

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

IN RE:

PLAN PRIORITARIO PARA LA
ESTABILIZACIÓN DE LA RED
ELÉCTRICA

CASE NO. NEPR-MI-2024-0005

SUBJECT: Motion in Compliance with Order to Show Cause of July 5, 2024 and Submitting Preliminary Plan Draft Required by the Resolution and Order of June 13, 2024

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**MOTION IN COMPLIANCE WITH ORDER TO SHOW CAUSE OF JULY 5, 2024 AND
SUBMITTING PRELIMINARY PLAN DRAFT REQUIRED BY THE RESOLUTION
AND ORDER OF JUNE 13, 2024**

TO THE PUERTO RICO ENERGY BUREAU:

COME NOW LUMA Energy ServCo, LLC and LUMA Energy, LLC (collectively “LUMA”) through their undersigned legal representatives and respectfully submit and request the following:

I. Introduction

On July 5, 2024 (“July 5th Order”) the Honorable Puerto Rico Energy Bureau of the Public Service Regulatory Board (“Energy Bureau”) issued a Resolution and Order regarding the request for extension submitted by LUMA, on June 28, 2024, to submit an aggressive preliminary plan of improvements to the electric system to “mitigate recurring failures” and “eliminate weak points” affecting the quality of electric service (“Preliminary Plan”) and to be implemented in two (2) years, which Plan the Energy Bureau had ordered each LUMA, Genera PR, LLC (“Genera”) and the Puerto Rico Electric Power Authority (“PREPA”) to submit within a twenty (20)-day timeframe, that is, by July 3, 2024, in an earlier Resolution and Order of June 13, 2024 (“June 13th Order”). In the July 5th Order, the Energy Bureau denies LUMA’s extension request, as well as similar requests filed by Genera and PREPA on July 1, 2023, indicating that the arguments

presented by LUMA, Genera and PREPA “did not persuade” the Energy Bureau, and orders each LUMA, PREPA and Genera to show cause, on or before July 10, 2024, why the Energy Bureau should not impose an administrative fine of twenty-five thousand dollars (\$25,000) for each day of delay in submitting their respective Preliminary Plans.

LUMA herein submits its response to the Order to Show Cause in compliance with the July 5th Order and a Preliminary Plan in draft form in compliance with the June 13th Order.

As a threshold matter, LUMA emphasizes that producing a quality Preliminary Plan within the twenty (20)-day timeframe provided by this Honorable Energy Bureau was not reasonably feasible. That timeframe was insufficient for LUMA to conduct all the tasks necessary to gather, assess and review the relevant information as well as coordinate and conduct the required interdepartmental consultations and reviews in an iterative fashion, all of which is a pre-requisite to develop a cohesive and complete plan that is fully validated and implementable. LUMA explained and expanded upon these reasons in its request for extension to the Energy Bureau.

LUMA takes its responsibility to provide accurate and reliable information to the Energy Bureau seriously. Given the relationship between the Preliminary Plan and the simultaneous investigations related to the two recent outage events, LUMA has been hard at work in analyzing the information currently being gathered in connection with such investigations, as such information becomes available during the course of the investigations and using it to inform its development of the Preliminary Plan. In doing so, LUMA’s intent is to enable the development and submittal of a Preliminary Plan that puts the Energy Bureau in the best position possible to assess and rely on the information provided by LUMA when issuing future determinations. These simultaneous efforts also substantially involve the same LUMA technical personnel, personnel who are also responsible for attending to the electric system’s day-to-day operations. Finally,

LUMA endeavored to submit its request for extension as soon as it determined it would not be able to submit to the Energy Bureau a comprehensive Preliminary Report, which it did on June 28, 2024, five (5) days prior to the established deadline. Hence, LUMA's request to this Honorable Energy Bureau for an extension was reasonable, timely filed and made in good faith.

In view of the above, and the fact that the Energy Bureau denied LUMA's request for extension after the original deadline to submit the Preliminary Plan had elapsed, denying LUMA an opportunity to take any action to at least submit a minimally compliant draft so as to avoid being penalized, the Energy Bureau's determination to deny the extension and impose a fine is unreasonable and not supported by the record in this proceeding.

For these reasons, as further expanded upon below, LUMA respectfully contends that the Energy Bureau should vacate the July 5th Order, considering that LUMA has shown cause on why the imposition of a fine is not warranted. In addition, LUMA respectfully requests that the Energy Bureau accept the draft Preliminary Plan submitted with this Motion in compliance with the June 13th Order, with the acknowledgement that it is preliminary and in draft form and will be further refined within the next days to complete its validation and ensure this honorable Energy Bureau has the benefit of reviewing and submitting for public expression a quality and implementable Preliminary Plan.

II. Background and Procedural History

1. On June 13, 2024, Energy Bureau issued a Resolution and Order ("June 13th Order") containing orders addressed to LUMA, Genera and PREPA.

2. The Energy Bureau ordered LUMA, Genera and PREPA to develop an "aggressive preliminary plan of improvements to the electric system" ("Preliminary Plan"), requiring that the Preliminary Plan include "a comprehensive analysis of the electric system 'as is' (as it is

currently)”; that it “detail factors such as the need to upgrade protection schemes, the need for redundant lines and/or equipment, vegetation management, lack of reliable generation, the need for frequency and inertia control and persistent load shedding”; that it “include an estimate detailing the costs necessary to repair and conduct such upgrades to the electric system and identify whether they are to be covered by federal, state or budget funds and/or the rate itself”; that it “include a detailed timeline with specific and measurable goals (expectation of reduction in the frequency and duration of interruptions, availability of reliable generation and reduction of forced outages of generation unites) for the execution of the necessary repairs and implementations”; and that it contemplate the Genera battery project approved in Case No. NEPR-MI-2021-0002, *In Re: Review of the Puerto Rico Electric Power Authority’s 10-Year Infrastructure Plan- December 2020*, and LUMA’s proposed batteries concept approved in Case No. NEPR-MI-2024-0002, *In Re: LUMA’s Accelerated Storage Addition Program*. See June 13th Order on pages 1-2 (translation ours). The Energy Bureau also required that the Preliminary Plan have an implementation period of a maximum of two (2) years and that it prioritizes the interventions in the most critical points of the electric system and include contingency and protection measures, in accordance with the reliability standards of the industry, to minimize interruptions during the implementation of the plan. *See id.* at page 2.

3. As for the timeframe to prepare the Preliminary Plan, in the June 13th Order the Energy Bureau ordered LUMA, PREPA and Genera, to individually present their respective Preliminary Plans within a term of twenty (20) days from the date of the notification of the June 13th Order (i.e., July 3, 2024). *See id.* The Energy Bureau also explained that, once submitted, and after the required evaluation, the Energy Bureau would schedule a public hearing for public expression on the plans. *See id.*

4. On June 14, 2024, the Energy Bureau issued a Resolution and Order (“June 14th Order”) whereby it initiated a proceeding under Case No. NEPR-IN-2024-0002, *In Re: Santa Isable Substation Major Outage Affecting Coamo, Aibonito, and Santa Isabel*, to investigate a major outage that occurred at the Santa Isabel transmission substation on June 2, 2024 (the “Santa Isabel Incident”) that affected customers in the municipalities of Santa Isabel, Coamo and Aibonito, pursuant to Section 6.3 of Act 57-2014 and Regulation No. 8543¹ with the purpose of determining “the causes of the [Santa Isabel Incident] and the investigative or corrective actions taken by LUMA in relation to them”. *See* June 14th Order on pages 1-2. The Energy Bureau also ordered LUMA to submit, on or before July 1, 2024, “an Incident Report with the information required in Attachment A” of the June 14th Order. *Id.* at page 2.

5. Also on June 14, 2024, the Energy Bureau issued another Resolution and Order (“Second June 14th Order”) whereby it initiated a proceeding under Case No. NEPR-IN-2024-0003, *In Re: June 12, 2024 Large Scale Bluesky Customer Interruptions*, to investigate two events affecting the Puerto Rico electric system which occurred on June 12, 2023 (the “June 12th Incidents”) pursuant to Section 6.3 of Act 57-2014 and Regulation No. 8543 with the purpose of determining “the causes of [the June 12th Incidents] and the investigative or corrective actions taken by LUMA in relation to them” and ordering LUMA to submit, on or before June 20, 2024, “an Initial Report on the causes of [the June 12th Incidents] and actions taken so far to address and prevent the [June 12th Incidents] from reoccurring” and to submit, on or before July 8, 2024, an “Incident Report with the information required in Attachment A” of the June 14th Order. *See* Second June 13th Order on pages 1-2.

¹ *Regulation on Adjudicative, Notice of Noncompliance, Rate Review, and Investigation Proceedings*, December 18, 2014 (“Regulation 8543”).

6. On June 28, 2024, LUMA filed a *Request for Extension of Time to Submit Preliminary Plan Required by the Resolution and Order of June 13, 2024*. In this motion (“June 28th Motion”), LUMA explained that: it had been diligently working on the preparation of the Preliminary Plan and as of that date it had developed a preliminary working draft; that “given the extensive scope of the plan and required details in a variety of subjects (including system analyses, validation of identified needs for repairs and upgrades, estimated costs, implementation timelines, and funding sources), the preparation of the plan requires significant coordination across several LUMA departments”; that “LUMA is currently reassessing [this plan] to incorporate details about current events, ensuring that it has the most current and comprehensive critical points of the T&D System”; and that given “the need to evaluate contingency elements that may affect the implementation of the plan [...] further cross-departmental reviews” were required “that were anticipated to extend beyond the originally anticipated date to have a complete, internally verified, version acceptable to LUMA”. *See* June 28th Motion on pages 2-3. For these reasons, LUMA indicated that it needed additional time to allow LUMA to “achieve a more thorough, clear, verified, and implementable Preliminary Plan that will more effectively address the requirements of the June 13th Order and be better positioned for the ensuing Energy Bureau review and public comment”. *See id.* at page 3. Accordingly, LUMA respectfully requested until July 19, 2024, to submit the Preliminary Plan. *See id.*

7. On July 1, 2024, Genera filed a request for extension of time to submit its Preliminary Plan until July 19, 2024. *See Solicitud de Extensión de Término para Presentar Plan Preliminar*.

