charging to projects
- Currently, there is no tool to support corporate purchase cards, which we could use to streamline small purchases. We will also utilize Oracle's expense module for the coding and approval of corporate purchase card transactions

Critical Financial Systems

PROCUREMENT

- Currently, there are two systems used for procurement: Oracle E-Business Suite (EBS) for purchases under \$5,000 and Asset Suite for purchases over \$5,000. The use of two separate systems for procurement does not allow for optimal contract and process management
- Asset Suite has not been developed to support the use of a project work breakdown structure which represents significant gaps in the ability to manage projects
- When financial transactions are recorded in Oracle EBS from Asset Suite, they do not provide the necessary information to allow for review and analysis. The user is required to trace the transaction back to Asset Suite in order to find details about the transaction
- Asset Suite has also not been integrated into Oracle EBS in a way that would record commitments to projects. The ability to review committed costs against projects provides the project manager with valuable information that helps to forecast cash flow and track progress toward completion and against budget. The review of committed costs would have to be done manually with a report from Asset Suite. This also impacts period-end accruals, which are currently calculated and recorded manually, a process that is prone to error

BUDGETING AND FORECASTING

- The budgeting and forecasting system used for operation and maintenance costs required enhancements to close the gaps in the overall process. The review of budgets and the tracking of those budgets to actuals provide organizational controls on expenditures and highlight areas of concern. The system supporting the process required controls around approvals, the ability to have a monthly amount to compare to actual costs, and the ability to accurately forecast future expenditures. In FY2022, we implemented an online budgeting and forecasting system that links to the actual operation and maintenance expenses in Oracle
- The process used for producing capital project budgets and forecasts is currently manual. A system similar to that implemented for operation and maintenance costs is also required for capital project budgeting and forecasting. In addition, a system is required that is able to integrate with software used by Project Controls to produce project-level forecasts

FINANCIAL AND OPERATIONAL REPORTING

- A financial reporting tool will automate the current manual financial reporting process, which is prone to error, making the reporting process more efficient to support the significant reporting requirements that are being placed upon LUMA. We plan to implement this tool by the end of FY2023
- The tool will also provide ad hoc reporting capabilities to support business decisions. Currently, there is no ad hoc reporting tool, so we must manually create every request for data in Excel or an Oracle custom report. The use of custom reports for ad hoc data analysis is not efficient from a cost or effort perspective

RISK MANAGEMENT

- We identified the gap of a lack of a risk management information system. Such a system would ensure that we identify enterprise risks, properly accumulate and track exposure data, and capture and trend claims data for further analysis and monitoring through claim closure. Modern systems can track retentions and deductible build-ups and provide a litany of additional services, including storing policies, managing department data, and creating efficiencies for the business and external stakeholders

Critical Financial Systems

FACILITIES MANAGEMENT

- We have identified a couple of gaps in the management of our facilities, including the lack of software to accurately project costs related to building upgrades. This will be a major area of focus in the coming years

GENERAL TECHNOLOGY

- Meeting rooms need to have technology installed to allow for collaboration and sharing

2.1.1 Additional Gaps Identified Post-commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

Four gaps noted in Section 2.1 are identified as needing remediation. Gaps reach their remediated state when the following is achieved:

- Employees can link time to projects and task structures, and the labor costing is accurate, traceable to an approved timecard, and fully integrated with payroll and project costing, which will meet the requirements for FEMA funding. Also, the recording of costs for non-federally funded projects and expenses is precise (gap A)
- Employee expenses can be recorded to a project and task structure. This was remediated in FY2022. (gap B)
- Procurement can record cost of materials and services to a project and task structure and is integrated with Oracle EBS to enable drill-down into transactions and the accurate and timely recording of commitments and accruals (gap C)
- Risk management exposures and the ability to manage insurance claims will be captured in the risk management information system (gap F)

2.3 Description of Program Completed State

Items included in this section have been identified as gaps and require work to bring the program to a completed state. Once the gaps have been addressed, the following should have been achieved:

- Employee expenses and per diems will be approved using automation, and the rollout of corporate purchase cards will be complete
- Procurement and contract management processes have been consolidated into one system and one process supporting the organization
- Budgets and forecasts will be relied upon by the organization for tracking and control of actual operation and maintenance and capital expenditures
- A financial reporting and ad hoc tool will be in place, allowing the organization to meet reporting requirements and support analysis of financial transactions for audit, decision making, and regulatory filings
- Estimating software is in place to support the major facilities work that is required with accurate forecasts and tracking of progress
- Meeting rooms are equipped to support collaboration and communication

Critical Financial Systems

- Financial applications will be upgraded as required to maintain vendor support and to take advantage of new functionality releases

2.4 Program Activities

- A new time tracking and labor costing system will be implemented that allows users to charge hours directly to activities and allows users to charge to project and task structures as required. The cost of labor will be automated
- All procurements will be moved from Asset Suite to Oracle EBS
- The implementation of the Oracle expense module will be completed. It is currently being utilized for the coding and approval of employee expenses and will be expanded to handle corporate purchase card transactions
- A new software system will be implemented to track insurance exposure data, insurance claims data, and safety data components
- Budgeting and forecasting systems will be developed for operation and maintenance expenses and capital projects to resolve gaps identified
- A financial reporting and ad hoc reporting tool will be implemented
- New estimating software for major facilities work will be implemented
- New meeting room technology will be installed
- A team will be formed to plan for a major Oracle upgrade

2.4.1 Additional Activities Identified Post-Commencement

No additional activities identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be completing the migration of the procurement for all inventory purchased for the warehouse, from Asset Suite to Oracle EBS. Also, risk management will be focused on the implementation of a risk management information system to capture the exposures and the ability to manage insurance claims in a centralized system.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	<input type="checkbox"/> Implement effective public safety practices	
<input type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input type="checkbox"/> Increase service reliability	
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct

Critical Financial Systems

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Direct
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Indirect
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively deploy federal funding	Direct
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

- Financial statements can be produced timely and accurately in accordance with generally accepted accounting principles
- Business users will be able to access financial data for analysis to support business decisions
- Information and reporting required to support regulatory filings can be produced timely and accurately
- Risks will be logged, reviewed, and measured for impact on the business
- Budgets will reflect expected results and provide tracking and control of the business
- Project managers will have detailed cost information allowing them to identify root causes of budget variances and improve cost forecasting

Objective: Pursue Project Delivery Excellence

- The ability to track detailed hours for activities performed and enforce timecard approvals
- Provide detailed labor costing for FEMA and non-federally funded projects without large amounts of manual effort
- The use of an estimating tool for buildings will allow for better execution of a large capital program

Objective: Enable Employees to Execute Operations Systematically

- The automation of employee expenses will ensure system-enforced approvals and timely transfer of data through the process
- The use of procurement cards will streamline the process for employees who need small materials or supplies

Critical Financial Systems

PRIMARY GOAL: SYSTEM REBUILD & RESILIENCY

Objective: Effectively Deploy Federal Funding

- Accurate recording of time is required for Federal Funding
- Deployment of building estimating software will support the spending of Federally Funded dollars on buildings

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Enable the Digital Transformation

Since this program comprises technology-related projects, most areas will contribute to enabling digital transformation. Automating time tracking and cost tracking, including employee expenses, would be heavy in this area.

2.6 Program Risks

Without the execution of this program, the risks would be a material misstatement of financial results and the loss of federal funding. Inaccurate financial results could lead to bad business decisions, materially misinform internal and external stakeholders, and damage LUMA's reputation. Inaccurate labor reporting and job costing could ultimately lead to unexpected budget variances and potentially losing eligibility for federal funding.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$1.8	\$1.8	\$4.4	\$15.2
SRP Expenditures	\$1.5	\$1.3	\$1.4	-

3.2 Program Resource Requirements

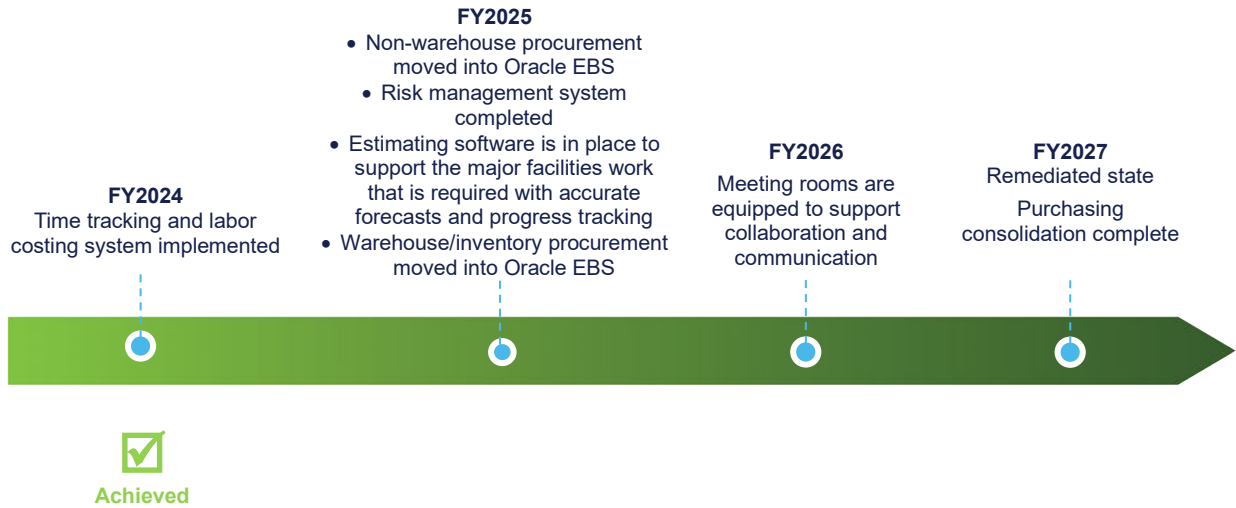
Costs related to this program include internal labor, external IT resources, and consulting support for specialized areas.

3.3 Estimating Methods and Assumptions

Each project was estimated individually based on the expected resource requirements. Resources and the hours of effort were costed at average labor rates.

Critical Financial Systems

3.4 Timeline and Milestones



Update to Third Party Use, Audit, Contract, and Billing Procedures

Update to Third Party Use, Audit, Contract, and Billing Procedures

1.0 Program Description

This program is focused on updating procedures for third-party use of land, use of infrastructure, audits, contracts, and billing. The program will include:

- Developing consistent processes and agreement templates to ensure compliance with legislation
- Streamlining and improving customer service for third parties who wish to use pole infrastructure
- Establishing annual billing to third parties to ensure they are paying the associated fee to attach to individual structures (either overhead or underground)
- Completing updates and corrections to the Customer Care & Billing (CC&B) system to ensure data accurately reflects the current asset management third-party pole attachment numbers and identifies responsible billing parties; and
- Implementing necessary changes to the billing process for third-party attachment billing, which may include contract updates and renegotiation.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

PREPA has obligations to allow third-party use of pole infrastructure in defined circumstances. Act 17, Arts. 1.5(9)(b); 1.15(a); and 1.17 and Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement, Annex I, Section 2. A. 2. requires a complete inventory of pole attachments and a plan to add revenues for pole attachments.

Procedures and processes for requests to use the pole infrastructure are below minimum acceptable levels. LUMA's review indicates a lack of documentation for third-party pole attachments.

The program will require working with operating groups who will complete an assessment of this infrastructure and record data on the existing pole attachments as part of that process. From the data, a full inventory will be created. The assessment process will include a review of adherence to loading standards to ensure the resiliency of the system. This work will be coordinated with the distribution assessment program and GIS mapping. From this review and assessment process, the program will assist in creating agreements for existing pole attachments and develop new procedures and agreement templates so that the reliability of the system can be maintained and the work can be performed safely.

The identified gaps are as follows:

- Agreement templates are currently unavailable
- Response times are inconsistent and often unreasonable

Update to Third Party Use, Audit, Contract, and Billing Procedures

- Procedures for installation by third parties are not consistently monitored and may result in unsafe installations or unplanned interruptions in service
- The lack of a permitting process for pole attachments has resulted in a high share of poles with third-party pole attachments, resulting in the physical loading of many distribution poles beyond prescribed limits. This increases the risk of the structural failure of poles, reducing reliability and increasing public safety risk
- Improper third-party pole attachments can block proper maintenance practices and increase safety risks to maintenance workers
- Excess third-party equipment is not removed, and unused or obsolete equipment is often left attached to poles
- There is no clarity on third parties' obligation to provide payment for the use of electric utility infrastructure. The systems and processes for tracking and updating joint-use attachments are unclear or non-existent. Although PREPA has stated that they bill for some joint-use attachments today, no data has been provided
- As noted in post-disaster reports, overloaded poles are more vulnerable to structural damage or failure in windstorm conditions, increasing restoration times

2.1.1 Additional Gaps Identified Post-Commencement

LUMA has developed a third-party pole attachment agreement, and this has been shared with all telecommunication companies since 2022 and the telecommunications regulator (NET). As of January 2024, LUMA has not been able to get third-party pole attachment agreements signed with any of the telecommunications companies in Puerto Rico

As part of the third-party pole attachment applications, LUMA is performing field condition assessments and engineering evaluations to ensure requested poles will meet industry and safety standards and the resulting condition will amplify possible safety hazards. An engineering evaluation will then analyze poles that meet minimum clearance criteria and have proper physical integrity for pole loading. Poles that pass the pole loading analysis will be validated for the installation of new or additional third-party pole attachments. This type of analysis is done in alignment with the JRSP-MI-2019-0001 “Uso Mancomunado Seguro de los Postes de la Utilidad Eléctrica” order by the *Junta Reglamentadora de Servicio Público* (Public Service Regulatory Board). A combination of implementing the safe load analysis and existing field pole conditions has provoked a high rate of third-party pole attachment applications not being validated.

A detailed inventory of third-party pole attachments in the system is unavailable. Requests have been made to all the telecommunication companies to provide their inventory information, but only a small number have responded. As part of other capital work in the system, LUMA will continue to collect information on third-party pole attachments in the system, but a full inventory could only be achieved by consolidating internal data with information from the telecommunication Companies.

As per Puerto Rico law 83-1941, LUMA provides notifications to the telecommunications companies regarding future planned work to take the necessary actions to remove and reattach their telecommunications equipment. As of January 2024, LUMA has notified work for more than 10,000 poles with ineffective responses from telecommunication companies. Telecommunication companies are indicating that it is LUMA's responsibility to remove and permanently reattach their equipment and to cover the costs associated with that work.

Update to Third Party Use, Audit, Contract, and Billing Procedures

2.2 Description of Remediated State

In accordance with the requirements of Act 17 and the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement, in the remediated state, all poles will have been inspected to document third-party pole attachments properly. Any issues arising from third-party pole attachments affecting pole integrity will be identified, and a plan to remove or resolve the issue will be developed.

Upon completion of the remediated state, LUMA will have completed agreements for third-party usage of poles in accordance with legislation. These agreements will clearly document standards required for third parties to attach to electrical infrastructure. Using agreement templates will support consistency and efficiency in a timely manner that meets the outside party's needs. The templates will be used to enforce standards and requirements for the safe installation of third-party infrastructure on company land and structures and to clarify LUMA's obligations with respect to third-party use of land and infrastructure.

Third-party attachment billing is not part of the System Remediation Plan. Updates to the joint-use billing system will be achieved in the completed state.

2.3 Description of Program Completed State

This program will be completed once the remediated state has been reached and the additional third-party pole attachment billing updates have been completed. All third-party pole attachments will be invoiced to third parties annually. LUMA will have completed updates and performed corrections in the customer care and billing system (CC&B) system to ensure that data accurately reflects the current asset management third-party pole attachment numbers and the associated responsible billing parties. In addition, necessary changes to the billing process (as it relates to CC&B administration of third-party pole attachments billing) will be updated, which may include contract updates and renegotiation.

Distribution poles would only be loaded exceptionally over prescribed structural limits in the completed state. This would also include minimal interference with maintenance practices and a low safety risk to maintenance workers and the public. Improperly installed third-party pole attachments and structural failure due to overloading would cause minimal service interruptions.

2.4 Program Activities

- Review the current legislation and establish communication with the regulating agency, finalize requirements within agreements (Complete)
- Develop agreement templates that are compliant with legal requirements and allow consistency of application with the outside parties (Complete)
- Establish, communicate, and enforce agreements with third parties to use electric infrastructure. This potentially includes payment for such use as permitted by law and regulation
- Analyze the current state of contracts related to pole attachments (Complete)
- Establish methodologies within the contract that define the responsibilities of the outside parties so that communication takes place and work can be monitored by Operations and be completed safely (Complete)
- Develop procedures for processing and managing requests received from third parties with defined timeframes to improve customer response times (Complete)

Update to Third Party Use, Audit, Contract, and Billing Procedures

- Develop and implement procedures and practices in conjunction with pole replacement and rehabilitation programs
- Asset Management will document third-party attachments as part of the ongoing field assessments for Capital Projects. LUMA will work with telecommunication companies to gather, compile, and validate joint-use attachments in the system
- Unsafe attachments will be identified as part of day-to-day activities, including Capital work. These unsafe conditions will be addressed with the telecommunication equipment owners
- Customer Experience will update all joint-use attachments into Oracle CC&B
- Customer Experience will create an annual billing cycle for third-party partners
- Complete updates and correct CC&B system billing data to ensure data accurately reflects the current asset management joint-use attachment numbers
- Make necessary changes to the billing process related to CC&B administration of joint-use billing to ensure effective and timely future updates

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be:

- New agreement signed by LUMA and telecommunication companies
- Continue to implement new requirements, codes, and standards related to pole attachment and new attachment agreements and enforce existing agreements
- Enhance procedures and practices in conjunction with pole replacement and rehabilitation programs
- Update joint-use attachments and associated systems and data in Oracle CC&B

2.5 Program Benefits

Primary Goals	Objectives	Direct or Indirect Impact
☒ Prioritize Safety	☒ Promote a safe workplace	Direct
	☒ Implement effective public safety practices	Direct
☒ Improve Customer Satisfaction	☒ Deliver a positive customer experience	Indirect
	☐ Increase service reliability	
	☒ Deliver electricity at reasonable prices	Indirect
☒ Operational Excellence	☒ Enable systematic management of the business	Direct
	☒ Pursue project delivery excellence	Direct
	☒ Enable employees to execute operations systematically	Indirect

Update to Third Party Use, Audit, Contract, and Billing Procedures

Primary Goals	Objectives	Direct or Indirect Impact
☒ System Rebuild and Resiliency	<input type="checkbox"/> Effectively Deploy Federal Funding	
	☒ Restore damaged grid infrastructure	Direct
	☒ Improve the resilience of vulnerable infrastructure	Direct
☐ Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
☒ Other	☒ Other: provide additional revenue	Direct

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a safe workplace

Objective: Implement effective public safety practices

- Decluttered poles make it much safer for employees as they climb them
- Standard form agreements that consider the work to be completed and the necessary communications with Operations will improve safety for both employees and the public

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a positive customer experience

Objective: Deliver electricity at reasonable prices

- Improved efficiency in responding to requests from outside parties will lead to an improved customer experience and a better company image within the Puerto Rico business community
- Increased accuracy in third-party customer billing can increase customer satisfaction as third-party customers will receive accurate billing
- Increased revenue from third-party customer billing will put downward pressure on the overall revenue requirement, thereby reducing electricity customers' rates. This involves a review of appropriate and justifiable rates with the advent of 5G technology

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable systematic management of the business

Objective: Pursue project delivery excellence

Objective: Enable employees to execute operations systematically



Update to Third Party Use, Audit, Contract, and Billing Procedures

- Increased visibility to third-party pole attachments on structures will improve the ability to complete planning activities
- The procedures to complete agreements with outside parties to comply with requirements to use existing poles will increase employee effectiveness and productivity by allowing employees to make decisions within established guidelines with clear standards
- Manual tracking systems will reduce the process administration for joint-use data
- Improved ability to query financial data related to third-party attachment revenue will streamline employee processes

PRIMARY GOAL: SYSTEM REBUILD & RESILIENCY

Objective: Restore Damaged Grid Infrastructure

This program helps to repair damage to pole integrity caused by the current system for managing third-party pole attachments.

Objective: Improve the Resilience of Vulnerable Infrastructure

New processes with enforceable contracts and standards will control the proliferation of third-party pole attachments and ensure they are safe and do not harm pole integrity.

PRIMARY GOAL: OTHER

Objective: Provide Additional Revenue

LUMA records, in addition to information provided by PREPA, indicate that as of FY2023, there are 435,636 attachments from various telecommunication companies. Previous agreements shared with LUMA show variations in the annual fee between the various telecommunication companies. It was also identified that since Hurricane María in 2017, no payment for third-party pole attachment usage has been billed or paid. With the data available, the total third-party attachment annual fee unbilled/unpaid for LUMA is approximately \$8.7 million (for FY2022 and FY2023). The total unpaid third-party attachment annual fee debt to PREPA from 2017 to 2021 is approximately \$17.6 million.

With the information available, LUMA could be billing telecommunication companies an estimated \$4.4 million for third-party attachment annual fees. In addition to the third-party pole attachment annual fee, LUMA implemented the third-party attachment application fee in November 2023. The application fee is intended to cover the expenses of processing the telecommunication companies' third-party attachment applications.

2.6 Program Risks

The risk of not proceeding with the program is to continue with the present system, which is inadequate. The current system will result in compromising the pole structures and potentially unsafe installations, which could result in unplanned service outages. The current system has led to poor relations in the business community and a high level of mistrust between the public and the company. Not pursuing this program will also result in lost pole attachment revenue and non-compliance with the regulator.

The risk in proceeding with the program is that it will represent a marked change from past practices. To be effective, a customer service-oriented approach will have to be established. Potential stakeholder



Update to Third Party Use, Audit, Contract, and Billing Procedures

management issues may arise if third-party attachment billing significantly increases for attached third parties, which may require escalation management.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures*	—	—	—	—
SRP Expenditures	—	—	—	—

*The fiscal year 2025 program funding anticipates covering program expenditure through fees collected from telecommunication companies as part of a forthcoming agreement under negotiation and third party applications fee.

3.2 Program Resource Requirements

- Technical writing resources will be required to aid in developing and writing the detailed procedures for pole attachments
- Legal resources will be required to develop the template agreements
- Customer experience resources are required to perform billing updates and assist in reporting progress and development of process and procedure updates
- Third-party billing information is required, including billing address, contact information, and contract terms
- Post-audit up-to-date asset data extracted from the asset management system (GIS), including structure type, location, and attached third-party company name, is required
- Field inspectors are needed to inspect the locations that are being requested for attachment
- Engineering analysts are needed to properly perform pole loading and sag analysis
- A portal must be created to properly process and document the applications
- Integration with various databases (G-electric, Asset Suite, etc.) is needed to keep pole data up to date

3.3 Estimating Methods and Assumptions

Standard LUMA pay scales assumed for internal resources and previous benchmarking of external resources such as contractors and legal assumed.

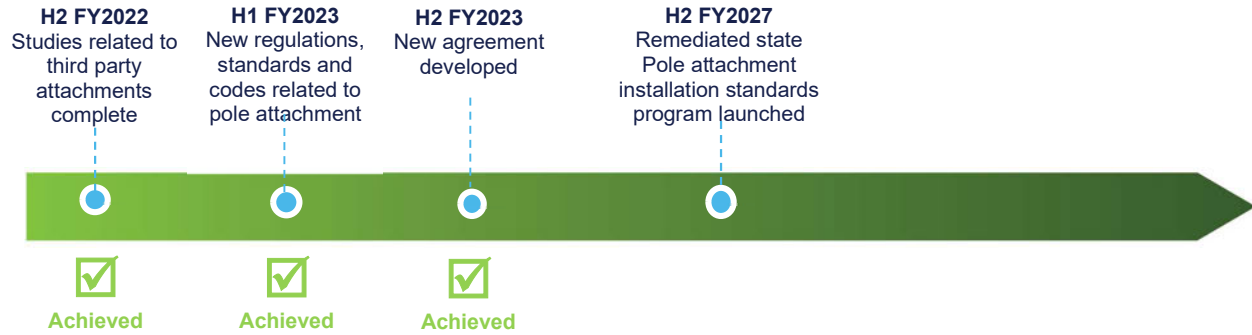
Methods and assumptions used to develop the third-party attachment billing update program estimate include the following:

- Estimated \$1,336.00 annually per overhead attachment
- Third-party pole attachment data has not been updated or billed accurately in some time, which will result in increased revenue post-audit

Update to Third Party Use, Audit, Contract, and Billing Procedures

- Estimated 75% of overhead structures have third-party pole attachments
- PREPA does not bill fees for unauthorized pole attachments

3.4 Timeline and Milestones



IT OT Enablement Program

IT OT Enablement Program

1.0 Program Description

This program will implement capabilities to deliver and maintain Information Technology/ Operations Technology (IT OT) services and systems, enabling LUMA operations by applying industry best practices and standardized processes and tools.

We will deploy fit-for-purpose devices to conduct business operations, enabling near real-time access to electric network data and providing a safer work environment.

We will implement industry best practices for information technology system management (ITSM) so that we can manage, provision, and maintain technology assets securely. We will implement processes to establish end-user device standards along with mobile application management to control how end-user devices are used.

We will also implement enterprise architecture and project management frameworks to ensure that we install, maintain and dispose of software and infrastructure assets in accordance with vendor support requirements, including patching and upgrades. This will mitigate the risk of prolonged system outages on non-vendor-supported software and infrastructure.

By the end of the program, LUMA will have developed and executed an operational data strategy, developed foundational enterprise architecture guidance, and outlined a cloud strategy. LUMA's IT and OT organization will be able to design, plan, deliver, operate, and control the lifecycle of IT and OT services, projects, and assets. An ITSM tool will ensure that technology is managed, provisioned, and maintained securely to reduce risk to the organization and enable users.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

LUMA is charged with:

- Overall management of approximately 4,000 users with access to enterprise and operational systems
- Management of end-user devices ranging from mobile phones to tablets, desktops, and peripherals distributed across Puerto Rico
- Management of business projects that introduce, extend, and maintain technology assets

The current state of service management, project management, and enterprise architecture processes and the maintenance of end-user devices correspond to a low maturity score based on LUMA's gap assessment. This indicates that PREPA is aware of the need to address the elements that define a competent IT OT service organization and end-user device program and is starting to apply them in specific areas of ITSM.

Gaps requiring attention exist in all areas of service management, for example:



IT OT Enablement Program

- There are no formal documented service management processes aligned to an industry framework for the management of incidents, problems, request fulfillment, and performance
- There are no certified service management professionals within the PREPA organization, nor is there a training and development plan in place to achieve certification
- There is no established IT OT service catalog, associated service levels, services, prioritization, or escalation mechanism for IT OT services. Incidents are responded to on a “first come, first served” basis without analysis of the risk level to the organization
- PREPA is using a project defect management tool in an attempt to manage the core capabilities of ITSM, which are request fulfillment and incident, problem, and performance management processes. As this is not the vendor’s intended use of the tool the capabilities are limited. The tracking of requests, incidents, and problems is simply through lists with no workflow or analytics
- There is no centralized repository for tracking and managing end-user devices, software, and infrastructure
- Resource constraints within the IT OT team have resulted in a lack of capacity to conduct analyses on incidents or to develop improvement plans
- Current PREPA systems do not comply with an end-user device refresh practice resulting in end-of-life devices that present a clear cybersecurity risk. The use of such devices would negatively affect LUMA’s operations, regulatory compliance, employee safety, and customer satisfaction
- End user device security patching processes and practices require significant improvement
- PREPA has an immature data management strategy — a Proof of Concept (PoC) is underway on data lake and analytics (which are covered in other initiatives), but there are no actions underway or planned with respect to operational data. This initiative is intended to address that shortfall, articulating a first set of policies/principles concerned with critical data subjects, defining: critical data subjects’ ownership / custodianship, definitive persistent stores (Books-of-Record) rules of consumption, replication, persistence data sensitivity, protection, integrity and availability rules/standards
- PREPA has very limited architectural capability — this initiative will introduce foundational artefacts/capabilities: enterprise architectural mandate operating model (governance, interactions), foundational models (e.g., Component Business Model [CBM]), and foundational building code for the implementation of a tool).
- There is no integrated software development or implementation lifecycle methodology, nor is there a project initiation, prioritization, approval, and funding process. There are also limited project planning, scheduling, execution, and closeout processes or standardized tools and templates for each project phase. The gap assessment also indicated a lack of standards for project document storage, folder organization, naming convention, or defined lessons learned process nor integration of lessons learned into future project planning
- Project management methodologies are not integrated with business relationship management, enterprise architecture, and technology

As a whole, the IT OT department’s ability to support and enable business operations in a secure manner has been hampered by end-of-life and poorly maintained end-user devices, immature service management processes, lack of properly skilled/trained personnel, lack of transparency on service management performance and the lack of an enterprise architectural and data management strategy.