8. On July 2, 2024, PREPA filed a request for extension of time to submit its Preliminary Plan until July 26, 2024. *See Moción para Solicitar Término Adicional Para Cumplir con Resolución y Orden del 13 de Junio de 2024.*

9. On July 5, 2024, the Energy Bureau issued a Resolution and Order (that is, the July 5th Order) in which it addressed the extension requests submitted by LUMA, PREPA and Genera. *See July 5th Order* on pages 2-3. With respect to LUMA’s extension request, the Energy Bureau indicates that LUMA “informed that it has been working on the development of its Plan and, to date, it has developed a preliminary working draft”; that “according to LUMA, given the broad scope of the Plan and the details required in a variety of topics (including system analyses, validation of identified needs for repairs and upgrades, estimated costs, implementation timelines, and funding sources), the preparation of the Plan requires significant coordination among various LUMA departments”; that LUMA “stated that “it is reevaluating the Plan to incorporate details about the recent events, ensuring it has the most updated and complete list of critical points in the Transmission and Distribution System”; and that LUMA also indicated that “due to the foregoing, and the need to evaluate the contingency elements that could affect the implementation of the plan, the Plan will require more interdepartmental revisions that are anticipated to extend beyond the date foreseen to have a complete, internally verified version acceptable to LUMA”. *See id.* at page 2.

10. In addition, the Energy Bureau indicates in the July 5th Order that the arguments presented by LUMA, Genera and PREPA “do not persuade the Energy Bureau”; that the critical situation experienced by consumers “requires immediate action” and that “LUMA, Genera and PREPA use their expertise and organize their resources in an effective and efficient manner, to the benefit of the consumer to address this matter with the urgency and immediateness that it clearly

requires” and that given the urgency, “any alleged difficulty in complying with the terms of the [June 13th Order] should have been informed in the days immediately subsequent to the notification” of the June 13th Order, which none of these entities did. *See id.* at page. 3.

11. The Energy Bureau then denies the requests for extension submitted by LUMA, PREPA and Genera and orders each to show cause, on or before July 10, 2024, why the Energy Bureau should not impose an administrative fine of twenty-five thousand dollars (\$25,000) for each day of delay in submitting their respective Preliminary Plan. *See id.* July 5th at page 3.

III. Discussion

A. Submittal of Preliminary Plan Draft

In compliance with the June 13th Order, LUMA hereby respectfully submits in *Exhibit 1* the Preliminary Plan in the form of a draft, which is as responsive to the requirements of the June 13th Order as it can be at this stage. LUMA is submitting this plan at this time in attention to the July 5th Order which denied the extension LUMA had requested in good faith by means of the June 28th Motion. Therefore, this plan is being issued in draft form and does not benefit from the various additional layers of iterative interdepartmental reviews described in the June 28th Motion needed to achieve a final, accurate and implementable plan. This thorough process was proposed by LUMA in the June 28th Motion to ensure this Energy Bureau can conduct a thorough assessment of the information contained in the Preliminary Plan and rely on such information when making any future determinations.

The Preliminary Plan draft continues to undergo internal review by LUMA from a perspective of system criticality and funding. Many of the projects identified had been previously identified as part of the longer-term System Remediation Plan proposed in docket NEPR-MI-2020-0019, *In re: Review of the Puerto Rico Electric Power Authority’s System Remediation Plan*,

which sets forth initiatives to remediate the vulnerabilities in the electric system existing prior to LUMA commencing operations, which given the extensive nature thereof, is anticipated to take multiple years to implement. In order to improve the alignment of priorities, LUMA is conducting a second review of these projects to identify actions relating to critical assets that may be accelerated or need additional funding to provide a higher level of resiliency.

In addition, LUMA is continuing to work on calculating the expected reliability benefits of the actions proposed under the Preliminary Plan. This effort takes significant time because each of the initiatives needs to be evaluated independently and historical trends need to be reviewed to assess potential reliability benefits and improvements.

B. The Energy Bureau's determination to deny the extension and impose an administrative fine in this case is unreasonable and an abuse of discretion.

LUMA respectfully contends that the Energy Bureau's actions in denying LUMA's extension and proposing the imposition of administrative penalties is unreasonable and is not supported by the record in this case.

In our jurisdiction, given existing due process guarantees, decisions by administrative agencies imposing fines shall not exceed statutory authorization, must be supported by substantial evidence in the administrative record, and cannot amount to a clear abuse of discretion. *See Comisionado de Seguros v. Antilles Ins. Co.*, 145 DPR 226, 233-34 (1998); *Assoc. Ins. Agencies, Inc. v. Com. Seg. PR*, 144 DPR 425, 439-41 (1997); *See also e.g. ECP Incorporated v. Oficina del Comisionado de Seguros*, 205 DPR 268, 281 (2020) (stating the general rule that decisions by administrative agencies should be reasonable and based on the administrative record); *see also Graciani Rodríguez v. Garage Isla Verde*, 202 DPR 117, 126-27 (2019).

The determination to impose a fine entails the exercise of discretion and a concomitant avoidance of arbitrary actions. In the context of administrative law, the Puerto Rico Supreme Court

has held that the exercise of discretion by an administrative agency must be rooted in reasonableness and accordance with applicable law. *See e.g., Ramírez v. Policía de PR*, 158 DPR 320, 339 (2002). Discretion, in turn, has been defined as a form of reasonableness applied to judicial discernment to reach a just conclusion. *See e.g., Banco Popular de PR v. Mun. de Aguadilla*, 144 DPR 651, 657-58 (1997); *Pueblo v. Ortega Santiago*, 125 DPR 203, 211 (1990).

As can be noted before, LUMA's request for an extension was timely, reasonable and rooted in a real need to complete the various internal processes necessary for LUMA to produce a compliant Preliminary Plan as required by this Honorable Energy Bureau. Consistent with the June 28th Motion, LUMA reiterates that the process of gathering and assessing the information required for the Preliminary Report is not confined to a single department within LUMA nor the responsibility of a single individual within the organization. It involves a collaborative effort across multiple disciplines and utility functions. This cross-functional interaction and coordination is reflective of the complexities associated with operating and maintaining the T&D System in its current size and condition, and of LUMA's commitment to doing so prudently and subject to the standards our customers deserve and expect.

Moreover, as highlighted in the June 28th Motion, LUMA's experienced and professional personnel responsible for developing the Preliminary Plan are also substantially responsible for assisting in responding to numerous other orders issued by this Honorable Energy Bureau, including the ongoing investigations of the recent outage events.² In addition to their technical involvement in these regulatory dockets, these same personnel have day-to-day responsibilities

²² *See* NEPR-IN-2024-0002, *In re: Santa Isabel Substation Major Outage Affecting Coamo, Aibonito and Santa Isabel*, and NERP-IN-2024-0003, *In re: June 12, 2024 Large Scale Bluesky Customer Interruptions*.

associated with the operation and maintenance of the T&D System, which cannot be reasonably deferred or deprioritized.

In view of the above, the original deadline established by this honorable Energy Bureau to develop, complete and submit a Preliminary Plan did not award LUMA sufficient time to complete each of the internal steps that would otherwise be necessary for LUMA to produce a compliant Preliminary Plan. The extension requested in the June 28th Motion was not only reasonable but necessary to ensure that LUMA could fulfill its obligations without compromising the quality and integrity of the information provided in the Preliminary Plan.

Rather than being reflective of a need for better resource coordination, LUMA's extension request is the product of a conscious allocation of resources amongst its multiple obligations, taking into consideration the day-to-day needs of the T&D System and the time and effort necessary for complying with this honorable Energy Bureau's orders. Therefore, in requesting an extension until July 19th for submitting the Preliminary Report, LUMA was putting forward a timeline that reflected an appropriate and reasonable allocation of resources, in furtherance of compliance of LUMA's obligations and responsibilities.

LUMA's extension request was made in good faith and not with the intention of obviating an Energy Bureau order. LUMA commenced the efforts to prepare the Preliminary Plan with the intention of submitting it within the twenty (20) day timeframe set forth in the June 13th Order. Notwithstanding those efforts, after undergoing the initial rounds of review, it was not until June 28th, that LUMA concluded that the effort of developing a compliant Preliminary Plan resulted in a much more complex and time consuming endeavor given the need for it to contemplate the reliability, safety and careful execution expected. LUMA then promptly proceeded to request the extension, five (5) days before the July 3rd deadline.

However, this honorable Energy Bureau issued its determination to deny LUMA's extension request on July 5, 2024, after the original deadline had expired. In doing so, the Energy Bureau denied LUMA of a reasonable opportunity to submit a draft version of the Preliminary Plan that would at least be minimally responsive to the Energy Bureau's requirements and thus would allow LUMA an opportunity to comply, even if partially, with the July 3rd deadline. Accordingly, this honorable Energy Bureau's determination to deny LUMA's extension request and propose the imposition of penalties for non-compliance is unreasonable, capricious and arbitrary and not supported by the record in this proceeding.