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

IT OT Enablement Program

2.2 Description of Remediated State

In the remediated state, LUMA end-user device standards and tools for device imaging and management will have been implemented. All end-user devices deemed end-of-life will have been replaced. Information architecture will have been strengthened, and service management processes, practices, and tools will have been implemented.

2.3 Description of Program Completed State

The IT OT Enablement program addresses major deficiencies in the End User Device Management and Technology Operations Practices that were identified through LUMA's gap assessment. This program includes:

- Replacement of end-of-life end-user devices, thus mitigating the risk of security breaches
- Implementation of service management certification standards
- Implementation of service management processes and practices
- Implementation of a service management tool to support improved request fulfillment, incident, problem, and performance management
- Implementation of project management certification standards
- Implementation of project management processes, practices tools, and templates across the service delivery lifecycle
- Implementation of vendor management processes and practices

In the program completed state, end-user devices will be maintained and refreshed on a schedule set by the IT OT Service Management group according to industry best practices. This includes conformance with Information Technology service management standards, regular patching and refreshing of end-user devices, full training for all service management personnel, implementation of service management practices, and owning end-user device assets that operate within their useful lives.

2.4 Program Activities

The largest project is for the capital acquisition of new end-user devices to replace those that are end-of-life and unsecured. This includes approximately 2,000 laptops, 550 desktops, 1,200 ruggedized tablets, and 2,300 mobile devices that need to be replaced. This project aims for device refresh to occur during 2022 and early 2023. We estimate that \$4.3 million over the two years is needed to complete the refresh of devices. (Complete)

The other major expenditure addresses the requirement to implement an industry-standard IT OT service management toolset to manage all service requests, including:

- User access
- Software
- End user device
- Hardware and peripherals
- Information Architecture
- Architectural Strengthening

IT OT Enablement Program

Additionally, the IT OT service management toolset will record and manage incidents, problems, and performance across these areas.

The resulting program will encompass the people, processes, and technology required to ensure the success of the comprehensive program.

PEOPLE

- Design the IT OT Service Management group based on leading industry service management standards (Complete)
- Develop a ITIL training and certification program for resources
- Design an Enterprise Architecture strategy that formalizes leading technology resource interactions
- Establish a Business Relationship Management team (Complete)

PROCESS

- Develop IT OT service management catalog and associated service levels based on leading industry IT service management standards (Complete)
- Develop level three business process models and standard operating procedures for request fulfillment, incident management, problem management and performance management (Complete)
- Develop end user device asset management strategy including refresh period and patch management process (Complete)
- Develops and operationalizes a critical IT capability concerned with strategic leadership of technology (Complete)
- Develop standardized project management processes including project deliverable set based on the project type and project phase (Complete)
- Establish a data management strategy.

TOOLS AND TECHNOLOGY

- Define LUMA end-user-managed device standards (including provisioning, securing, and imaging) and user profiles (Complete)
- Evaluate and implement recommended service management toolset with core configuration service management toolset based on the IT OT Service Management Catalogue and service levels enabling service level reporting and data-driven decision making (Complete)
- Extend the service management toolset to manage LUMA end-user devices in accordance with the end-user device asset management strategy (Complete)
- Establishes the Building Code as the basis by which technology work will be conducted.
- Establish project deliverable templates (Complete)

2.4.1 Additional Activities Identified Post-Commencement

No additional activities identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be to implement a configuration database manager in service now to manage IT assets and start migration to a DevOps model to establish the Building Code.



IT OT Enablement Program

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Indirect
	<input type="checkbox"/> Implement effective public safety practices	
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Indirect
	<input checked="" type="checkbox"/> Increase service reliability	Indirect
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Indirect
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Indirect
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively Deploy Federal Funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input checked="" type="checkbox"/> Enable the digital transformation	Direct
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

Reduce risk of safety-related incidents by providing access to electrical network data via functioning and secured end user devices, and by resolving business critical application and infrastructure incidents on a priority basis.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

Enable the field workforce access to the electrical network and customer request data.

Objective: Increase Service Reliability

Eliminate manual work orders reducing the time to respond to network outages.

IT OT Enablement Program

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Use of secure end user devices will enable more systematic business management.

Provides standards and associated governance for LUMA's most important technology commodity: operational data. This ensures that critical operational data features are managed with integrity, and that owners/custodians own key decision-making.

Objective: Enable Employees to Execute Operations Systematically

Since employees will have access to more functional end-user devices, they will be better positioned to systematically execute operations.

2.6 Program Risks

The primary risk of not proceeding with this program is unsecured devices' continued access to the IT OT networks and the increased risk of a cybersecurity attack. This represents a significant risk of breaching customer and corporate data.

We cannot immediately suspend the use of all end-of-life end-user devices, so there will be an ongoing risk until all end-user devices used by LUMA are refreshed and devices used by the Generation Company (GenCo) and any other users are removed from the network. This includes both a cybersecurity risk due to outdated security standards of the end-of-life devices and an operational risk since the continued use of end-of-life devices may result in operational delays and difficulties.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$1.9	\$4.1	\$4.4	\$23.1
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

- ITSM Tool system integrator
- End user devices
- Enterprise architectural strengthening and data management

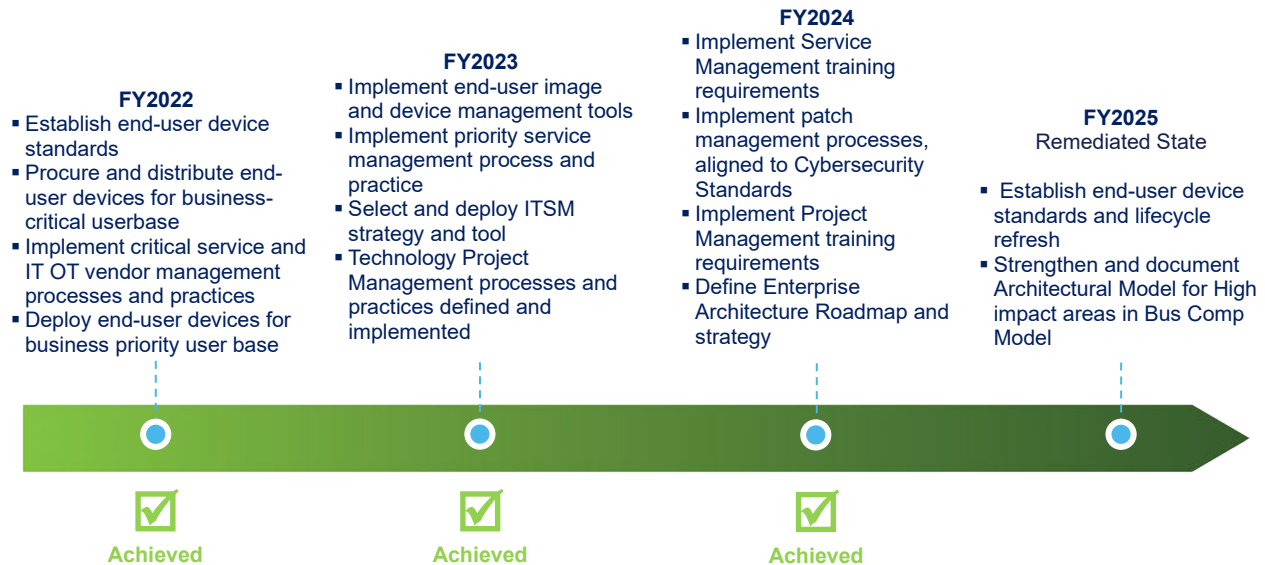
3.3 Estimating Methods and Assumptions

The end-user device replacement project, which represents the bulk of this program, is estimated based on quotes from various service providers available within Puerto Rico and the mainland United States.

IT OT Enablement Program

The costs associated with implementing service management processes and tools are estimated using the IBM Project Cost Estimator for implementing a Gartner-recognized industry-leading ITSM solution. Pricing assumptions are based on implementing ServiceNow for a medium-large enterprise.

3.4 Timeline and Milestones



Land Record Management

Land Record Management

1.0 Program Description

LUMA will develop a new record management system that allows land information to be found easily and managed to meet utility industry standards. This allows compliance with legal requirements to be documented and shown to satisfy regulators. It also allows user groups to have efficient access to information. In particular, such a system lets Operations and Construction perform their work while respecting land rights agreements.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

The current organization of property records makes it difficult to identify PREPA-owned or otherwise acquired property. An improved file format will allow user groups, such as Operations and Construction, better access to pertinent information so that tasks can be completed while respecting the land agreement. This will allow for better efficiency in completing the work and minimize the potential for conflict with the landowner.

LUMA's gap assessment has identified the following areas to be addressed:

- The historical reliance on judicial processes to acquire land rights means that land files are full of court filings and resolutions but may lack important technical information
- Files are not organized in a manner that allows for a review of maps identifying property rights acquired through each agreement
- Operations has difficulty determining the limits of the land rights that exist and therefore has difficulty in respecting land agreements during the performance of work
- Disputes with landowners may arise unnecessarily as a result of neither party having clear information about the land agreement

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

According to the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement, Annex I, Section I(G)(2), LUMA is responsible for maintaining documentation and acquiring easements as required for T&D System operations. In Section II(A), LUMA is required to manage and maintain all T&D System assets, including easements. In addition, Section 5.19(a) requires LUMA to identify areas that will be encumbered by easements for operation, maintenance, repair, restoration, replacements, improvements, additions, and alterations of the T&D System and take the necessary actions to acquire and constitute them.

Land Record Management

In the remediated state, LUMA will have:

- Developed a land file structure so that information pertinent to the Construction and Operations departments is easily located and accessed
- Ensured that all new files are organized as per the new land file structure
- Completed the assessment to convert the existing files and defined the project requirements

2.3 Description of Program Completed State

In the completed state, LUMA will have:

- Converted existing land files to the new structure and remedied information gaps in existing land files
- Integrated all land files into a land management system

2.4 Program Activities

- Review of existing land files (Complete)
- Determination of the structure necessary for the land files, potentially made with the assistance of legal experts (Complete)
- Assessment of IT and other requirements for a land management system (Complete)
- Acquisition of land management system
- Full implementation of the new land management system
- Complete conversion of existing files to new file structure and the land management system

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

Due to delays in the procurement process, the focus for the upcoming fiscal year will be to acquire and implement a new land management system, convert existing land files to the new structure, remediate information gaps in existing land files, and integrate all land files into a land management system.

2.5 Program Benefits

Primary Goals	Objectives	Direct or Indirect Impact
☒ Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	☒ Implement effective public safety practices	Indirect
☒ Improve Customer Satisfaction	☒ Deliver a positive customer experience	Indirect
	☒ Increase service reliability	Indirect
	☒ Deliver electricity at reasonable prices	Indirect

Land Record Management

Primary Goals	Objectives	Direct or Indirect Impact
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Direct
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Direct
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Implement Effective Public Safety Practices

Through better landowner management and communications, and as supported with correct and accessible documentation, encroachments onto current rights of way can be mitigated and threats to public safety minimized.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

More efficient use of information and records systems will allow for better relationships with landowners and a reduction in associated disputes, which contribute to better customer perceptions.

Objective: Increase Service Reliability

Access to right-of-way documentation for maintenance and emergency response is key to the system's reliability and the efficient performance of work.

Objective: Deliver Electricity at Reasonable Prices

More efficient use of information and records systems will help deliver the required services and minimize the cost of delivery.

Land Record Management

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

The records system to support land management will enable systematic management of the business by reducing the time to administer land rights and by improving resource efficiency.

Objective: Pursue Project Delivery Excellence

The ability to efficiently use support documentation to manage land acquisition and settle claims will improve the execution of capital projects.

PRIMARY GOAL: SYSTEM REBUILD & RESILIENCY

Objective: Effectively Deploy Federal Funding

Proof of land rights is a condition for obtaining any federal funding for capital projects, and the records system is integral to providing the necessary documentation.

2.6 Program Risks

The risk in not proceeding with the program is continuing with the present system, which is inadequate. This system has led to poor management of land acquisition and administration, inefficient operational work, and unnecessary conflicts with landowners.

The risk in proceeding with the program is that it will represent a change from past policy. It will take a change in thinking to execute and complete the file formats in a manner that serves the needs of users and the public rather than the strict legal needs of the land file.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$0.8	\$0.4	\$0.2	\$1.4
SRP Expenditures	\$0.2	—	—	—

3.2 Program Resource Requirements

The land file structure will require an integrated land management system as one element, complete with the necessary IT software and hardware.

Land Record Management

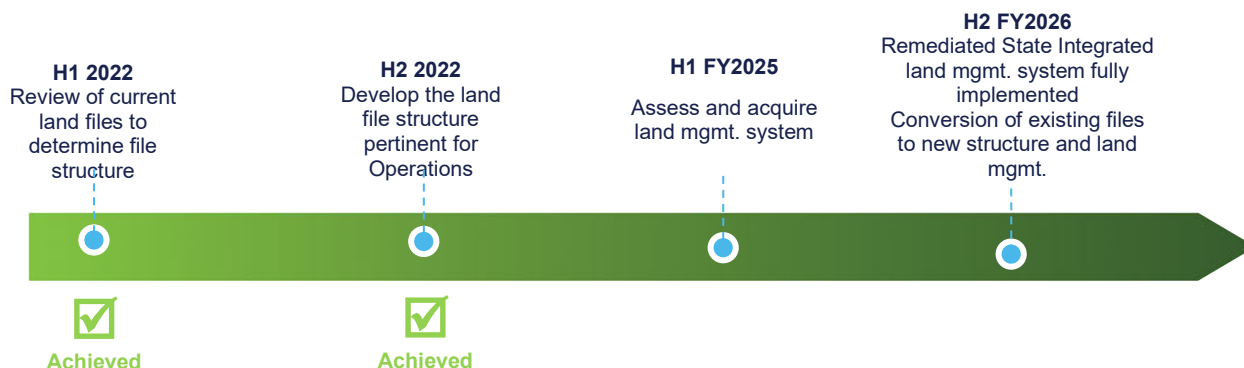
3.3 Estimating Methods and Assumptions

Applicable Standards and Codes: Right of way legislation in Puerto Rico, file requirements (“Ley de Archivo” and associated regulations), PREPA’s Regulation of Easements for the Puerto Rico Electric Power Authority Regulation 7282.

Internal resources from the PREPA Catastro office.

LUMA pay scales have been used for internal employee resources.

3.4 Timeline and Milestones



Critical Financial Controls

Critical Financial Controls

1.0 Program Description

The Critical Financial Controls program focuses on two key areas: Internal Controls and Internal Audit. Personnel from these two areas will build skills and capabilities in financial reporting and audit, and will update and enforce industry-standard policies and procedures that comply with the latest laws and regulations. Internal Controls will address various internal items, including obtaining and reviewing service organization controls for major vendors, the implementation of key transaction controls, reconciliations, validation, physical inspections, documentation evidencing performance of control tasks, disclosures, enforcement of applicable policies and procedures for employees to identify deviations, the establishment of a formal plan for communications with the audit committee and the revamp of the internal audit department. Internal Audit builds the foundation of the internal audit team as well as the development of the methodology and process, along with building and retaining the required skills and technology base.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Pre-Commencement, a review of processes and controls identified a list of 63 critical SRP gaps. These gaps covered multiple areas and were summarized into key areas of findings:

- Accounting policies
- Approval controls
- Physical asset reviews
- Reconciliation and review
- System-enforced controls
- Timely recording of transactions and accruals
- Evidence of review and approvals
- System access and segregation of duties
- Budgeting processes
- Accuracy of sub-ledgers
- Customer service policies
- Recording of cash
- Control over master data and reports

These control gaps needed to be remediated to create a control environment that mitigates the risk of material misstatement of the financial statements, provides for the reporting of consistently reliable financial information, provides reasonable assurance that transactions are properly processed without error, and assists in the mitigation or detection of fraud.

Overall, the analysis confirmed a lack of clarity regarding roles and responsibilities, which led to an ineffective financial decision-making process. Much more clarity was required on roles and responsibilities related to financial transactions, reconciliations, validation, physical inspection, and disclosure steps. This includes complex decisions that require judgment.

Critical Financial Controls

Enforcement of policies and procedures, as well as employee training in policies and procedures, was greatly lacking. Both training and enforcement are critical to identifying deviations and root causes, assessing impact, and determining corrective actions in key areas such as cash, procurement, capital assets, revenue and account receivables, accruals, and inventory.

There was a need to identify and document key areas of focus and to mitigate risks of significant changes in business, system, and overall processes or fraud.

Follow-up on deficiencies and other matters identified internally and/or by external auditors was not prompt. Also, key findings and corrective actions taken to address them were not documented.

The existing financial management and reporting processes and procedures were inadequate to manage the complex business of running an electric utility. Therefore, new policies and procedures must be reviewed, updated, remediated, and implemented to ensure controls are in place and operating as needed. This will provide reasonable assurance that risks are mitigated and help ensure accurate and complete closing of accounting records, financial statements, and reporting on deliverables.

The Audit department required an increase in overall skills and capabilities. There was no formal assessment of the Internal Control Framework. In addition, the existing internal audit procedures needed to be updated to effectively manage and control the risks associated with the high capital and operating costs of a large utility company.

Gap assessments of the existing financial management procedures and policies identified significant problems and inconsistencies in how the system was being managed. Any deviations from expected answers in the annual ethics certification process in the work environment and workplace were not properly followed up on for compliance. Policies and procedures must be routinely examined to ensure they comply with the latest laws and regulations. Additionally, these policies and procedures need to be aligned with the latest technology and the latest thinking in the industry to increase their consistency and effectiveness.

The employee skill levels needed to properly execute policies and procedures required for the financial management systems were not fully available, and the internal controls to assess effectiveness were lacking. There was no process in place to obtain and review specific organization controls for services provided by major outsourced vendors or to review their interface with the Oracle E-Business Suite system.

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

Items included in this section have been identified as significantly below operating practice and required remediation (dates are contingent upon available funding for resources to remediate) prior to the transfer of liability. Once the gaps have been remediated, the following should have been achieved:

- All 63 of the identified internal control gaps discussed above have been remediated
- Policies and procedures exist and are reviewed for updates, and all employees and contractors are knowledgeable of relevant policies and have access to a current "Administrative Manual"

Critical Financial Controls

- Policies and procedures are in place to ensure key risks are mitigated, and accurate and complete closing of accounting records, financial statements, and reporting on deliverables are achieved
- Transparency and necessary skills on key financial roles and responsibilities with employees able to identify deviations, assess the impact, and take appropriate actions to ensure compliance with laws and regulations
- Basic skills and consistent application of industry standards for financial tasks and decisions that are complex and require a high level of judgment
- Consistent information and communication across the organization supports a forward-looking and solution-oriented audit approach
- Establishment of more frequent and fluid audit cycles on key areas of focus, and review of the Internal Control Framework

2.3 Description of Program Completed State

Internal Controls address the major deficiencies identified as part of the assessment of internal controls over financial reporting, such as review, update, and enforcement of applicable policies and procedures; review of external contractors for compliance; and assessment of skill and capabilities. In the completed state, the Finance department will have policies and procedures updated to comply with laws and regulations relevant to the latest technology and industry best practices. They would be regularly reviewed for a consistent and effective approach, which will help to identify and address the necessary continuing development of skills and capabilities, support strong internal controls, and ensure accountability and consistency in daily transactions and financial reporting.

The presence of sound controls will mostly avoid financial errors or omissions, material weaknesses, and significant deficiencies in the completed state.

Revamping the Internal Audit addresses the need build the foundation for the Internal Audit team and subsequently retain the required skills and technology. In the completed state, more frequent and fluid audit cycles will be established on key areas of focus, such as legal and compliance, finance, federal and non-federal procurement, payroll, and operations. Also, the new policies and procedures established through this program will require prompt communications across the Audit Committee, Finance/Operations departments, and external auditors.

The completed state will also include a routine process whereby audit findings are discussed with the management of the audited department, followed by required formal remediation actions. The completed state will include follow-up audits by the internal audit department to verify remediation actions have been completed.

There will be a link between strategic objectives and the risk assessments of the Finance and Operations groups, which must mitigate, monitor, and report on risks associated with their day-to-day activities. Understanding how the business works and its major objectives will help them to establish a clear link between those objectives, the information they collect, and the controls they establish to mitigate risks. This approach also gives risk management personnel the ability to aggregate, visualize, and assess data consistently, since all risks will be related to the same corporate objectives.

Critical Financial Controls

2.4 Program Activities

- Monitor and address deviations in ethical values and compliance. Corroborate common ethics challenges and establish a compliance process to follow up on deviations
- Link risk management from top to bottom. Create a framework to ensure alignment between corporate objectives and the risk assessments of the finance and operations groups
- Develop processes needed to ensure policies and procedures exist and are reviewed for updates, and to communicate and ensure that all employees and contractors are knowledgeable of relevant policies and have access to a current "Administrative Manual"
- Develop and implement an industry-standard approach and identify the necessary skills for financial tasks or decisions that are complex and require a high level of judgment
- Define and implement key roles and responsibilities so employees can identify deviations, assess the impact, and take appropriate actions to ensure compliance with laws and regulations
- Establish a formal plan for Internal Audit to communicate any deficiencies to executive management and the Audit Committee. Deficiencies may be identified internally or by external auditors. The plan will describe actions to be taken to assess the root cause and dependencies, along with the remediation plan
- Implement standard business planning processes for budgeting, which need training and support
- Addressing and training people on any interdependencies on the design and effectiveness of internal controls within EBS and Job Costs
- Build the foundation for the internal audit team, including identifying and acquiring necessary skills and technology, establishing more frequent and fluid audit cycles on key areas of focus, assessing the Internal Control Framework, improving information and communication across the organization, and facilitating a forward-looking and solution-oriented audit approach

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be on continuing to advance the development of an internal control framework and to develop and document policies and controls within Finance Transformation. Risk Management will develop a framework to align corporate objectives and the risk assessment entity-wide. The internal audit department will continue to target audits of areas of the organization identified by senior management as higher risk. In addition to establishing the Internal Audit Committee for reporting.

2.5 Program Benefits

Primary Goals	Objectives	Direct or Indirect Impact
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Indirect
	<input type="checkbox"/> Implement effective public safety practices	
<input type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input type="checkbox"/> Increase service reliability	

Critical Financial Controls

Primary Goals	Objectives	Direct or Indirect Impact
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Direct
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Indirect
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Indirect
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

A safer workplace is being provided through new procedures, culture, and training. Having an ethics and compliance program to follow up on deviations is a powerful tool for reducing pressure to compromise standards. Such a program also supports observations of misconduct, increasing employee reporting if misconduct occurs and decreasing retaliation against whistleblowers. Fewer employees feel pressured to break the rules, and fewer infractions take place. When they do occur, employees feel safe enough to tell management so the problem can be addressed internally.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Documentation and enforcement of policies and procedures will strengthen internal controls and ensure accountability and consistency in daily transactions and financial reporting.

Objective: Pursue Project Delivery Excellence

Effective internal controls reduce the risk of asset loss, ensure that plan information is complete, and provide for reliable and accurate financial statements. As such, more effective internal controls promote smooth project delivery in accordance with the provisions of applicable laws and regulations.

Critical Financial Controls

Objective: Enable Employees to Execute Operations Systematically

With the requisite training and capabilities support, employees will be able to display increasingly improved judgement in more complex cases. This will be of direct benefit.

Reviewing and providing guidance on key roles and responsibilities will better enable employees to identify deviations, assess their impact, and take appropriate actions. This helps ensure the overall accuracy of financial statements and compliance with laws and regulations. This will become routine — again of direct benefit.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively Deploy Federal Funding

Proper controls are central to managing any organization effectively. They contribute to the ability to safeguard assets, use resources efficiently, and produce accurate and reliable financial information. This capability is key to managing federal funding.

2.6 Program Risks

Failure to implement internal controls would increase pressure to compromise standards and create the opportunity for financial misconduct. Plans and financial statements would not be complete or reliable and might not be conducted in accordance with applicable laws and regulations. The utility would be unable to close its books properly and routinely, and the review of actual versus forecast financial performance would have to wait for the annual audit.

In the near term, accurate and timely performance data cannot be distributed to operational management to assist them in making quality business decisions in a timely manner. The lack of financial management of major outsourced projects makes mismanagement a higher risk and timely delivery of project completion unlikely- leading to increased costs along with an increased risk of asset loss.

If the revamping of internal audit were not implemented, there would be no assurance of achievement of control objectives relating to operations, reporting and compliance, or mitigation of risks due to significant changes and or fraud. There would be no proper follow-up on deficiencies and other matters identified internally and or by external auditors. There would be no process for continual improvement, and performance would likely degrade over time.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$1.6	\$1.4	\$1.1	-
SRP Expenditures	\$1.6	\$1.4	\$1.1	-

Critical Financial Controls

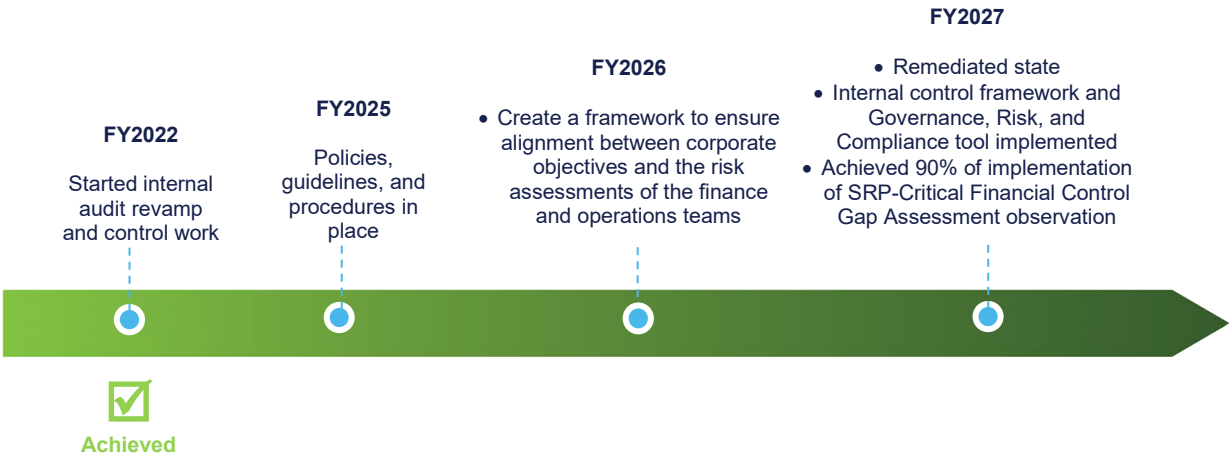
3.2 Program Resource Requirements

Costs related to the two programs are mostly related to internal labor and consulting support for specialized topics.

3.3 Estimating Methods and Assumptions

Each project was estimated individually based on the expected resource requirements. Resources and the hours of effort were costed at average labor rates.

3.4 Timeline and Milestones



Land Acquisition & Dispute Management

Land Acquisition & Dispute Management

1.0 Program Description

LUMA will introduce processes and procedures from land management industry practice to:

- Manage records
- Carry out land acquisition
- Interact with landowners to resolve disputes, and (iv) begin to establish landowner relations concepts within the land management practices

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Instead of using its own in-house business processes to resolve land disputes, PREPA relies heavily on the legal system and court resolutions to interact with affected landowners and, eventually, settle landowner claims. These claims can relate to payment disputes, damage claims, encroachments, land access disputes, or other disputes relating to the management of land rights. This overreliance on the legal system leads to the following:

- Land management relies on the resolution of legal disputes that take a long time to settle, leading to high ongoing litigation costs and deteriorating relations with landowners
- Delays due to ill-defined procedures for landowner relationships and land management
- Uncertainty due to the unknown number of current land disputes and encroachments in the existing system, which cannot be determined from the existing system

Additionally, the quality of the information in line files is inconsistent and poorly organized, meaning that it is difficult to effectively implement land management best practices.