III. Conclusions

For the reasons stated above, LUMA requests this honorable Energy Bureau vacate the July 5th Order and consider that LUMA has shown cause on why the imposition of a fine is not warranted.

In addition, LUMA respectfully requests this Honorable Energy Bureau accept the Preliminary Plan draft in *Exhibit 1* herein in compliance with the June 13th Order. LUMA recognizes that the Preliminary Plan draft will require further refinement in order to comply with the Energy Bureau's requirements. To this end, LUMA is actively continuing its rigorous review of the Preliminary Plan. LUMA proposes to submit a more refined version of the Preliminary Plan on or before July 19, 2024. As it was stated in the request for extension of time, this timeline will allow LUMA to incorporate the additional information that becomes available from the reviews described above to result in a comprehensive and validated plan and place the Energy Bureau in the position to assess the information contained therein and rely on such information when making any future determinations.

WHEREFORE, LUMA respectfully requests the Energy Bureau to **take notice** of the aforementioned, **accept** the Preliminary Plan draft submitted herein in *Exhibit 1* in compliance with the June 13th Order and **accept** that LUMA submit a more refined version of this plan by no later than July 19, 2024; and **vacate** the July 5th Order and **determine** that the imposition of a fine is not warranted.

RESPECTFULLY SUBMITTED.

In San Juan, Puerto Rico, on this 10th day of July 2024.

We hereby certify that I filed this Motion using the electronic filing system of this Energy Bureau. I will send an electronic copy of this Motion to counsel for PREPA Alexis G. Rivera Medina, arivera@gmlex.net, and to Genera PR LLC, alopez@sbgblaw.com, jfr@sbgblaw.com, and regulatory@genera-pr.com.



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Exhibit 1
Preliminary Plan



System Improvements Preliminary Plan

July 10, 2024

System Improvements Preliminary Plan

INFORMATIONAL USE DISCLAIMER

The content in this document is furnished for informational use only and is subject to change without notice. The document should not be construed as a final commitment by LUMA to execute all the initiatives listed herein or as a limitation to include additional initiatives. This is designed as a dynamic plan borne of an iterative process and subject to changes to adjust and recognize situations where change is warranted. The initiatives listed here are also complementary and work in conjunction with additional initiatives that LUMA would seek to execute in due time.

System Improvements Preliminary Plan

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1.0 Introduction

On June 1, 2021, LUMA assumed operation and maintenance responsibility for the Puerto Rico Electric Power Authority's (PREPA) Transmission and Distribution System (T&D System) as specified in the Puerto Rico Transmission and Distribution Operating and Maintenance Agreement (T&D OMA) between PREPA, the Puerto Rico Public-Private Partnerships Authority (P3A), and LUMA. Since commencement of operations, LUMA has executed multiple federally and non-federally funded initiatives in the transmission, distribution, substations, IT/telecom, buildings, and environmental asset categories (T&D Projects).

In accordance with the Resolution and Order dated June 13, 2024, the Puerto Rico Energy Bureau (PREB) required LUMA to develop an aggressive preliminary plan for system improvements to affect the quality of electric service. This document provides a current analysis of the electrical system, programs and initiatives identified to repair and make these improvements, including cost estimates necessary and forecasted funding sources. Additionally, the Plan includes a timeline with reliability improvement projections, Vegetation Management initiatives and the Accelerated Storage Addition Program (ASAP). LUMA will supplement this plan with further detail as appropriate.

LUMA's Historic Progress

When LUMA began operation of the electric system three years ago, the effects of decades of under-investment and neglect were apparent. LUMA conducted a system-wide gap assessment that resulted in the identification of over 1,000 gaps which determined that the system assets were in poor health across the majority of assets. These deficiencies (including processes, systems and physical assets) corresponded with negative effects on system performance and reliability which would require significant improvement, resources and capital. Since then, LUMA has made tremendous progress across all facets of Puerto Rico's transmission and distribution system. Among the examples of the significant progress made over the last three years include:

- **Strengthening the energy system against storms and hurricanes:** by replacing more than 12,500 utility poles with new poles able to withstand 160+ mph winds,
- **Reducing size and the impact of outages:** by installing over 8,200 grid automation, which has saved our customers over 120 million service interruption minutes,
- **Addressing the largest cause of outages:** by clearing vegetation from over 4,500 miles of powerlines and electric infrastructure,
- **Improving community safety and energy efficiency:** by replacing over 106,000 streetlights as part of LUMA's Community Streetlight Initiative,
- **Empowering the adoption of solar energy:** by connecting over 91,000 customers to rooftop solar, representing 585 megawatts of clean, renewable energy for Puerto Rico, and,
- **Improving reliability during generation shortfalls:** by launching the Customer Battery Energy Sharing (CBES) initiative.

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While there is clearly much more work to do, customers are already seeing results. In fact, an analysis of LUMA's daily reliability determined that more than 95% of LUMA's 1.5 million customers have had concurrent service for more than 98% of the year when generation is available.

Advancing FEMA Projects

Much of this progress has been made possible through collaboration and support from the Central Office for Recovery, Reconstruction and Resiliency (COR3) and FEMA. Before LUMA commenced services, the previous operator had submitted only 37 projects to COR3 and FEMA for their consideration. In the three years since, **LUMA has worked closely and cooperatively with both agencies to submit 423 projects for consideration of federal funding – a record pace for Puerto Rico.** These 423 projects would represent \$13+ billion in federal funds and are critical to allowing for the short- and long-term investments necessary to transform and modernize the electric system and significantly improve service for customers across the island. Of those projects, 164 projects have received obligation, representing over \$2 billion of project investments, as well as \$2 billion incremental in available spend to procure long-lead materials and the engineering services needed to execute additional work. Already, LUMA has energized 29 of the 164 projects that were obligated, including critical transmission priority pole replacement, distribution pole replacement projects, as well as critical substation projects, including a substation in Manatí.

Much more, however, remains to be done to allow the grid to reach the levels of reliability and resilience that Puerto Ricans expect and deserve. LUMA continues to work on 136 obligated projects that are planned or underway to improve service reliability and build system resiliency, including:

- The **Vegetation Safety and Reliability Initiative**, an island-wide initiative that will target overgrown vegetation from over 16,000 miles of powerlines to dramatically reduce outages for all customers by up to 45% once complete,
- The **Smart Meter Initiative** will install 1.5 million electric meters across Puerto Rico that will help modernize electric service across the island by helping to restore service more quickly, and improving customer service, and,
- The upgrading of the **energy management system (EMS)** to be able to provide modern levels of operational capabilities.

In addition, LUMA continues to work with COR3 and FEMA on more than 250 projects that have yet to be obligated, including allowing for the large-scale deployment of distribution automation, the rebuilding of critical transmission lines, and the deployment of a cutting-edge networked microgrid project serving Vieques and Culebra. LUMA also continues to complete the interconnection of 729 MW of utility-scale solar and 350 MW of battery. Even with these investments, however, the reliability experienced by Puerto Rico would continue to be at the bottom of the fourth quartile of peer utilities, as measured according to industry standards such as IEEE 1366. LUMA continues to work with COR3, FEMA and other stakeholders to fill the island's energy needs and complete the transformation and modernization of the grid to allow for the integration of 100% renewable generation and provision of sufficiently reliable and resilient energy.

In the next sections, LUMA will provide a high-level system overview, including the challenges and expected impacts of these investments, and then go into further detail about the system improvement

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plan that is being executed over the next two years, including associated budgets and planned execution. In short, the sections of this report provide details of the following planned actions:

- Near-term restoration of out-of-service equipment, like substation transformers, circuit breakers and transmission lines, to stabilize the grid, and,
- Planned long-term capital projects that include substation rebuilds, new substations, transmission line pole replacements, and transmission line rebuilds, and,
- The hardening of poor performing assets and equipment.

2.0 System Overview

The transmission and distribution (T&D) grid for which LUMA is responsible is a highly complex interconnected system. To provide power to any one individual can require dozens of complex pieces of equipment to work perfectly in concert. To provide reliable, resilient power to 1.5 million customers living across Puerto Rico entails substations, transmission lines, and distribution feeders, as well as the control capabilities operating them, to work effectively together.

As has been well documented, Puerto Rico has suffered from decades of system-wide neglect under the prior operator; neglect which has been exacerbated by historic damage caused by natural disasters (earthquakes) and hurricanes. Since 1989, for example, the island's power grid has been severely impacted by six hurricanes, or more than one hurricane every six years. This includes Hurricane Hugo (1989) that knocked out power for 75% of the island's residents, Hurricane Hortense (1996) that caused approximately 40% of island residents to lose power, and Hurricane Georges (1998) that left approximately 96% of the island population without power.

In September 2017, the island was again struck by a major hurricane – Hurricane Irma – that significantly damaged the power grid and led to over one million residents losing power. Just weeks later, the island was struck by Hurricane Maria, which crippled the island's power grid and required more than a year just to restore power to all customers. In addition to large numbers of equipment out of service, even more equipment was vulnerable due to being required to operate for years or even decades longer than had been expected when originally manufactured. Since then, continued stress, including Hurricane Fiona, a Category 1 event which produced an island-wide blackout that required 12 days to restore 90% of customers, placed additional burden on the infrastructure.

To mitigate these challenges, LUMA is executing an aggressive series of programs to rebuild the system in alignment with industry standards. LUMA utilizes industry best practices and established standards to model and assess the system, and to propose long-term capital plans to harden the grid, improve reliability performance, including NERC CIP standards, integrate renewable generation, and mitigate deficiencies. For example, substation transformers as critical sources need to have designed redundancy, with reliable bus configurations like breaker-and-a-half and ring-bus which allow for the continuous operation of the substation even with an outage of a breaker, or other substation equipment.

Furthermore, since commencement LUMA has performed assessment, repair and replacement work on substation and transmission assets. These proactive activities have prevented many outages by identifying priority items that can be serviced or maintained before equipment failure that can cause an outage. For substations, LUMA has replaced 5 large substation transformers, and replaced over 42 transmission substation circuit breakers, as well as 25 distribution substation circuit breakers. These

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circuit breakers provide the essential service of quickly detecting and isolating disturbances, and protecting equipment, and are the essential device to maintain public safety by isolating and deenergizing faulted equipment on the grid. LUMA has also replaced over 200 transmission structures as part of T-Pole replacement program. In addition, in FY2024 alone, LUMA has completed over 1160 insulator replacement projects, more than 600 hot spot repairs, and over 275 switch repairs on the transmission system. Combined, these transmission investments have provided hardening and reduced the likelihood of critical equipment failures causing customer interruption.

The present state of the grid includes out of service assets that are described in Section 3. These include substation transformers that are currently out of service due to equipment failure and must be placed in service to reduce the likelihood and consequence of widespread outages. Similarly, out of service transmission lines cause power flows to increase on adjacent lines, which can increase the likelihood of failure and number of customers affected when an unexpected failure occurs. These out-of-service transmission facilities are discussed in Section 3 and must be restored to service to reduce reliability impacts to the grid.

Future improvement plans, projects and programs are detailed in Section 4. In the next two years, the focus will be on near-term restoration of out-of-service equipment like substation transformers, circuit breakers and transmission lines to stabilize the grid. Planned long-term capital projects that include substation rebuilds, new substations, transmission line pole replacements, and transmission line rebuilds, and hardening of poor performing assets and equipment are currently in progress with COR3 and FEMA.

What is described here is part of a larger plan to deploy significant funds to transform the grid. In the next five years, LUMA expects to have deployed close to \$10B of federal funds, which will serve as a major step towards increasing the system's operational flexibility, reliability, and resilience while also improving customer service and allowing integration of distributed and clean energy sources towards the existing public policy goals. For example, these investments over the next five years will:

- Harden and upgrade the transmission system which will improve reliability, capacity, and resiliency, including addressing nine transmission circuit segments' North American Electric Reliability Corporation (NERC) reliability criteria violations, which will improve resilience as well as meet NERC guidelines regarding critical substations.
- Rebuild distribution feeders with poor reliability performance and those that serve critical power facilities, targeting the worst-performing feeders first.
- Improve reliability by strategically clearing hazardous vegetation from more than 16,000 miles of power lines and substations over the next three years.
- Strengthen the overall resiliency of the electric grid by (1) hardening and modernizing substations, (2) making upgrades to conform to the latest codes, industry standards, and practices, (3) replacing electromechanical and electronic relays, (4) relocating or mitigating substations in flood-prone areas, and (5) deploying new substations to meet industry standards.
- Increase system reliability and resiliency through the installation of grid automation devices, which are smart switches that are used to reduce the impact and duration of outages and install grid communication equipment to improve service restoration times for customers.

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- Strengthen grid resiliency to better withstand severe weather by replacing damaged or old distribution poles and transmission towers, along with their associated hardware and conductors, with hardened equipment that can withstand at least 160 mph winds.

3.0 System Critical Contingency Equipment

LUMA continues to regularly analyze the grid using industry-standard rigorous planning processes and tools to identify weak points of the grid. This analysis evolves as conditions change, including through new loads associated with businesses and residences; new generation, including renewable deployments; and loss of critical substation and transmission equipment. LUMA has addressed many areas of the grid where a critical contingency could have caused system issues since commencement.

More, however, remains to be done. In the below section, we identify some of the critical weak points in the grid and the planned efforts to mitigate them. These projects will be funded with a mixture of federal capital, non-federal capital, and operations and maintenance (O&M) planned work. As engagements with FEMA, COR3, and PREB evolve over the next two years, some projects that are here projected to be funded by one of those categories of funds may be funded by another.

3.1 Prioritized Substation Equipment

Table 1-1 identifies prioritized substation equipment, including their “as-is” grid condition, plans to mitigate, potential permanent solution funding option, and estimated completion date. Should this equipment not be able to function, it can pose threats to the reliability and resilience of the grid.

Substation transformers, in particular, are perhaps some of the most critical components in the electric grid. Reliable design therefore includes redundancy for any one transformer. However, for example, when one transformer fails, it requires putting additional load on the remaining functioning transformers, which can often put that transformer in a more vulnerable state. Should a second contingency transformer fail, it can often lead to connected transmission and distribution lines not being able to transmit power to serve customers. In the table below, we identify not only the prioritized transformers, but the associated transformers that are in a more vulnerable state, and the transmission or distribution lines that can be affected should an additional piece of equipment fail.

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3.2 Prioritized Transmission Substation Transformers

Substation	Caguas TC
Prioritized Out-of-Service Equipment	Transformer 115/38/13 kV
Risk ¹	High
Contingency Component	Caguas TC - Bank 1 Transformer
Potential Affected Equipment	L-9300 Juncos - G Benitez
Load Impact	180 MW
Operational Mitigation	Rotational load shedding. Emergency switching and mobile generators to reduce impact
Permanent Solution	Replace transformer bank #2 with available unit
Potential Permanent Solution Funding Source	TBD
Est. Completion Date	TBD
Substation	Monacillos TC
Out-of-Service Equipment	Transformer Bank 1 - 115/38 kV
Risk	High
Critical Contingency Component	Monacillos TC Bank 2 -115/38 Kv
Potential Affected Equipment	L-3500 Monacillos - Caparra

¹ High Risk refers to either the increased likelihood of the failure of additional equipment due to significantly exceeding the maximum emergency rating of the equipment, or the increased likelihood of disruptive impacts including area load-sheds and/or cascading outages. Medium risk refers to either a moderate likelihood of the failure of additional equipment due to exceeding the maximum emergency rating of the equipment, or the moderate likelihood of disruptive impacts including localized load-sheds.

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Load Impact	180 MW
Operational Mitigation	Rotational load shedding. Emergency switching and mobile generators to reduce impact
Permanent Solution	Replace transformer bank # 3
Potential Permanent Solution Funding Source	FEMA
Est. Completion Date	Q1 FY2025
Substation	Monacillos TC
Out-of-Service Equipment	Transformer Bank 1 & 3 -115/38 kV
Risk	High
Critical Contingency Component	Monacillos TC breaker
Potential Affected Equipment	L-1000 Venezuela-Capuchino
Load Impact	10 MW
Operational Mitigation	Emergency switching and repair or replace affected breaker
Permanent Solution	Replace transformer bank #3
Potential Permanent Solution Funding Source	FEMA
Est. Completion Date	Q1 FY2025
Substation	Sabana Llana TC
Out-of-Service Equipment	Autotransformer 2 - 230/115 kV

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Risk	High
Critical Contingency Component	Sabana Llana TC Auto 1 (230 kV / 115 kV)
Potential Affected Equipment	L-41400 Juncos-Humacao
Load Impact	270 MW
Operational Mitigation	Rotation load shedding. Emergency switching and mobile generators to reduce impact.
Permanent Solution	Replace Sabana Llana autotransformer #2 and replace Bayamon transformer
Potential Permanent Solution Funding Source	FEMA
Est. Completion Date	TBD
Substation	Bayamon TC Auto
Out-of-Service Equipment	Transformer 115/38 kV
Risk	High
Critical Contingency Component	Manati TC 230/115 kV Autotransformer
Potential Affected Equipment	L- 39000 Ponce - Juana Diaz L-1000 Venezuela - Capuchino Cambalache & Sabana Llana 230/115 kV Transformers.
Load Impact	10 MW
Operational Mitigation	Emergency switching
Permanent Solution	Replace Bayamon transformer

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Potential Permanent Solution Funding Source	FEMA
Est. Completion Date	TBD
Substation	Bayamon TC
Out-of-Service Equipment	Autotransformer 230/115 kV
Risk	Medium
Critical Contingency Component	Cambalache 230/115 kV Autotransformer
Potential Affected Equipment	L-37400 Vega Baja-Manati
Load Impact	<10MW
Operational Mitigation	Emergency switching
Permanent Solution	Replace Bayamon TC Transformer
Potential Permanent Solution Funding Source	FEMA
Est. Completion Date	Q1 FY2025
Substation	Costa Sur Power Plant TC
Out-of-Service Equipment	Auto 1 230/115 kV
Risk	Medium
Critical Contingency Component	Costa Sur Power Plant TC Auto 2 (230/115 kV)
Potential Affected Equipment	Ponce TC 230/115 Auto #1
Load Impact	<10MW
Operational Mitigation	Emergency switching

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Permanent Solution	Replace Costa Sur 230/115 kV auto-transformer
Potential Permanent Solution Funding Source	FEMA
Est. Completion Date	Q1 FY2026
Substation	Llorens Torres
Out-of-Service Equipment	38/13.2 kV
Risk	Medium / High
Critical Contingency Component	Loss of mobile substation 15
Potential Affected Equipment	Multiple distribution feeders from same substation.
Customer Impact	~ 9000 customers
Operational Mitigation	Emergency load switching and installation of temporary breakers
Permanent Solution	Repair of metal-clad equipment
Potential Permanent Solution Funding Source	FEMA
Est. Completion Date	TBD
Substation	Hato Rey TC
Out-of-Service Equipment	115/13.2 kV
Risk	Medium / High
Critical Contingency Component	Loss of adjacent circuit 1419-00
Potential Affected Equipment	Multiple distribution feeders from same substation.