Field personnel are expected to interact with landowners directly without the support of specialized land management professionals who have access to land documentation and specialized knowledge. There exists a high potential for conflicts with landowners and, ultimately, legal claims for entering private property to gain access and use of temporary easements.

Current industry practice is to have specialized land professionals manage the process of acquiring property rights, interact directly with landowners, organize the necessary documentation, and support field operations, including vegetation management activities, where applicable.

2.1.1 Additional Gaps Identified Post-Commencement

Technical and professional specialization in land management and landowner relations are not available at the necessary level to perform to industry standards.

Land Acquisition & Dispute Management

The requirements for notifications established under the law have been identified; however, the necessary procedures and practices are developing.

2.2 Description of Remediated State

This program is not part of the SRP.

2.3 Description of Program Completed State

Section 5.19 (a) of the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement requires LUMA to identify the areas encumbered by easements for the operation, maintenance, repair, restoration, replacements, improvements, additions, and alterations of the T&D System. Concerning each easement establishment, LUMA shall:

- Develop all necessary supporting material, including required appraisals under Regulation 6955
- Negotiate terms and conditions with fee owners/lienholders
- Procure required Governmental Approvals
- Prepare petition of condemnation to be filed if a consensual agreement is not reached, (v) cause recordation of the easements
- Take all other actions necessary to constitute the easements

Section 5.19(c) of the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement requires LUMA to identify real properties or rights that need to be acquired for the operations and maintenance services. With respect to each purchase, LUMA shall:

- Develop all necessary supporting material, including required appraisals under Regulation 6955
- Negotiate terms and conditions with fee owners/lienholders
- Procure required Governmental Approvals
- Prepare a condemnation petition to be filed if a consensual agreement is not reached
- Cause recordation of the deed vesting title on PREPA or the Commonwealth
- Take all other actions necessary to purchase the land

Section 5.19(d) of the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement requires LUMA to procure the required concession rights permitting the use of real estate assets under the public domain necessary for the operation, maintenance, repair, restoration, replacement, improvement additions, and alterations of the T&D System. With respect to each such real property, LUMA shall:

- Develop all necessary supporting material, including surveys
- Negotiate terms and conditions with the governmental body
- Procure required governmental approvals
- Cause recordation of the concession
- Take all other actions necessary to constitute the concession

In the completed state, land acquisition and administration processes will fully comply with applicable law, and settlement options for claims will have been fully developed.

Land Acquisition & Dispute Management

Company procedures designed to understand the underlying dispute and find acceptable solutions will have been fully implemented for landowner management, so landowners and outside parties can become more confident in quickly reaching fair and reasonable agreements. Landowners will also have confidence that contracts will be respected in the completed state.

Field personnel will be able to work more efficiently and focus on work on assets as most interaction with landowners is handled by specialized land managers.

By developing a capability to settle claims without resorting to the legal system, landowner claims can be settled in a fair and expeditious manner without the time and expense required for litigation, which is cumbersome, time-consuming, and expensive. This will help improve landowner relations with the company and reduce the time and cost to achieve a resolution through the court system. This will also minimize encroachments on the right of way to enhance the safety of the T&D System and reduce potential liabilities with outside parties.

2.4 Program Activities

- Full development of procedures for land acquisition and land administration (Complete)
- Identification of new claims and review of issues categorized under current legislation (Complete)
- Using information to settle claims and to evaluate the cost/benefit of settlement vs. litigation (Complete)
- Establish procedures for critical encroachments and development of action plans in response (Complete)
- Review existing right of way or land disputes and develop an understanding of potential liabilities (Complete)
- Based on a better understanding of potential liabilities, develop and implement internal procedures so that new claims resulting from construction, or operations activities are minimized and resolved quickly and fairly (Complete)
- Develop guidelines for land agents (LUMA employees or third parties depending on the size of land acquisition) to engage with landowners to prevent disputes from arising and to settle claims quickly (Complete)
- Ensure procedures are developed so that required payments are completed promptly to create a positive customer experience (Complete)
- Ensure that the new software is being used to keep track of new land acquisitions, encroachment, and management of land rights (in alignment with the *Permit Processes and Management Improvement Program*)

2.4.1 Additional Activities Identified Post-Commencement

Develop land lists for all existing lines.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be ensuring that we are using the new software to keep track of new land acquisitions, encroachment, and management of land rights (in alignment with the Permit Processes and Management Improvement Program) and continue evaluating the effectiveness of the procedures developed for encroachments.

Land Acquisition & Dispute Management

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Indirect
	<input checked="" type="checkbox"/> Increase service reliability	Indirect
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Indirect
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Direct
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Direct
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Direct
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Implement Effective Public Safety Practices

Through landowner management and communications, encroachments onto the current right of way can be reduced, thereby minimizing threats to public safety.

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

The correct and timely payments to landowners will help improve customer perceptions.

Objective: Increase Service Reliability

Land Acquisition & Dispute Management

Access to the right of way for maintenance and emergency response is key for system reliability.

Objective: Deliver Electricity at Reasonable Prices

More efficient use of existing resources for delivering electricity will help streamline the cost of service delivery.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Developing a land management process will enable systematic management of the business by reducing the time to administer land rights and improving resource efficiency.

Objective: Pursue Project Delivery Excellence

The ability to manage land acquisition and settle claims efficiently will improve the execution of capital projects.

Objective: Enable Employees to Execute Operations Systematically

The new procedures and guidelines will provide the necessary structure and authority for employees to proactively settle claims rather than react to court filings.

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively Deploy Federal Funding

Proof of land rights is a condition for obtaining any federal funding for capital projects.

2.6 Program Risks

The most important risk to not proceeding with this program is to continue with the present system of relying on legal processes. This has led to many disputes in the court system and the costs associated with litigation. Further, this methodology has led to poor landowner relations and has contributed to a high level of mistrust between the parties.

The risk in proceeding with the program is that it will represent a marked change from past policy. Employees will have to adapt from a system that defaulted to the legal system to obtain and administer land rights to a system of accountability for decisions that need to be made in the best interest of the ratepayer. It will take a change in thinking to execute and complete contracts more efficiently and fairly.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
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Land Acquisition & Dispute Management

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditure	\$1.2	\$1.2	\$1.2	\$8.4
SRP Expenditures	—	—	—	—

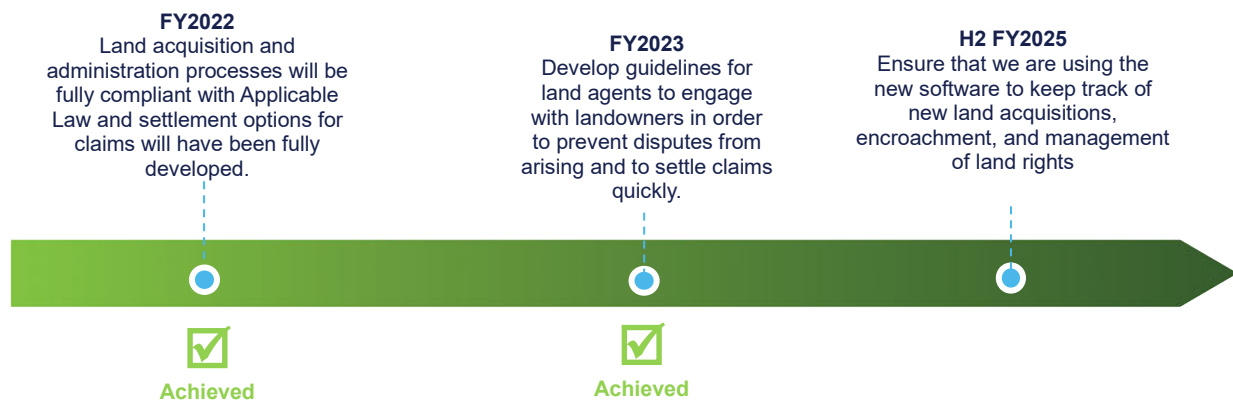
3.2 Program Resource Requirements

The primary resource required is the integrated land management system.

3.3 Estimating Methods and Assumptions

- LUMA pay scales assumed for internal resource
- Previous contractor rates assumed for third parties
- Applicable standards and codes are: Right of way legislation in Puerto Rico, File requirements (“Ley de Archivo” and associated regulations)
- Internal resources come from PREPA Catastro office

3.4 Timeline and Milestones



IT OT Cybersecurity Program

IT OT Cybersecurity Program

1.0 Program Description

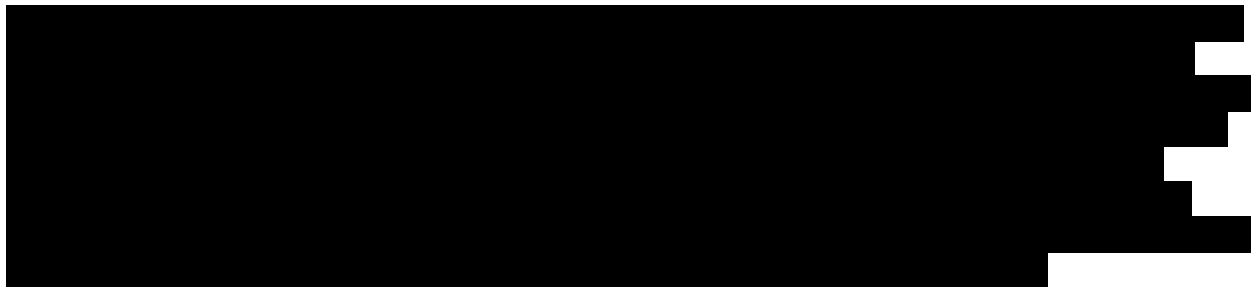
This program focuses on the establishment of a cybersecurity program that protects key organizational assets, including people, resources, and technology. The program will ensure that cyber risk, internal and external threats, vulnerabilities, and natural disasters are identified and mitigated based on risk and readiness factors. Improving cybersecurity is a critical part of hardening the Transmission and Distribution (T&D) System and PREPA business continuity. Cyber risks could severely affect T&D System operations, potentially even to the point of widespread failure. The program will design and implement the people, processes, and technologies essential for effective cybersecurity governance, cybersecurity operations and monitoring, vulnerability identification and management, and cloud security.

Key to this program is the ability to defend against cyber incidents. A cyber incident is an event that has a negative impact on the organization. This includes but is not limited to data breaches, damage to systems (physical or digital), loss of system control or operations, lack of confidence in or accuracy of data, ransomware, phishing, theft, natural disaster (loss of ability to operate), equipment/system failure and unauthorized access. By ensuring the confidentiality, integrity, and availability of assets in compliance with Section 13 of the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement (T&D OMA), the cybersecurity program will proactively mitigate risk and enable business operations by identifying and reducing the risk and impact of a cybersecurity incident on the organization.

2.0 Program Rationale

*Confidential

2.1 Initial State and Identified Gaps



CULTURE OF SECURITY/SECURITY AWARENESS



¹ Though Puerto Rico does not fall under the jurisdiction of NERC, LUMA opts to apply the appropriate sections of NERC to the extent they are reflective of industry best practices.

IT OT Cybersecurity Program

LACK OF RESOURCES

[REDACTED]

IDENTITY ACCESS MANAGEMENT (USER ACCESS: AUTHENTICATION AND AUTHORIZATION)

[REDACTED]

NETWORK SEGMENTATION/SECURITY ZONES

[REDACTED]

KPIS AND SLAS FOR EXISTING SECURITY SERVICE PROVIDERS

[REDACTED]

2.1.1 Additional Gaps Identified Post Commencement

[REDACTED]

2.2 Description of Remediated State

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

IT OT Cybersecurity Program

[REDACTED]

[REDACTED]

2.3 Description of Program Completed State

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

IT OT Cybersecurity Program

[REDACTED]

2.4 Program Activities

[REDACTED]

2.4.1 Additional Activities Identified Post-Commencement

[REDACTED]

IT OT Cybersecurity Program

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
☒ [REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

PRIMARY GOAL: PRIORITIZE SAFETY

[REDACTED]

[REDACTED]

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

[REDACTED]

IT OT Cybersecurity Program

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

PRIMARY GOAL: OPERATIONAL EXCELLENCE

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

[REDACTED]

[REDACTED]

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

2.6 Program Risks

[REDACTED]

IT OT Cybersecurity Program



3.0 Program Funding and Timeline

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$1.5	\$0.1	\$0.0	\$12.2
SRP Expenditures	\$0.3	\$0.1	\$0.0	\$12.2

3.2 Program Resource Requirements

The OpEx budget estimate includes staff augmentation to manage and operate the Information Security Office and Cybersecurity program. The CapEx estimate includes contracted resources to implement the projects and program.

3.3 Estimating Methods and Assumptions

- Contract or internal resources
 - Licensing and implementation costs
 - Rates/hour or full time employees and hours assumed
- In-service date (lifecycle refresh dates — industry best practice)
- Historical program information
 - Experience/knowledge

3.4 Timeline and Milestones



IT OT Cybersecurity Program

4.0 Abbreviations

CIA Triad	Confidentiality, integrity, availability triad
IAM	Identity and access management
IT	Information technology
KPI	Key performance indicator
MSSP	Managed security service provider
NERC-CIP	North American Electric Reliability Corporation – Critical Infrastructure Protection
NIST	National Institute of Standards and Technology
NIST CSF	NIST cybersecurity framework
RACI	Responsible, accountable, contributor, informed
SLA	Service level agreement

Electric Vehicle Implementation Support

Electric Vehicle Implementation Support

1.0 Program Description

This program involves developing and implementing new electric vehicle (EV) initiatives in compliance with regulatory requirements. The activities conducted in this program will help support a coordinated, proactive approach to the electric vehicle transition. The Puerto Rico Electric Vehicle Adoption Plan (PR-EVAP) identifies near-term and mid-term EV support actions that customers may engage in and outlines a roadmap for future growth and increased EV adoption in Puerto Rico.