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Customer Impact	~ 3000 customers
Operational Mitigation	Mobile generators and/or mobile substation
Permanent Solution	Replace transformer
Potential Permanent Solution Funding Source	FEMA
Est. Completion Date	TBD
Substation	Covadonga GIS
Out-of-Service Equipment	38/4.16 kV
Risk	Medium
Critical Contingency Component	Loss of adjacent substation 1011
Potential Affected Equipment	Multiple distribution feeders from substation 1011.
Customer Impact	~ 5000 customers
Operational Mitigation	Install mobile substation
Permanent Solution	Perform permanent repairs to Covadonga GIS equipment
Potential Permanent Solution Funding Source	Non-Federal Capital (NFC)
Est. Completion Date	Q1 FY2026
Substation	Factor Sectionalizer
Out-of-Service Equipment	38/13.2 kV
Risk	Medium

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Critical Contingency Component	Loss of mobile substation 10
Potential Affected Equipment	Multiple distribution feeders from Factor Sectionalizer
Customer Impact	~ 3500 customers
Operational Mitigation	Mobile generation and/or mobile substation
Permanent Solution	Transformer replacement
Potential Permanent Solution Funding Source	TBD
Est. Completion Date	TBD

Table 1-1. Prioritized Transmission Substation Transformers

3.3 Prioritized Transmission Equipment

LUMA also continues to regularly analyze transmission lines using industry-standard rigorous planning processes and tools to identify weak points of the grid. Power flow models are updated to represent the status of each out-of-service transmission line, identify the alternate paths for power flows that compensate for the out-of-service equipment, and then contingency scenarios are run to determine the potential risks and customer impacts. Table 1-2 identifies critical line outages and resulting contingencies, and their customer impact, as well as solutions which were identified to stabilize system conditions.

3.4 Prioritized Transmission Lines

T-line Out-of-Service Equipment	L-8700 Costa Sur SP-Garzas 1 HP
Risk	High
Critical Contingency Component	BKR 9060 at Garzas HP 1
Potential Affected Equipment	Load shed at Garzas 5403 and Peñuelas 5401
Potential Customers Impacted	~ 9000 customers
Operational Mitigation	Enable tie between lines 500 and 9000.
Permanent Solution	Replace breaker 9060.

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T-line Out-of-Service Equipment	L-8700 Costa Sur SP-Garzas 1 HP
Potential Permanent Solution Funding Source	TBD
Est. Complete date	TBD
T-line Out-of-Service Equipment	L- 4800 Santa Isabel TC-Toro Negro 1 HP
Risk	High
Critical Contingency Component	BKR 4850 at Santa Isabel TC
Potential Affected Equipment	Load shed at Useras 4601, Santa Isabel 4401 & Private Customers
Potential customers Impacted	~ 9000 customers
Operational Mitigation	Temporary onsite generation.
Permanent Solution	Santa Isabel 115/38 kV transformer replacement expected.
Potential Permanent Solution Funding Source	FEMA
Est. Complete date	FY 2024, Q1
T-line Out-of-Service Equipment	L-2100 Dos Bocas HP-Hatillo TC
Risk	High
Critical Contingency Component	BKR 2170 at Hatillo TC
Potential Affected Equipment	Load shed at Dominguito 8010
Potential customers Impacted	~ 10,000 customers

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T-line Out-of-Service Equipment	L-8700 Costa Sur SP-Garzas 1 HP
Operational Mitigation	Transferring load between distribution circuits.
Permanent Solution	Replace Breaker 2170 at Hatillo TC
Potential Permanent Solution Funding Source	TBD
	TBD

Table 1-2. Prioritized Transmission Lines

4.0 System Improvements Preliminary Plan

Following Hurricanes Maria and Irma, leveraging Section 428 of the Stafford Act, FEMA aligned with COR3 and PREPA on a FAAS settlement, setting aside \$10.7B, of which \$9.7B would be used to make repairs on the transmission and distribution system. Additionally, FEMA conducted an island-wide benefit cost analysis, which estimated the value of hazard mitigation investments on the energy system, in line with Section 406 of the Stafford Act, to be \$7.6B. Under the assumption that these \$7.6B would be allocated using a similar breakdown to how the \$10.7B of 428 funds were allocated, LUMA has developed an estimate that the overall amount of FEMA funds set aside for permanent T&D repairs comes to above \$16 billion. In addition, LUMA is also leveraging non-federal capital and O&M funds to improve reliability and service.

Below is a high-level view of the Improvement Programs LUMA will prioritize for the next two fiscal years to improve system stability and reliability.

4.1 Transmission Line Rebuilds Overview

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. 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. In addition to the overhead transmission line upgrade work, this program includes the 115 kV underground cable repair in the San Juan area.

LUMA 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 industry codes and standards and mitigate other issues identified during the analysis, to allow for improved reliable and sustainable service for the people of Puerto Rico.

Because of the significance of these transmission lines, LUMA is aiming to leverage a significant amount of federal funds to rebuild them. The transmission system helps relay large quantities of power, including

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utility-scale renewable generation that is being deployed in alignment with Act 17-2019. Additionally, the proper functioning of the transmission system is necessary to reduce the risk of cascading events including blackouts, as well as to allow for the re-energization of the system, including through the black start process, when necessary.

Currently, LUMA has successfully worked with COR3 and FEMA to obligate the repair of a portion of the 115 kV underground line in the island's most populated area (San Juan area). LUMA continues to focus with COR3 and FEMA on the review of additional transmission lines, including other backbone 115 and 230 kV transmission lines, as well as sub-transmission 38 kV lines which play a critical role in providing reliable power to communities across the island.

4.1.1 Federal Fiscal Year Budgets

Federal Fiscal Year 25-26 Budgets		
Fiscal Year	FY2025	FY2026
Est. Budget	\$67	\$163

Table 1-3. Federal Fiscal Year Budgets

4.1.2 Project Execution

Projects Name	Construction		FEMA Obligation Status
	Estimated Start Date	Estimated Completion Date	
Preliminary Network Upgrades	FY2025	FY2026	Pending
3600 – Monacillos TC to Martin Pena	FY2026	FY2028	Pending
2800 – Aguadilla Hospital Distrito Sect to T-Bone TO	FY2026	FY2027	Pending

Table 1-4. Project Execution

4.2 Transmission Reliability Improvement Plan

Project Execution

Part of LUMA's system reliability improvement plan is to conduct yearly evaluation of the system condition and reliability performance. The yearly reliability improvement plan for transmission focuses on specific transmission line segments that have experienced multiple failures resulting in customer outages over the previous fiscal year (12-month performance). From this analysis it was determined that the top 51 line segments on the 38 and 115 kV systems contributed to approximately 75% of all transmission related customer minute interruptions. To help mitigate future outages and improve overall system reliability, LUMA is inspecting all 51 line segments during FY2025 and performing repairs on all critical components on the 1,000+ structures on the segments listed below:

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Rank	Segment	Line
1	1900-Dos Bocas HP-San Sebastian TC	1900
2	37500-Rio Bayamon Sect-Monacillos TC	37500
3	500-Ponce TC-Costa Sur SP-Canas TC	500
4	13700-Mora TC-Isabela TO	13700
5	3200-Monacillos TC-Venezuela SECT	3200
6	2200-Factor SECT-Barceloneta TC	2200
7	37400-Cambalache TC-Dos Bocas Hydro Plant	37400
8	3000-Monacillos TC-Barioa TO	3000
9	7800-Dorado TC-Vega Alta SECT	7800
10	2700-Aguadilla Hospital Distrito SECT-Mora TC	2700
11	300-Toro Negro 1 HP-Juana Diaz TC	300
12	7200-Baldrich SECT-Escuela Industrial TO	7200
13	2300-Dos Bocas HP-Arecibo SECT	2300
14	7900-Juana Diaz TC-La Rambla SECT	7900
15	13500-Acacias TC-Cabo Rojo TO	13500
16	600-Caguas TC-Gautier Benitez SECT	600
17	100-Jobos TC-Guayama TO	100
18	10300-Canovanas TC-Canovanas SECT	10300
19	2300-Arecibo SECT-Cambalache TC	2300
20	7100-Viaducto TC-Egozcue SECT	7100
21	11400-Barceloneta TC-Florida TO	11400
22	2000-Once de Agosto SECT-San Sebastian TC	2000
23	5900-San Juan SP-Crematorio TO	5900

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Rank	Segment	Line
24	3600-Llorens Torres SECT-Martin Peña TC	3600
25	1000-San Anton TO-Villa Prades SECT	1000
26	1200-San German SECT-San German TC	1200
27	2200-Vega Alta SECT-Dorado TC	2200
28	7400-Hato Rey TC-Tres Monjitas SECT	7400
29	5400-Rio Blanco HP-Daguao TC	5400
30	2600-San Sebastian TC-Quebradillas SECT	2600
31	3500-Monacillos TC-Las Lomas SECT	3500
32	3300-Viaducto TC-Egozcue SECT	3300
33	1000-Villa Prades SECT-Capuchinos SECT	1000
34	8900-Monacillos TC-Centro Médico SECT	8900
35	13400-Acacias TC-San German SECT-LA PARGUERA SEC	13400
36	36200-Monacillos TC-Juncos TC-	36200
37	3100-Monacillos TC-Sabana Llana TC	3100
38	1600-Leon SECT-Acacias TC	1600
39	6500-Toro Negro 1 HP-Barranquitas TC	6500
40	3000-Juncos TC-Rio Blanco HP	3000
41	2200-Barceloneta TC-Manati TC	2200
42	6500-Comerio TC-Aguas Buenas SECT	6500
43	5600-Añasco TC-Mayaguez GP	5600
44	3600-Sabana Llana TC-Los Ángeles SECT	3600
45	10000-Bayamon Pueblo SECT-Magnolia TO	10000
46	4700-Canas TC-Adjuntas TO	4700

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Rank	Segment	Line
47	3100-Canovanas SECT-Rio Grande TO	3100
48	3700-Maunabo TC-Humacao TC	3700
49	3600-Monacillos TC-Sabana Llana TC	3600
50	9400-Dorado TC-Toa Alta	9400
51	700-Costa Sur SP-Yauco 2 HP	700

Table 1-5. Transmission Segments

4.3 Substation Rebuilds Overview

The Substation Rebuilds 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 Rebuilds 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. Based on analysis conducted by LUMA, 86 substation sites are located within areas determined by FEMA as susceptible to flooding.

This program utilizes a foundation of asset prioritization, which means that relevant aspects of reliability, resilience, risk, exposure, impact, and criticality were quantified, and the results ranked such that the highest needs were addressed first, both to maximize the impact of investment and prioritize the remediation of the most critical items. This method 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, thereby improving the resiliency of the grid, reducing the risk of outages during disruptive weather events.

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. Adoption of technology such as intelligent substation automation and protocols also provides higher reliability, operating flexibility, and manageable costs.

This program focuses on improvements to T&D substations to strengthen the grid. This includes (1) hardening and modernizing substations, (2) making upgrades to conform to the latest codes, industry standards, and practices, (3) replacing electromechanical and electronic relays, (4) relocating or

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mitigating 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 T&D OMA; specifically, the scope of services as set forth in Annex I. High-accuracy metering is required to accurately measure power generation at major plants and their injection into the 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, enabling improved system efficiencies and potential associated cost reductions. 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 mis-operation 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.

Currently, LUMA, COR3, and FEMA have reached alignment on the obligation of 21 substation rebuild projects. This includes portions or the entirety of the rebuilding of six of the seven most critical substations, as well as other key substation repairs across Puerto Rico.

4.3.1 Federal Fiscal Year Budgets

Federal Fiscal Year 25-26 Budgets		
Fiscal Year	FY2025	FY2026
Est. Budget (\$M)	\$89	\$172

Table 1-6. Federal Fiscal Year Budgets

4.3.2 Project Execution

Major Projects	Construction		FEMA Obligation Status
	Estimated Start Date	Estimated Completion Date	
Catano Moder & Hard 1801	9/5/23	FY2026	Obligated
Aguirre BKRS T018	5/3/23	FY2027	Obligated
Costa Sur BKRS P001	5/15/24	FY2026	Obligated
EPC Monacillos TC – Rebuild	FY2026	FY2029	Obligated
Sabana Llana TC	FY2026	FY2029	Obligated
Centro Medico 1 & 2 1327 & 1	FY2026	FY2027	Obligated

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Major Projects	Construction		FEMA Obligation Status
	Estimated Start Date	Estimated Completion Date	
San Juan SP TC	FY2026	FY2029	Obligated
Rio Grande Estates – CH - 2306	9/7/23	FY2026	Obligated
Cambalache TC Relocation	FY2026	FY2027	Obligated
Tapia GIS Rebuilt - 1102	FY2025	FY2027	Obligated

Table 1-7. Projects Execution

4.4 Substation Reliability Overview

This federally funded program reinforces and upgrades the existing and aging system infrastructure to improve system reliability. This includes the replacement of 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, along with Protection, Automation, and Control (PAC) upgrades, as well as procurement of emergency spares. 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 PAC and Supervisory Control and Data Acquisition (SCADA) systems for data collection and use based on the latest industry standard.

Upon LUMA commencing service in 2021, much high voltage infrastructure was found 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 more than 40 years ago and have experienced electrical faults and system disturbances far in excess of other typical utilities. All of this equipment is being subjected to more rigorous and frequent assessment and testing to maximize longevity, as well as to prioritize their replacements. 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.

Additionally, 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. Moreover, deficient AC/DC systems with cabling issues, broken panels, and defective battery banks have been identified and must be addressed to improve system restoration time in cases of emergency.

The prevalence of obsolete PAC and SCADA systems adds to our maintenance costs, reduces the possibility of implementing asset monitoring to support the Asset Management process and compromises our ability to supervise and operate the system remotely.

After evaluating maintenance records, conducting significant testing and assessments, and analyzing the results, it was determined that a considerable amount of equipment was out of cycle with respect to its

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maintenance intervals. The high number of operations required to be executed by the equipment represents significant wear and tear above what a normal utility would experience.

These are significant needs that have been identified and have driven the effort 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 system to ensure LUMA is able to effectively reduce power outages and respond and restore power to customers when necessary.

4.4.1 Fiscal Year Federal Budgets

Fiscal Year Federal Budgets		
Fiscal Year	FY2025	FY2026
Est. Budget (\$M)	\$26	\$58

Table 1-8. Fiscal Year Federal Budgets

4.4.2 Project Execution

Major Projects	Construction		FEMA Obligation Status
	Estimated Start Date	Estimated Completion Date	
Humacao TC	FY 2024 (site prep only)	FY2026	Pending
Canovanas TC	FY2025	FY2026	Pending
Barceloneta TC	FY 2024	FY2025 (38kVs) FY2026 (115kVs)	Pending
SCADA Remote Access and RTU Replacements Group 1	FY2025	FY2026	Pending
SCADA Remote Access and RTU Replacements Group 2	FY2025	FY2026	Pending
SCADA Remote Access and RTU Replacements Group 3	FY2025	FY2027	Pending

Table 1-9. Project Execution

In addition to the above projects which are expected to receive FEMA funding, LUMA is also leveraging its NFC and O&M budgets to execute priority repairs on key substations. LUMA's system reliability improvement plan looks at substation reliability performance over prior fiscal year (12-month performance) with a focus of identifying substations with recurring events, multiple breaker operations, customer interruptions and outage duration as requiring additional repairs.

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For FY2025 the reliability analysis of the top 24 substations revealed that these substations contributed to over 1/3 of all substations related outages and over 40% of customer minute interruptions from substation related outages. To improve the reliability performance of these substations and help mitigate future outages, LUMA plans to perform assessments and preventative and corrective maintenance on all 24 substations: including infrared thermography, hotspot repairs, minor component repairs, wildlife protection, lighting arrester repair and installation, as well as performing preventative maintenance on distribution breakers.

Region	District	Substations	Customers
Ponce	Ponce	Rambla 13 kV	8,700
Caguas	Barranquitas	Cidra	8,500
Arecibo	Arecibo	Pajuil	5,000
Arecibo	Vega Baja	Vega Alta 8 kV	8,000
San Juan	San Juan	Llorens Torres 13 kV	9,000
Ponce	Yauco	Yauco Pueblo II	7,600
Ponce	Guayama	Salinas Urbano	5,600
Ponce	Yauco	Yauco Pueblo 1	5,800
Bayamón	Toa Baja	Dorado PDS 13 kV	1,100
Caguas	Caguas	San Lorenzo	7,000
Caguas	Humacao	Verdemar	3,000
San Juan	Fajardo	Culebra	1,500
Ponce	Yauco	Parguera PDS	3,200
San Juan	Canóvanas	Villamar	4,600
San Juan	San Juan	Tres Monjitas	1,500
Mayaguez	Aguadilla	T – Bone	7,800

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Region	District	Substations	Customers
Arecibo	Arecibo	Arecibo Hosp. Distr. 13 kV	5,000
San Juan	San Juan	Hato Rey TC #1	2,300
San Juan	San Juan	Reparto Metropolitano	2,400
Mayaguez	Aguadilla	Ramey Field 3	3,000
Caguas	Caguas	Caguas T.C. 13.2 kV	7,100
Bayamón	Toa Baja	Breñas	3,400
Caguas	Caguas	Caguas T.C.	3,300
Caguas	Barranquitas	Las Cruces	3,100

Table 1-10. Substations

4.5 Distribution Automation Overview

This program focuses on deploying equipment for grid automation. It includes deploying automated switchgear and communicating fault sensors on distribution feeders to improve reliability. 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 Operations to improve service restoration times for customers.

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.

The system contains a series of gaps, including:

- 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.
- 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.

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- 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 are currently below industry standards (in the fourth quartile).
- 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 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.

To mitigate this, the program brief includes a series of steps. First, there will be studies undertaken to plan the location, testing, and installation of new intelligent reclosers, single-phase reclosers, and fuse cutouts. It will also upgrade the communication system components and deploy Fault Location, Isolation, and Service Restoration (FLISR) and Automatic Transfer Switch (ATS) systems, which automate the outage restoration and load re-routing process. This includes the installation of fault indicators on select feeders (including mainline and feeder ties) to reduce the number of customer interruptions per outage.

LUMA has worked with COR3 and FEMA to submit the first detailed scopes of work of what will ultimately be a \$700M project to deploy grid automation across Puerto Rico.