2.0 Program Rationale

2.1 Background

On November 18, 2021, the PREB issued a Resolution and Order setting forth directives for initiating electric vehicle (EV) infrastructure deployment, including principles to guide the adoption of plans, regulations, and procedures related to the electric vehicle energy sector in Puerto Rico.

On May 31, 2022, LUMA submitted the draft of EV Rate Design Proposal 1 to the Energy Bureau.

On June 15, 2022, the Energy Bureau held Compliance Technical Hearing No. 2 regarding the Draft EV Rate Design Proposal. During this hearing, the Energy Bureau issued a bench order directing LUMA to submit a revised rate design proposal by June 30, 2022.

On July 21, 2022, LUMA submitted to the Energy Bureau a revised EV Rate Design Proposal.

On September 1, 2022, LUMA submitted to the PREB Phase I EV Plan. The Phase I EV Plan supports the deployment of infrastructure to enable equitable and accessible use of EVs while advancing the remediation of the electric system to improve reliability and resiliency for customers. The principal objectives are to enable greater EV adoption, produce fuel cost savings, and mitigate future generation supply constraints from increased EV load.

On January 13, 2023, the PREB issued a resolution and order making a series of observations and conclusions, issuing various directives, and setting deadlines relating to the filed Phase 1 EV Plan and the revised rate design.

2.2 Description of Remediated State

This program is not part of the SRP.

2.3 Description of Program Completed State

In the completed state, LUMA will have completed the activities required under the Phase I Electric Vehicle Plan, resulting in new rates, customer service, and educational offerings to EV customers. LUMA



Electric Vehicle Implementation Support

will also have collected technical data and conducted research, planning, and program development activities to support compliance with the PR-EVAP.

2.4 Program Activities

Major activities in this program include:

- Provide Educational Materials and Customer Assistance
- Engage Customers and Stakeholders in the EV Ecosystem
- Plan for Grid Infrastructure and System Improvement
- Provide EV Rate Options
- Prepare the Workforce for the Growing Adoption of EVs
- Support EV Charging Infrastructure Deployment

LUMA proposed a total of six near-term (0-3 years) activities, aiming to lay the groundwork for broad electrification in residential market segments. The first activity aims to build and provide accessible data-driven information on EVs, charging technology, and EV program-specific information to customers. The second is to directly engage with customers and stakeholders to raise awareness and enable LUMA to have a better understanding of customers' needs and help support the growth in EV adoption in Puerto Rico. To maintain the safety and reliability of the electric grid, LUMA proposed three actions under the EV Infrastructure and System Improvement Initiative to plan for grid infrastructure and system improvement and support EV charging infrastructure deployment, while preparing LUMA's internal workforce to help facilitate Puerto Rico's transition to electrified transportation. A residential EV time of use (TOU) rate will be implemented on an interim basis accompanied by the associated educational and outreach campaign to recruit and enroll customers.

The activities in the program are summarized below.

PROVIDE EDUCATIONAL MATERIALS AND CUSTOMER ASSISTANCE

The objective of this activity is to build and provide accessible data-driven information on EVs, charging technology and EV program-specific information to customers. This information will be designed to improve public awareness and understanding of the options, feasibility, and benefits of EVs, along with information about program opportunities within LUMA and in the community. LUMA will develop a suite of general and program-specific educational resources, tools, and marketing collateral to provide information on EVs and charging technology as well as the benefits of EVs and EV program offerings. Educational resources and materials being developed may include Electric Vehicle 101 (how, where, how long, and how much to charge an EV) and information about processes and considerations for installing EV charging equipment, among others.

LUMA will develop an engaging and compelling suite of educational and outreach collateral focusing on the gaps or needs of residential customers and low-income communities in the near term. The collateral will be designed for use across a variety of communications channels—website, social, email, and face-to-face meetings – to address multiple uses and audience needs. Although this activity will target all customer segments, focus will be given to low-income and residential customer segments.

Electric Vehicle Implementation Support

ENGAGE CUSTOMERS AND STAKEHOLDERS IN THE EV ECOSYSTEM

This activity aims to directly engage with customers and stakeholders to raise awareness and enable LUMA to have a better understanding of customers' needs and help support the growth in EV adoption in Puerto Rico. Additionally, targeted customer engagement will help educate key decision-makers within organizations, corporations, and communities on the benefits and opportunities for transportation electrification. Examples of customer groups and stakeholders LUMA will engage include vehicle automakers, EVSE service providers, low-income community groups, and government agencies.

LUMA plans to continue to engage with key stakeholders, market actors, and customers to provide information, raise awareness, communicate interconnection processes, provide advisory support, participate in EV-related events, and gather feedback.

PLAN FOR GRID INFRASTRUCTURE AND SYSTEM IMPROVEMENT

This activity focuses on planning for grid infrastructure and system improvement efforts that can be done internally within LUMA. LUMA plans to develop and regularly update detailed EV load projections for the 2024 Integrated Resource Plan (2024 IRP) and other system planning purposes to ensure that foundational infrastructure programs incorporate the impact of increased EV adoption. Furthermore, LUMA will evaluate the distribution system and local grid infrastructure using locational EV impact forecasts developed under the Department of Energy's PR100 initiative and utilize advanced planning studies to optimize existing resources as more EV infrastructure is being deployed.

LUMA views EVs as part of the future grid design and continues to build feeders for improved voltage regulation, automation and system visibility, and increased feeder capacity, all of which directly support EV adoption.

PROVIDE EV RATE OPTIONS

LUMA's primary focus in this activity is to implement the three-period residential EV time of use (TOU) rate on an interim basis as described in LUMA's Revised EV Rate Design Proposal. Once EV charging consumption data is available and the necessary billing systems enhancements are implemented, LUMA will implement the rate, launch the associated educational and outreach campaign, and recruit and enroll customers in the rate. In the near term, the target customer segment is residential customers with their own dedicated EV charging infrastructure.

PREPARE THE WORKFORCE FOR THE GROWING ADOPTION OF EVS

To support the local economy as Puerto Rico transitions to a clean energy and transportation future, LUMA will build and train its workforce to support the growing and evolving EV market. LUMA recognizes that holistic workforce development strategies are an essential building block of EV market development and will lay the groundwork for a thriving EV market in Puerto Rico. In the near term, LUMA will ensure that our internal workforce has the skills, training, and experience needed to support customers through their EV purchase decision-making and the deployment of EV infrastructure. Specialized skills and training on charger features, vehicle capabilities, interconnection processes, and site host needs and expectations are some of the necessary knowledge that customer contact centers must have to effectively support the needs of customers, developers, and site hosts.



Electric Vehicle Implementation Support

SUPPORT EV CHARGING INFRASTRUCTURE DEPLOYMENT

Under this action, LUMA will continue to collaborate with key stakeholders and leverage studies and lessons learned from other jurisdictions to develop guidebooks and checklists for the installation of EV charging infrastructure. These resources will help facilitate EV adoption and charging infrastructure investments in Puerto Rico. To ease and streamline the integration and interconnection processes for charging infrastructure development, LUMA will develop an Interconnection Guidelines and/or Project Connection Manual for high-powered EV charging stations, while ensuring equitable and fair treatment of new charging infrastructure deployment.

LUMA also recognizes that there are several federal funding opportunities coming to support EV charging infrastructure rollout in Puerto Rico. Accordingly, LUMA plans to remain proactive in collaboration with local stakeholders and project developers to facilitate future federally funded infrastructure deployment.

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be based on four main activities: Education and outreach to customers and stakeholders in the EV ecosystem; support EV charging infrastructure deployment; prepare the workforce for the growing adoption of EVs; and implement an interim EV TOU rate.

Electric Vehicle Implementation Support

2.5 Program Benefits

Primary Goals	Objectives	Direct or Indirect Impact
<input type="checkbox"/> Prioritize Safety	<input type="checkbox"/> Promote a safe workplace	
	<input type="checkbox"/> Implement effective public safety practices	
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Direct
	<input checked="" type="checkbox"/> Increase service reliability	Indirect
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Direct
<input type="checkbox"/> Operational Excellence	<input type="checkbox"/> Enable systematic management of the business	
	<input type="checkbox"/> Pursue project delivery excellence	
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively Deploy Federal Funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input checked="" type="checkbox"/> Sustainable Energy Transformation	<input checked="" type="checkbox"/> Modernizing the grid	Direct
	<input type="checkbox"/> Enable the digital transformation	
	<input checked="" type="checkbox"/> Enable the sustainable energy transformation	Direct
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

Objective: Increase Service Reliability

Objective: Deliver Electricity at Reasonable Prices

Transportation electrification brings significant value and benefits to customers as well as to the local economy, the electric system, and to the environment. On average, Puerto Rico residents can save over \$1,200 per year by going electric. Several studies in other jurisdictions have shown that utility customers benefit overall from increased EV adoption since higher revenues generated from EV use can be reinvested in system improvements and customer programs to help improve service and reduce electricity



Electric Vehicle Implementation Support

prices. EVs will improve local air quality and associated health outcomes, while also reducing noise pollution. LUMA will provide and maintain critical infrastructure needed to support the growth of EV adoption while ensuring grid resiliency and reliability.

PRIMARY GOAL: SUSTAINABLE ENERGY TRANSFORMATION

Objective: Modernizing the Grid

Objective: Enable the Sustainable Energy Transformation

LUMA is modernizing the grid to enable sustainable energy transformation in accordance with Puerto Rico energy public policy. The electrification of transportation is an exciting and dynamic trend which, if successfully harnessed, will allow for reductions in overall carbon emissions, and the enhancement of service to customers. By implementing the PR-EVAP LUMA can help to reduce Puerto Rico's dependence on expensive imported fossil fuels and help lower overall electricity costs to customers.

2.6 Program Risks

Without the activities proposed in this program, LUMA will be unable to contribute to the objectives of Puerto Rico's clean energy and climate goals as set forth in Act 17-2019 and Act 33-2019. The proposed portfolio of near-term actions in the PR-EVAP will help promote the use of EVs and contribute to achievement of several objectives of Puerto Rico's Energy Public Policy Act and Climate Change Mitigation, Adaptation, and Resiliency Act. Specifically with respect to the purposes of these Acts, the PR-EVAP is expected to bring significant benefits in the following ways: greater EV adoption, fuel cost savings and mitigate resource adequacy constraints. If LUMA does not comply with the Energy Bureau's orders or applicable legal requirements may carry the imposition of administrative fines of up to twenty-five thousand dollars (\$25,000.00) per day, per violation and/or other sanctions that the Energy Bureau may deem appropriate. These fines are stated in Law 17-2019, Section 5.32 (Amended Act No. 57-2014, 6.36 penalties).

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$0.6	\$0.6	\$0.6	\$0.6
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

LUMA will deliver this program through a team of internal managers, coordinators, and engineers, assisted by consultants and vendors for support on EV TOU rate implementation, and website construction. Also, plans to work with potential partners that include stakeholders, government agencies, EV charging infrastructure providers, EV manufacturers and EV charging software solutions companies.

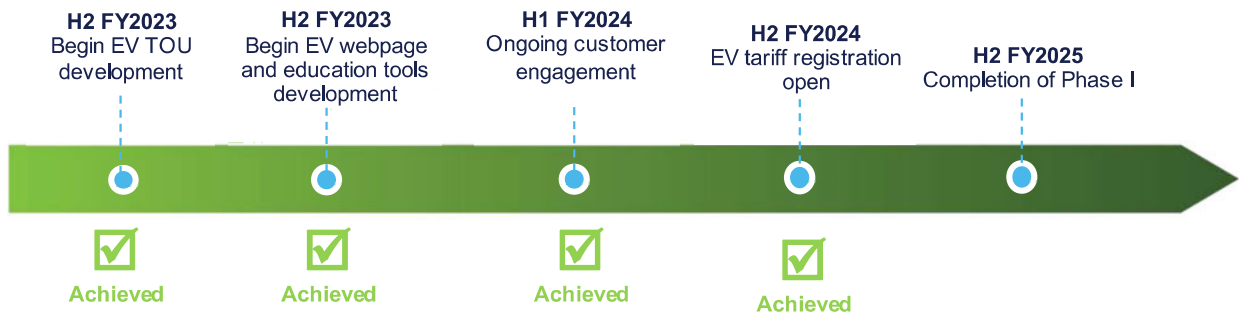


Electric Vehicle Implementation Support

3.3 Estimating Methods and Assumptions

LUMA estimated resources and costs associated with each initiative based on expected outcomes and past EV program development and implementation experience.

3.4 Timeline and Milestones



HR Information Systems and Learning Platforms

HR Information Systems and Learning Platforms

1.0 Program Description

This program covers two distinct areas to support the LUMA HR department. This includes the following.

TRAINING

LUMA will implement core compliance training to ensure employee understanding and compliance with all corporate policies and procedures and Commonwealth laws and regulations supporting and promoting appropriate conduct. In addition, all functions across LUMA will implement comprehensive training programs meeting the minimum requirements necessary to improve employee skill sets and bring performance to Contract Standards.

SUPPORT SOFTWARE

The implementation of human capital management software will introduce standardized processes for managing employee data, employee performance management, talent management, succession planning, recruitment onboarding and offboarding management, learning management, and compensation management. It will also provide employee and manager self-service capabilities. This is a key element that will support contemporary human resource (HR) practices.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

The current state and identified gaps across different areas of HR include the following:

TRAINING

PREPA training programs are not up to industry standards nor meet the minimum requirements for LUMA to perform in accordance with Contract Standards. The LUMA training program is in the process of including specialized training courses to meet mandatory legal requirements and help employees gain the minimum essential knowledge and learning experience for all functions.

SUPPORT SOFTWARE

The current support systems exhibit the following:

- Lack of employee self-service capabilities
- Lack of performance, compensation, talent management, and learning management strategy
- Lack of career planning and succession planning program
- Lack of documented policies and processes

HR Information Systems and Learning Platforms

- Lengthy manual processes are used for benefits enrollment, training compensation, performance management, onboarding, and HR metrics
- Lack of data on employee engagement levels and HR metrics

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

This program is no longer part of the SRP.

2.3 Description of Program Completed State

The program completed state will include the following:

TRAINING

Upon training program implementation, a learning platform will be available for all LUMA employees, which includes training modules for a wide range of functions. Specific courses and learning paths under this platform will be assigned to eligible employees based on their roles, with specific training programs administered by SMEs as needed. The learning platform will track the completion of the different pieces of training for employees such that completion and performance can be monitored on an ongoing basis. As such, all employees in LUMA will receive the required education to perform their jobs securely. Employees will recognize that management has invested in their career development, and this will improve employee engagement levels as well as provide a safer workplace, efficient service delivery, and improved customer experience.