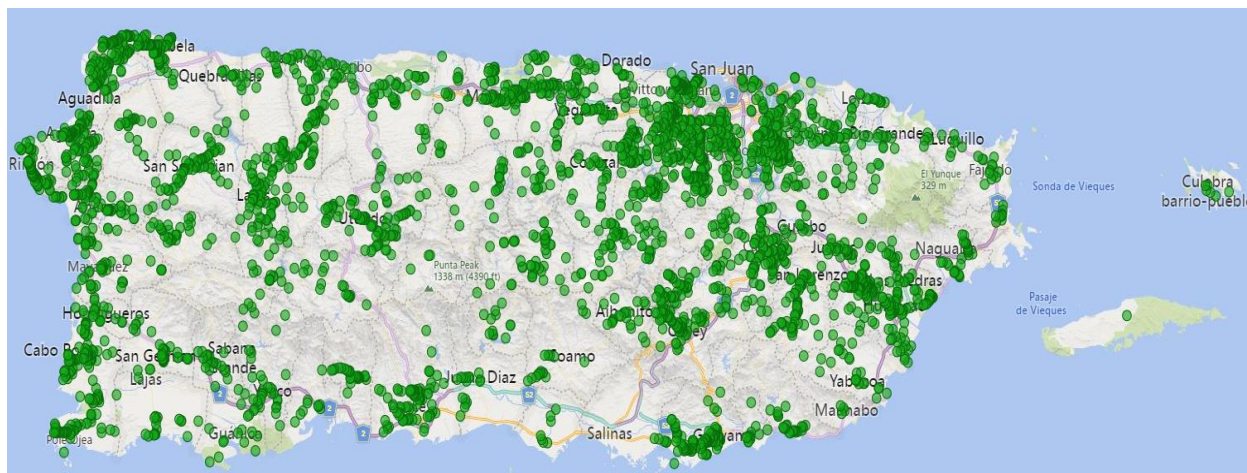


Figure 1 – Grid Automation Map

System Improvements Preliminary Plan

4.5.1 Fiscal Year Federal Budgets

Fiscal Year Federal Budgets		
Fiscal Year	FY2025	FY2026
Est. Budget (\$M)	\$90	\$143

Table 1-11. Fiscal Year Federal Budgets

4.5.2 Project Execution

LUMA plans to install more than 11,000 automation devices in the next two years, including three phase reclosers, single phase reclosers, communicating fault current indicators (CFCI) and distribution protective devices. The following table provides information regarding the quantity of the devices planned to be installed.

Fiscal Year	Total Devices
FY 2025	5,500+
FY 2026	5,600+

Table 1-12. Project Execution

5.0 Vegetation

5.1 Vegetation Clearing Program

5.1.1 Workstream Overview

The Vegetation Clearing workstream includes management of all efforts related to the \$1.2B Vegetation clearing effort planned to occur over the next four years (between FY2025 and FY2028). The scope covers the San Juan, Arecibo, Bayamón, Caguas, Mayagüez, and Ponce regions for all lines and feeders on the island for full line/feeder clearing across all substations, transmission, distribution and telecom facilities.

Execution is prioritized by region and asset classification as outlined in the following two tables. The alignment of assets into each of the groups identified below was derived from feedback and discussion with FEMA. Obligation of Projects is expected to support this execution strategy; all initial Detailed Scope of Work (DSOW) for projects were originally submitted by December 19, 2023; FEMA Environmental and Historic Preservation (EHP) review and obligation is pending based on resubmittals (see Obligation Schedule below). The first project, San Juan Group A was obligated in June 2024.

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Priority	Region
1	San Juan
2	Caguas
3	Bayamón
4	Mayagüez
5	Arecibo
6	Ponce

Table 1-13. Six Regions in Scope for Island-Wide Vegetation Clearing

Group	Asset Description
A	Distribution Non-Sensitive Vegetation
B	Transmission 38 kV non-sensitive
C	All 38 kV & Distribution EHP Sensitive
D	Transmission 115 kV
E	Substation & Telecom Sites
F	All Regions Transmission 230 kV

Table 1-14. Groups A-F with Asset Description

5.1.2 Obligation Schedule

The remaining Group A and Group B regions have been further divided into High Density Urban Area & Low Density Urban Area subcategories. These were divided, via an agreement between LUMA Environmental and FEMA Environmental, for FEMA to be able to conduct faster environmental reviews. The High Density Urban Area is defined by an area having lower amounts of vegetation which is measured by the level of reflection of infrared light. Lower levels of reflection from vegetation are due to the lower level of vegetation density. The Low Density Urban Area is defined by an area having more vegetation density which is determined by a higher level of reflection of infrared light.

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Table 1-15 below identifies the Group A and B High and Low Density planned submittal dates to FEMA and expected obligation dates. For the expected obligation dates, FEMA usually provides their obligation schedule based on LUMA's submittal timeline.

In general, for the Distribution projects (Group As and parts of Group C) the FEMA Obligation will take 3 to 6 months from the LUMA submittal date based on the current level of engagement with FEMA. The Transmission projects (Groups B, C, D, and F) can take up to 18 months or more depending on the level of environmental concerns during review. LUMA is currently developing a submission schedule for the remaining Groups (additional Group B (Low Density), Group C Regions, and remaining Transmission and Substation/Telecom project. Those dates are currently being calculated based on the internal LUMA actions needed to complete the revised mapping.

Group A High Density		
Project Region/FAASt Number	Planned Submittal Date to FEMA	Expected FEMA Obligation Date
Bayamón - 727572	6/21/24	~ 3-6 months from submittal date
Arecibo - 728827	7/3/2024	~ 3-6 months from submittal date
Caguas - 727692	7/3/2024	~ 3-6 months from submittal date
Mayaguez - 728832	7/12/2024	~ 3-6 months from submittal date
Ponce - 727531	7/12/2024	~ 3-6 months from submittal date
Group A Low Density		
Bayamón- 750065	8/23/2024	~ 3-6 months from submittal date
Arecibo - 750066	8/23/2024	~ 3-6 months from submittal date
Mayaguez - 750068	9/6/2024	~ 3-6 months from submittal date
Caguas - 750067	9/6/2024	~ 3-6 months from submittal date
Ponce - 750063	9/6/2024	~ 3-6 months from submittal date
Group B High Density		
All Group B High Density Region Projects	7/26/2024	Up to ~18 months from submittal date

Table 1-15. Vegetation Clearing FEMA Submission Schedule for Vegetation Group A (High and Low Density) and Group B (High and Low Density) Projects.

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5.1.3 Project Plan

The vegetation clearing program was originally organized into 31 projects over the 6 Groupings, each with its own unique FAASt Number. As discussed above, the Group A's and B's have been further divided into High and Low Density Areas. The High-Density Areas will retain the original Group/Region FAASt number and the Low-Density Areas will be designated as new projects with new FAASt numbers.

The revised vegetation clearing program will have 42 projects over the 6 Groups. Table 1-16 and Figure 2 below display the high-level schedule and Gantt Chart display, with Table 1-17 identified as the estimated construction (vegetation clearing) start dates that were used to build the initial high-level schedule of 31 projects.

Region	FAASt Number	Project Name	Estimated Cost	Total Miles/Acres
San Juan	723883	FAASt [Region 1 San Juan Distribution - Non-Sensitive (Vegetation)]	\$24.8 (M)	688.74
San Juan	740406	FAASt [Region 1 San Juan Transmission 38kV - Non-Sensitive (Vegetation)]	\$7.8 (M)	210.03
San Juan	727691	FAASt [Region 1 San Juan Transmission 38kV/Distribution EHP sensitive areas] (Vegetation)	\$55.6 (M)	1472.61
San Juan	727608	FAASt [Region 1 San Juan Transmission - 115kV] (Vegetation)	\$12.7 (M)	153.47
San Juan	741097	Region 1 San Juan Substation/Telecom	\$1.3 (M)	33.95
Caguas	727692	FAASt [Region 4 Caguas Distribution - Non-Sensitive (Vegetation)]	\$34.3 (M)	929.15
Caguas	740409	FAASt [Region 4 Caguas Transmission 38kV - Non-Sensitive (Vegetation)]	\$4.8 (M)	98.49
Caguas	727694	FAASt [Region 4 Caguas Transmission 38kV/Distribution EHP sensitive areas] (Vegetation)	\$76.4 (M)	2075.31
Caguas	727606	FAASt [Region 4 Caguas Transmission - 115kV] (Vegetation)	\$11.1 (M)	133.97
Caguas	741100	Region 4 Caguas Substation/Telecom	\$1.4 (M)	36.03
Caguas	741105	Region 4 230 kV	\$9.3 (M)	76.39

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Region	FAASt Number	Project Name	Estimated Cost	Total Miles/Acres
Bayamón	727572	FAASt [Region 3 Bayamon Distribution - Non-Sensitive (Vegetation)]	\$34.6 (M)	957.80
Bayamón	740408	FAASt [Region 3 Bayamon 38kV - Non-Sensitive (Vegetation)]	\$1.6 (M)	32.65
Bayamón	727558	FAASt [Region 3 Bayamon Transmission 38kV/Distribution EHP sensitive areas] (Vegetation)	\$19.2 (M)	475.03
Bayamón	727522	FAASt [Region 3 Bayamon Transmission - 115kV] (Vegetation)	\$6.9 (M)	83.44
Bayamón	741098	Region 3 Bayamon Substation/Telecom	\$961 (K)	24.65
Bayamón	741105	Region 3 230kV	\$5.9 (M)	48.98
Mayaguez	728832	FAASt [Region 5 Mayaguez Distribution - Non-Sensitive (Vegetation)]	\$21.3 (M)	619.40
Mayaguez	740411	FAASt [Region 5 Mayaguez Transmission 38kV - Non-Sensitive (Vegetation)]	\$708 (K)	14.35
Mayaguez	727562	FAASt [Region 5 Mayaguez Transmission 38kV/Distribution EHP sensitive areas] (Vegetation)	\$84.0 (M)	2220.58
Mayaguez	727657	FAASt [Region 5 Mayaguez Transmission - 115kV] (Vegetation)	\$8.8 (M)	106.12
Mayaguez	741102	Region 5 Mayaguez Substation/Telecom	\$1.8 (M)	42.39
Arecibo	728827	FAASt [Region 2 Arecibo Distribution - Non-Sensitive (Vegetation)]	\$21.4 (M)	593.77
Arecibo	740410	FAASt [Region 2 Arecibo Transmission 38kV - Non-Sensitive (Vegetation)]	\$1.9 (M)	38.64
Arecibo	727540	FAASt [Region 2 Arecibo Transmission 38kV/Distribution EHP sensitive areas] (Vegetation)	\$66.1 (M)	1762.62