SUPPORT SOFTWARE

Upon implementation, all HR processes will be managed in a single, modern platform, eliminating excess physical documentation, improving process control, and avoiding duplication of labor.

2.4 Program Activities

TRAINING

- Implementation of a learning platform (Complete)
- Definition and development of the learning platform (Complete)
- Courses or learning paths are assigned to eligible employees (Complete)
- Required courses are completed (Complete)
- Development of learning tools and base content

SUPPORT SOFTWARE

- Definition of the HR Information System (HRIS), benefits, compensation, recruitment and learning modules implementation project teams (Complete)
- Development and monitoring of project plans (Complete)
- Testing of modules (Complete)



HR Information Systems and Learning Platforms

- Training of employees on the use of the platform (Complete)
- Formal launch of the modules (Complete)
- Ongoing enhancements to HRIS

2.4.1 Additional Activities Identified Post-Commencement

No additional activities identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be to expand the existing HRIS and the completion of remaining learning platform activities.

2.5 Program Benefits

Primary Goals	Objectives	Direct or Indirect Impact
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input checked="" type="checkbox"/> Implement effective public safety practices	Indirect
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Direct
	<input checked="" type="checkbox"/> Increase service reliability	Direct
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input checked="" type="checkbox"/> Operational Excellence	<input type="checkbox"/> Enable systematic management of the business	
	<input checked="" type="checkbox"/> Pursue project delivery excellence	Indirect
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Indirect
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively Deploy Federal Funding	
	<input checked="" type="checkbox"/> Restore damaged grid infrastructure	Direct
	<input checked="" type="checkbox"/> Improve the resilience of vulnerable infrastructure	Direct
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the Sustainable Energy Transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

HR Information Systems and Learning Platforms

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

Objective: Implement Effective Public Safety Practices

Training: Well-trained employees will directly impact workplace safety by putting into practice acquired skills and practices

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

Objective: Increase Service Reliability

Training: Trained employees will directly impact service to customers by providing excellent customer service skills acquired through LUMA's training program

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Pursue Project Delivery Excellence

Objective: Enable Employees to Execute Operations Systematically

Training: Well-trained employees will directly impact the delivery and execution of services by applying learned skills

Support software: A modern human capital management platform and the appropriate training for users, have directly impacted human resources processes, enabled better project delivery, and supported employees in their work, thereby supporting operational excellence

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Restore Damaged Grid Infrastructure

Objective: Improve the Resilience of Vulnerable Infrastructure

Training: Well-trained employees will be able to restore and improve the resiliency of the grid infrastructure by applying specialized learned skills

2.6 Program Risks

- **Training:** The lack of specialized, modern, and up-to-industry-standard training can lead to workplace safety incidents, which can severely impact performance and the company brand. Customer service can also be directly impacted as employees without proper training will not be able to provide the expected service delivery
- **Support software:** The primary risk of not proceeding with this software implementation is that human capital management will continue to be managed in an ad hoc and manual manner, limiting LUMA's ability to monitor employee activities. The processes will continue to be lengthy and manual, which will

HR Information Systems and Learning Platforms

negatively affect performance levels and increase the risk of human error. This limits the ability to respond to employee requests in a timely and appropriate manner

Another risk is the lack of compensation management and learning management for employees which impacts the employee experience at LUMA and LUMA's reputation as an employer. Not proceeding with this program may cause employees to seek different employment opportunities in Puerto Rico.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$0.3	\$0.3	\$0.3	\$0.3
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

TRAINING

- Implementation of Workday HCM Learning module
- Identification of required education external resources
- Training programs will be administered by the Workday HCM Learning Module or Training managers and coordinators (internal and external). Training modules will require trainers, writers, and training consultants, along with training materials, props, and training-specific technologies. Specific training modules may have dedicated location requirements, with overnight stays and travel depending on the training location

SUPPORT SOFTWARE

- Identification of required modules for the HC management system to be acquired
- Resource requirements are as follows:
 - System integrator
 - Project manager
 - Systems analysts/business analysts
 - Subject matter experts
 - Reporting Manager

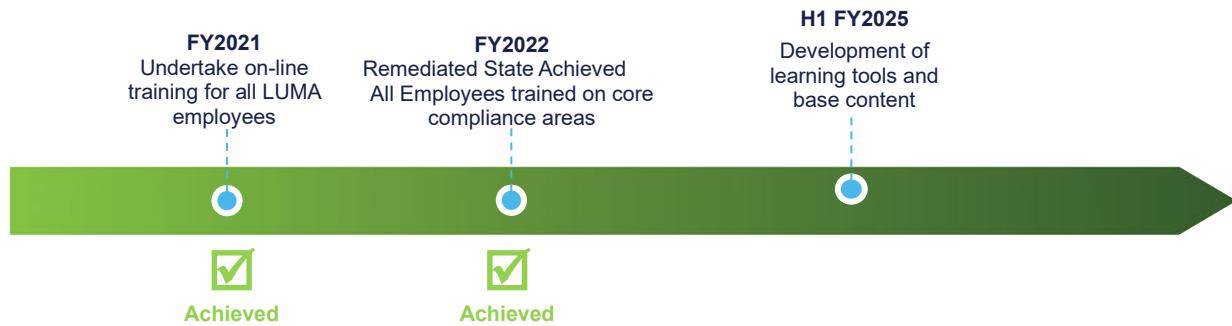
3.3 Estimating Methods and Assumptions

- **Training:** Costs vary per function based on learning needs
- **Support software:** The costs associated with the implementation of the Human Capital Management solution are estimated using the IBM Project Cost Estimator for implementing a leading Human Capital

HR Information Systems and Learning Platforms

Management solution. Pricing assumptions are based on experience with utilities of similar size to implement human capital management solutions

3.4 Timeline and Milestones



Waste Management

Waste Management

1.0 Program Description

In accordance with the requirements of the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement (T&D OMA) Section 5.10 and the scope of T&D OMA Services specified in Annex I, LUMA will install new equipment and implement management processes to comply with environmental statutory requirements and support safe and efficient operations. The program includes installing secondary containment to prevent contamination, ensuring proper containers are in place to store wastes, and when required for site operations, processing, or removal of accumulated waste debris.

LUMA will take actions concerning pre-existing environmental conditions, including accumulated waste, per the T&D OMA Section 5.10(b).

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Many facilities do not currently comply with Environmental Protection Agency requirements under the Resource Conservation and Recovery Act and the Clean Water Act (specifically, Title 40, parts 112 and 273) and Department of Natural and Environmental Resources (Department of Natural and Environmental Resources) requirements under the Non-Hazardous Solid Waste Management Regulation. Processes and practices are not in accordance with Prudent Utility Practice. Many sites have accumulated mixed wastes collected over long periods of time. Accumulated wastes include decommissioned transformers, poles, used oil drums, light ballasts, scrap wire, miscellaneous equipment, and building debris. The accumulated wastes are not properly segregated, labeled, stored, and removed. Often, the accumulated wastes are stored immediately outside a building or beside constructed containment areas, preventing access or use of containment areas. Universal wastes are being collected and stored at sites for longer than one year. Liquid waste is frequently stored without required secondary containment. Many facilities lack maintained spill response equipment to respond to incidents.

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

In a remediated state, LUMA operations will comply with the regulatory and legal requirements listed above. LUMA will have established processes and procedures for proper handling. LUMA employees will have improved awareness of appropriate waste management practices and will have appropriate tools and equipment on-site to dispose of wastes and respond to spills while minimizing environmental impact.

Waste streams will have appropriately constructed and labeled storage containers. Newly generated waste will be removed at regular intervals. Liquid storage will also require secondary containment. Appropriately sized waste bins will be in place for routinely generated waste. Routine waste streams will

Waste Management

be clearly labeled, and stored. Site spill kits will have been restocked allowing operations to adequately respond to spills. The potential for future environmental liabilities will be reduced due to properly handled waste.

2.3 Description of Program Completed State

Upon completion of the program, facilities will be well organized and have the appropriate tools and equipment to prevent environmental impact from waste management . Accumulated wastes will be removed or mitigated in accordance with the plan between regulators and LUMA and according to T&D OMA Section 5.10(b). Used spill kits will be restocked after use, ensuring timely and immediate response to any spill.

LUMA operations will employ leading industry practice in waste management via programs and processes that encourage regular recycling and reuse of materials. LUMA employees will be knowledgeable about handling new waste streams.

2.4 Program Activities

- Taking into consideration the baseline environmental study that will be completed during the Front-End Transition Period by PREPA as required under Section 4.10 (f) of the T&D OMA, complete assessment of high usage sites to quantify accumulated waste volumes and determine appropriate containment in accordance with Environmental Protection Agency and Department of Natural and Environmental Resources regulations
- Engage with regulators to provide information and receive feedback on the improvement plan
- Removal of accumulated wastes when required for site operations (for example, to enable access to a containment or storage area or when accumulated wastes prevent mobility within a site), all following the procedures specified in T&D OMA Section 5.10 (Complete)
- Procure additional waste containment bins and install secondary containment at facilities storing liquids when required
- Replenish or replace spill kits first at high-usage sites and then at all locations to encourage timely spill response and clean-up

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The upcoming fiscal year will focus on removing accumulated vehicles located at Palo Seco and Carolina Warehouse as identified in the front-end transition and procure additional secondary containment for damaged transformers at operations facilities.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a Safe Workplace	Direct

Waste Management

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
	<input type="checkbox"/> Implement Effective Public Safety Practices	
<input type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input type="checkbox"/> Increase service reliability	
	<input type="checkbox"/> Deliver electricity at reasonable prices	
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Indirect
	<input type="checkbox"/> Pursue project delivery excellence	
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively Deploy Federal Funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

Well-organized and managed sites, with the use of waste storage and containment equipment will reduce the likelihood of injuries and equipment damage that are more common in congested and disorganized work environments lacking proper equipment.

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Proper waste and liquid storage equipment and processes will ensure that waste management contractors can easily and routinely remove waste.

Waste Management

2.6 Program Risks

This program reduces potential and actual environmental liability and puts in place processes to avoid or minimize future environmental liabilities. Not proceeding with the program increases the risk of potential environmental contamination. The program also promotes worker safety and efficient work practices. The lack of the program will delay improvements regarding worker safety and improving operation practices to industry standard levels.

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	—	—	—	—
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

- A project manager and contractors to complete the work
- Procurement representatives to establish contracts and purchase spill clean-up and secondary containment materials

*Confidential

3.3 Estimating Methods and Assumptions

It is assumed that 300 sites have some degree of accumulated waste, of which 35 sites require a very high amount of clean-up, 115 sites require a high amount of clean-up, 75 sites require a moderate amount of clean-up, and 75 sites require a small amount of clean-up. These estimates were based on information collected from site visits and from Sargent and Lundy site reports.

The following assumptions were used to support estimates:

- Local landfill costs were used to generate estimates for tipping and landfill fees
- Costs from US providers were used for estimates of spill containment equipment
- [REDACTED]
- We estimated a 10% overhead for project management, contract administration, waste assessments, and logistics

Detailed site assessments will be completed in the first year to define waste streams, storage options, and disposal requirements in accordance with Section 5.10(b) and enable us to refine cost estimates.

Waste Management

3.4 Timeline and Milestones



Public Safety

Public Safety

1.0 Program Description

LUMA will introduce an organizational strategy to engage and educate the public on safety around electric equipment and installations, thereby reducing public safety incidents. The program will include procuring public safety-related materials for training awareness and public outreach, developing, and completing a communications plan, and continuing a maintenance plan for the program.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

Currently, there is no organizational strategy for public safety, with limited tracking of public safety incidents. The strategy is needed to reduce the number of safety incidents involving members of the public. Without a public safety strategy, there is also no clear organizational direction around public safety communications.

Creating a public safety policy and program will provide guidance and an overall organizational strategy for engaging with our customers and communities regarding safety around the electrical grid. A public safety strategy will prioritize risks and mitigations and allow stakeholder input across business functions (operations, communications, legal, and customer service). Such a strategy should also include implementing a communications plan to ensure better education and awareness of powerline safety; this will help reduce public injuries and litigation. Collecting and analyzing public safety-related incident data will support better-targeted communications.

2.1.1 Additional Gaps Identified Post-Commencement

No additional gaps were identified at this time.

2.2 Description of Remediated State

In the remediated state, LUMA will have measures in place to ensure electrical service can be provided while ensuring public health and safety are protected in accordance with Annex I of the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement. A program will be established that aligns with the initiatives and mission of the Electric Safety Foundation International. Public safety incidents that occur will be tracked and investigated, and the information will be shared within the organization and with the public. The company will initiate an awareness program to engage and educate the public and other government agencies, including schools and emergency responders. Summaries of public safety incidents will be shared with emergency agencies and stakeholder interest groups.

As a result of education, there will be fewer and less severe public safety incidents because the public is better informed about the risks of living and working near electrical utilities.



Public Safety

2.3 Description of Program Completed State

In the completed state, the company will be able to implement electrical utility public safety best practices to develop and continuously improve initiatives to help promote powerline awareness through communications, education, and awareness training. LUMA will work proactively with emergency agencies and stakeholder interest groups to respond to incidents, establish incident prevention measures, and updating the public safety program.

The effective implementation of the public safety program will further reduce public safety incidents and litigation. The company will also actively engage with the public and other government agencies and participate in joint initiatives to improve public awareness.

2.4 Program Activities

- Establish a comprehensive public safety program and key processes, including a communications plan based on incident details and trends
- Train employees on identifying a public safety incident and on reporting requirements
- Report accurate public safety data and analyze for trends
- Develop a presentation to address powerline safety for the public (Complete)
- Development of displays, training, awareness presentations, and other materials aimed at different potential target audiences (schools, emergency responders, contractors, and general public) (Complete)
- Purchase of visual powerline awareness displays
- Complete regular public engagement through different venues (advertisements, public notices, and engagement in events)
- Work with internal groups to ensure the public safety program meets their needs and expectations

2.4.1 Additional Activities Identified Post-Commencement

No additional activities were identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be offering public safety seminars and implementing the Public Safety Policy along with the Operations and Distribution Engineering Departments. We will develop communications strategies to deliver the Public Safety message to a broader audience.

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Indirect
	<input checked="" type="checkbox"/> Implement effective public safety practices	Direct
<input type="checkbox"/> Improve Customer Satisfaction	<input type="checkbox"/> Deliver a positive customer experience	
	<input type="checkbox"/> Increase service reliability	
	<input type="checkbox"/> Deliver electricity at reasonable prices	



Public Safety

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input type="checkbox"/> Operational Excellence	<input type="checkbox"/> Enable systematic management of the business	
	<input type="checkbox"/> Pursue project delivery excellence	
	<input type="checkbox"/> Enable employees to execute operations systematically	
<input type="checkbox"/> System Rebuild and Resiliency	<input type="checkbox"/> Effectively Deploy Federal Funding	
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

Comprehensive public safety training and awareness would be given to LUMA contractors to ensure their awareness of powerline safety is top of mind. This would also be part of the contractor management requirements.

Objective: Implement Effective Public Safety Practices

Educating the public on powerline safety will increase awareness and reduce public incident contacts and litigation claims.

2.6 Program Risks

The following risk areas have been identified:

- **Liability risk:** More awareness and campaigning will increase powerline safety awareness and reduce the frequency and severity of public incidents and litigations, which LUMA could otherwise be liable for
- **Corporate reputation risk:** More communication, education, and public engagement around safety will benefit LUMA's reputation, which may suffer without such engagement

Public Safety

3.0 Program Funding

3.1 Program Funding (\$ millions)

DESCRIPTION	FY2025 ESTIMATE	FY2026 ESTIMATE	FY2027 ESTIMATE	FY2028+ ESTIMATE
Total Expenditures	\$0.1	—	—	—
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

- Successful procurement of visual demonstrations and materials
- Establish communication strategy
- Operational field employees to assist with community engagement
- Interdepartmental coordination of investigations and trending incidents

3.3 Estimating Methods and Assumptions

- For equipment and material costs, estimates were based on historical parent company costs
- Implementation costs were estimated based on operations personnel assisting with community engagement across the island

We have assumed the following:

- All related communication costs and materials would be in the communications department budget
- Program development would be completed by two designated employees (Public Safety Manager and Communications Specialist)
- An incident tracking system would be in place to collect, analyze and follow up on public safety-related incidents. This information would be used to target audiences for communications and awareness

3.4 Timeline and Milestones



IT OT Collaboration & Analytics

1.0 Program Description

LUMA will upgrade and implement technology solutions to support collaboration across the organization, provide employees with access to relevant content to do their work, the ability to track the performance across the organization and the ability to drive data-based decision-making through the use of analytics. This program also includes the development of a strategy, along with target architecture and the associated roadmap, for a data analytics structure to better support critical decision-making across the company. The program will also implement a centralized repository for internal and external reporting of performance metrics and expand data sources as business needs dictate.

2.0 Program Rationale

2.1 Initial State and Identified Gaps

LUMA is charged with the following:

- Overall management of approximately 4,000 users who require secure access to corporate policies, procedures, and practices and the ability to collaborate across business units in an efficient manner
- Ensuring the efficient operations of the Transmission and Distribution (T&D) network by reporting on contracted reporting metrics as well as implementing internal reporting metrics to measure operational effectiveness
- Developing strategic, data-driven investment plans for decision-making

The current state of the technology landscape for providing collaboration and analytical capabilities varies greatly across the PREPA organization. While technological advances have been made, they have been siloed and without an overarching and executable strategic plan.

This indicates that PREPA is aware of the need to address collaboration management and data-driven decision-making elements and is starting to apply them in specific areas.

Gaps requiring remediation exist in all areas of collaboration management and reporting and analytics, for example:

- There is no unified strategy and governance, and no organizational goals are defined
- While PREPA implemented an enterprise content management/document management solution, that solution has not been maintained and is now out of vendor support
- The existing content management/document management solution was not implemented from a corporate view; therefore, document management practices, standards, and tools vary across the organization
- Document classification, retention, and disposal practices are limited
- Standardization across the organization for document management is non-existent

IT OT Collaboration & Analytics

- There is a lack of a central repository of information for all projects to enable central management oversight of project progress and resource assignment, provide the ability to track consistent project information and use common processes to expand capabilities to all project types
- Corporate policies and procedures are managed in file folders with limited employee access
- The lack of a standard for corporate email accounts results in poor circulation of critical communications among employees
- The lack of a centralized business process model repository or toolset for business processes makes onboarding of new resources difficult and does not support maintenance, and redesign of processes.
- There are no formal documented Information Technology/ Operational Technology (IT OT) business processes aligned to an industry framework for the management of incidents, problems, request fulfillment, and performance
- There is no shared collaboration space across the organization, with SharePoint only used in a limited capacity
- The lack of standardized process flow makes it difficult to track efficiency
- The process for reporting on electrical network performance metrics does not leverage the capabilities within the outage management system but rather extracts the raw data to a custom-built application where the data is manually manipulated in a non-auditable manner and reported
- There are no established KPIs and other performance metrics within the IT OT department, although service desk tickets are starting to be tracked within the Jira tool
- PREPA currently has seven reporting and analytics tools, each implemented in isolation with the intent of only reporting/analyzing data from a single source. Many of these reporting and analytic tools are now out of date and not vendor-supported
- PREPA has recently implemented a data lake on Azure, with the initial data source being limited to customer care and billing data
- Historical data does not exist, which hinders the establishment of data-driven targets

As a whole, the IT OT department's ability to support and enable collaboration across the business and to enable the business to progress to data-driven decision-making has been hampered by the lack of corporate-driven strategies for collaboration, content management, performance metrics, and drivers, combined with siloed and unsupported software solutions.

2.1.1 Additional Gaps Identified Post Commencement

No additional gaps have been identified at this time.

2.2 Description of Remediated State

This program is not part of the SRP.

2.3 Description of Program Completed State

The IT OT Collaboration and Analytics program addresses major deficiencies that were identified in LUMA's gap assessment. These deficiencies span management systems, technology and performance metrics and provide for needed improvements in outage management technology. The program includes:

- Implementation of LUMA's internal collaboration space to enable knowledge sharing across the organization. This project will also implement department-specific locations for sharing within the department and within the organization. SharePoint will be used to deliver Intranet services to

IT OT Collaboration & Analytics

employees. The current site will be re-designed in a way founded on both library sciences and the new organizational structure

- Defining usability governance and publishing standards for all content
- Implementation of a central repository of information for all projects to enable central management oversight of project progress and resource assignment, provide the ability to track consistent project information, and use common processes through the expansion of capabilities to all project types. This program will provide the ability for sustainable training to less experienced employees working on capital construction project management. The program will also provide consolidated and consistent project reports to customers and management by utilizing the central repository and integration of the project management toolset with the financial system
- Upgrade/Replace PREPA's enterprise content management tool. Assess the available approach(es) to follow vendor upgrade path(s) and restore PREPA to licensed status, allowing access to vendor support
- Evaluate and implement software solutions to deliver a central repository for business process models based on best practices aligned with business process modeling standards
- Evaluate and implement an Enterprise Architecture tool to support the development and maintenance of business, information, application, and infrastructure architectural artifacts
- Develop a strategy, target architecture, and roadmap for achieving the target data analytics architecture while ensuring fit-for-purpose solutions are maintained, and the business will be better supported for critical decision-making with ready access to both structured and unstructured data. The intent of the analytics strategy is to identify a first set of requirements for analytics use cases and to drive the identification of necessary data and its availability
- Implementation of a centralized repository to enable the internal and external reporting of performance metrics. This project will provide workflows to load source data, maintain data history, construct the metrics, and provide for review and approvals of metrics
- Expand on the core configuration of the data lake to additional data sources as business criticality dictates, this initiative will add new data domains to the data lake - involves sourcing data, modeling/extending schema(s) within the data lake, and building data extract and cleansing routines
- Extend the data historian to additional data points and upgrade the software to ensure continued vendor support

In the program's completed state, employees will have access to relevant data and knowledge with secure and reliable external access. This program will also provide performance management reporting and dashboard systems to support timely operational and strategic data-driven decision-making, along with the ability to respond to requests for information from the regulatory and other stakeholders.

2.4 Program Activities

- Establish a corporate standard for email accounts (Complete)
- Establish document standards and centralized repositories to ensure employees have access to content that is essential to perform their duties in a safe and secure manner (Complete)
- Establish internal collaboration channels (intranet)
- Upgrade/replace end-of-life software solutions supporting content management
- Rationalize analytics tools through strategy and implementation plan
- Establish performance metrics for IT OT services

Following the above activities, the 10 projects comprising the overall IT OT Collaboration and Analytics program will be fully implemented as follows. The expenditure across this program addresses the

IT OT Collaboration & Analytics

requirement to upgrade/replace existing technologies, extends capabilities within existing technology, and introduces new technologies to enable the business further.

The resulting program will encompass the people, processes, and technology required to ensure the success of the comprehensive program.

PEOPLE

- Design the LUMA internet SharePoint site based on leading industry library science standards and optimize how teams work and collaborate through enhancements in the secured internal communication channels (Complete)
- Define role-based content management needs based on ensuring employees have access to the relevant information to complete the work
- Design the data schema for the data lake expansion based on business-critical data ensuring the integrity of the data
- Design LUMA's process model hierarchy and standards

PROCESS

- Define and implement IT OT performance metrics and processes for capturing source data
- Define workflows to load source data, maintain the history of data, construct the metrics, and provide for review and approvals of performance metrics for internal and external reporting
- Define processes for loading source data to the data lake
- Develop and implement LUMA process for publishing content

TOOLS AND TECHNOLOGY

- Upgrade/replace existing content management solution
- Evaluate and implement recommended business process modeling tool providing a central repository of business process models
- Evaluate and implement recommended enterprise architecture tool providing a central repository of business, information, application, and infrastructure architectural artifacts
- Evaluate and implement recommended risk and compliance management tool
- Extend the capabilities of the existing data lake through the integration of additional data sources

2.4.1 Additional Activities Identified Post-Commencement

No additional activities identified at this time.

2.4.2 FY2025 Activities

The focus for the upcoming fiscal year will be the strategy and implementation plan for rationalizing analytics tools, establishing performance metrics for IT OT services, and evaluating and implementing recommended risk and compliance management tools.

IT OT Collaboration & Analytics

2.5 Program Benefits

PRIMARY GOALS	OBJECTIVES	DIRECT OR INDIRECT IMPACT
<input checked="" type="checkbox"/> Prioritize Safety	<input checked="" type="checkbox"/> Promote a safe workplace	Direct
	<input type="checkbox"/> Implement effective public safety practices	
<input checked="" type="checkbox"/> Improve Customer Satisfaction	<input checked="" type="checkbox"/> Deliver a positive customer experience	Indirect
	<input checked="" type="checkbox"/> Increase service reliability Increase Service Reliability	Indirect
	<input checked="" type="checkbox"/> Deliver electricity at reasonable prices	Indirect
<input checked="" type="checkbox"/> Operational Excellence	<input checked="" type="checkbox"/> Enable systematic management of the business	Indirect
	<input type="checkbox"/> Pursue project delivery excellence	
	<input checked="" type="checkbox"/> Enable employees to execute operations systematically	Direct
<input checked="" type="checkbox"/> System Rebuild and Resiliency	<input checked="" type="checkbox"/> Effectively Deploy Federal Funding	Indirect
	<input type="checkbox"/> Restore damaged grid infrastructure	
	<input type="checkbox"/> Improve the resilience of vulnerable infrastructure	
<input type="checkbox"/> Sustainable Energy Transformation	<input type="checkbox"/> Modernizing the grid	
	<input type="checkbox"/> Enable the digital transformation	
	<input type="checkbox"/> Enable the sustainable energy transformation	
<input type="checkbox"/> Other	<input type="checkbox"/> Other	

PRIMARY GOAL: PRIORITIZE SAFETY

Objective: Promote a Safe Workplace

Reduce risk of safety-related incidents by providing real-time access to current work procedures and business processes

PRIMARY GOAL: IMPROVE CUSTOMER SATISFACTION

Objective: Deliver a Positive Customer Experience

Enables customer service representatives' real-time access to business processes, ensuring a constant approach to managing

IT OT Collaboration & Analytics

Objective: Increase Service Reliability

Enhances performance management reporting and dashboard systems to support timely operational decision-making

Objective: Deliver Electricity at Reasonable Prices

Improved performance metric reporting combined with business process optimization will drive operational efficiencies, thereby controlling costs to ensure more reasonably priced electricity

PRIMARY GOAL: OPERATIONAL EXCELLENCE

Objective: Enable Systematic Management of the Business

Objective: Enable Employees to Execute Operations Systematically

Provides access to standardized business processes through a centralized repository

Reporting on internally established performance metrics drives consistency in the delivery of services

Provides access to standardized work practices to improve employee efficiency

PRIMARY GOAL: SYSTEM REBUILD AND RESILIENCY

Objective: Effectively Deploy Federal Funding

Enhanced analytics reporting capabilities through extension of the data lake to include financial data

2.6 Program Risks

The primary risk of not proceeding with this program is the continued siloed approach to managing business-critical content and the lack of collaboration across the organization. This represents a significant risk to our ability to improve the operations of the utility. The lack of integrated data for analytics will hamper our ability to move to data-driven decision-making, and the lack of effective use of technology to enable our employees to work in a safe manner.

3.0 Program Funding

3.1 Program Funding (\$ millions)

Description	FY2025 Estimate	FY2026 Estimate	FY2027 Estimate	FY2028+ Estimate
Total Expenditures	\$0.1	—	—	—
SRP Expenditures	—	—	—	—

3.2 Program Resource Requirements

- Content management consultant



IT OT Collaboration & Analytics

- System integrator
- Data architect
- Systems Analyst

3.3 Estimating Methods and Assumptions

The costs associated with the implementation, upgrade/replacement, or expansion of existing technology tools and related processes were estimated using the IBM Project Cost Estimator for implementing Gartner-recognized industry-leading solutions. Pricing assumptions are based on the implementation of a medium-large enterprise.

3.4 Timeline and Milestones