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Region	FAASt Number	Project Name	Estimated Cost	Total Miles/Acres
Arecibo	727659	FAASt [Region 2 Arecibo Transmission - 115kV] (Vegetation)	\$6.0 (M)	73.38
Arecibo	741101	Region 2 Arecibo Substation/Telecom	\$1.1 (M)	26.90
Arecibo	741105	Region 2 230kV	\$17.2 (M)	141.26
Ponce	727531	FAASt [Region 6 Ponce Distribution - Non-Sensitive (Vegetation)]	\$23.9 (M)	663.07
Ponce	740414	FAASt [Region 6 Ponce Transmission 38kV - Non-Sensitive (Vegetation)]	\$1.3 (M)	26.60
Ponce	727530	FAASt [Region 6 Ponce Transmission 38kV/Distribution EHP sensitive areas] (Vegetation)	\$71.1 (M)	1833.44
Ponce	727529	FAASt [Region 6 Ponce Transmission - 115kV] (Vegetation)	\$12.1 (M)	146.97
Ponce	741104	Region 6 Ponce Substation/Telecom	\$1.9 (M)	48.45
Ponce	741105	Region 6 230kV	\$13.8 (M)	113.32

Table 1-16. Project Plan

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Figure 2 illustrates a high-level view of the Vegetation Clearing projects schedule for the next two fiscal years.

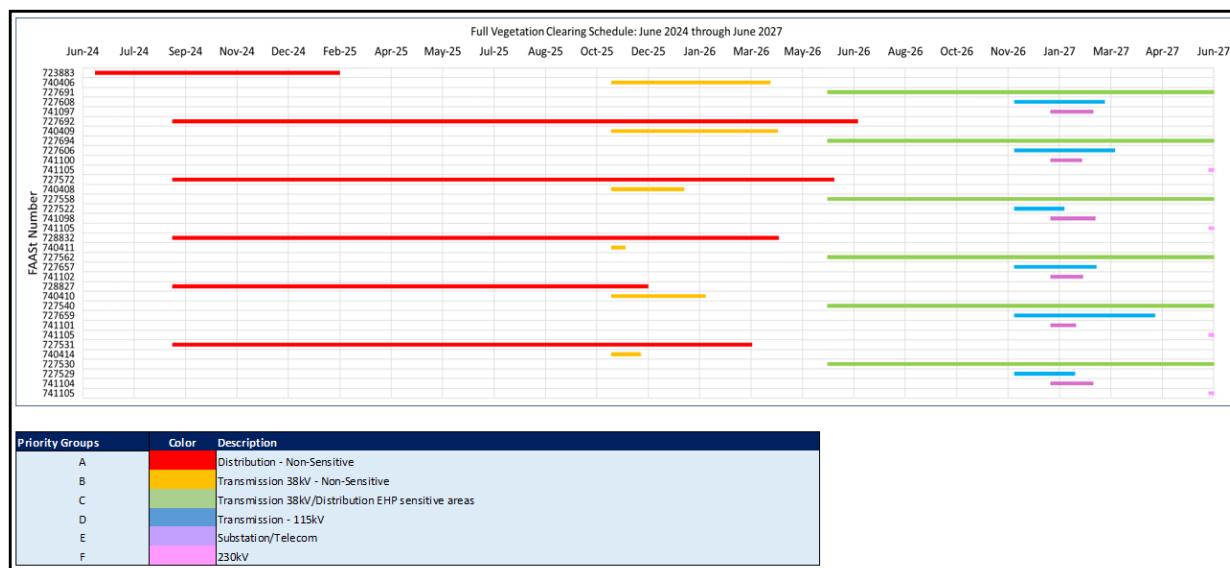


Figure 2 - Gantt Chart View of High-Level Schedule

The following table outlines estimated start dates for the 31 federally funded projects initiated with FEMA.

FEMA FAAS Project	Project Name	DSOW Submittal	Estimated Start
723883	FAAS [Region 1 -San Juan Group A] (Vegetation)	7/18/2023	7/1/2024
727531	FAAS [Region 6 -Ponce Group A] (Vegetation)	7/31/2023	9/2/2024
727572	FAAS [Region 3 -Bayamon Group A] (Vegetation)	7/31/2023	9/2/2024
727692	FAAS [Region 4 -Caguas Group A] (Vegetation)	7/31/2023	9/2/2024
728827	FAAS [Region 2 -Arecibo Group A] (Vegetation)	7/31/2023	9/2/2024
728832	FAAS [Region 5 -Mayaguez Group A] (Vegetation)	7/31/2023	9/2/2024
740406	FAAS [Region 1-San Juan Group B] (Vegetation)	12/11/2023	11/3/2025
740408	FAAS [Region 3-Bayamon Group B] (Vegetation)	12/11/2023	11/3/2025
740409	FAAS [Region 4-Caguas Group B] (Vegetation)	12/11/2023	11/3/2025

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FEMA FAASt Project	Project Name	DSOW Submittal	Estimated Start
740410	FAASt [Region 2-Arecibo Group B] (Vegetation)	12/11/2023	11/3/2025
740411	FAASt [Region 5-Mayaguez Group B] (Vegetation)	12/11/2023	11/3/2025
740414	FAASt [Region 6-Ponce Group B] (Vegetation)	12/19/2023	11/3/2025
727530	FAASt [Region 6 -Ponce Group C] (Vegetation)	7/31/2023	6/1/2026
727540	FAASt [Region 2 -Arecibo Group C] (Vegetation)	7/31/2023	6/1/2026
727558	FAASt [Region 3 -Bayamon Group C] (Vegetation)	7/31/2023	6/1/2026
727562	FAASt [Region 5 -Mayaguez Group C] (Vegetation)	7/31/2023	6/1/2026
727691	FAASt [Region 1 -San Juan Group C] (Vegetation)	7/31/2023	6/1/2026
727694	FAASt [Region 4 -Caguas Group C] (Vegetation)	7/31/2023	6/1/2026
727522	FAASt [Region 3 Bayamon TL - 115kV] (Vegetation)	7/31/2023	11/30/2026
727529	FAASt [Region 6 Ponce TL - 115kV] (Vegetation)	7/31/2023	11/30/2026
727606	FAASt [Region 4 Caguas TL - 115kV] (Vegetation)	7/31/2023	11/30/2026
727608	FAASt [Region 1 San Juan TL - 115kV] (Vegetation)	7/31/2023	11/30/2026
727657	FAASt [Region 5 Mayaguez TL - 115kV] (Vegetation)	7/31/2023	11/30/2026
727659	FAASt [Region 2 Arecibo TL - 115kV] (Vegetation)	7/31/2023	11/30/2026
741097	FAASt [Region 1 San Juan Subs/Telecom] (Vegetation)	12/19/2023	1/4/2027
741098	FAASt [Region 3 Bayamon Subs/Telecom] (Vegetation)	12/19/2023	1/4/2027
741100	FAASt [Region 4 Caguas Subs/Telecom] (Vegetation)	12/19/2023	1/4/2027

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FEMA FAAS ^t Project	Project Name	DSOW Submittal	Estimated Start
741101	FAAS ^t [Region 2 Arecibo Subs/Telecom] (Vegetation)	12/19/2023	1/4/2027
741102	FAAS ^t [Region 5 Mayaguez Subs/Telecom] (Vegetation)	12/19/2023	1/4/2027
741104	FAAS ^t [Region 6 Ponce Subs/Telecom] (Vegetation)	12/18/2023	1/4/2027
741105	FAAS ^t [All Regions TL – 230kV] (Vegetation)	12/18/2023	6/7/2027

Table 1-17. Estimated Vegetation Clearing Start Dates for Each of the 31 Projects with FEMA.

5.2 Vegetation Maintenance

Operations vegetation management will be continuing to focus on the areas showing continual outages while the federally funded clearing program focuses on reclamation efforts. All work LUMA anticipates on doing will have an impact on reliability by assisting in reducing the number of outages and helping to reduce the likelihood of transmission related outages due to vegetation. LUMA's Operations business unit will also provide support during planned outages and any upgrade work where vegetation work will be needed.

The 230 kV system has had reclamation work done on all lines; therefore, preventative (cycle) maintenance will be performed from the oldest to newest completion dates. Four circuits will be scheduled for this cycle in FY2025 and four will be scheduled in FY2026. This work will be working edge-to-edge of the easement, removing resprouted or new growth trees and using herbicide control. Also, the 230 kV will be flown quarterly by the Operations transmission team to identify any potential issues related to vegetation.

LUMA's Operations team will focus then on corrective work on the 115 kV lines with 3 circuits being preventative work. For the corrective work, with the support of helicopters and ground patrols, mid-span vegetation will be identified and mitigated. The first lines in FY2025 will be the lines at risk of line sag due to load transfers during planned outages or emergency outages.

The 38 kV system will have approximately 200 miles cleared in FY2025 and in FY2026. These circuits being worked by operations vegetation management have been chosen due to past reliability issues and highest contributors to SAIDI/ SAIFI and are not on part of the federally funded project that was obligated by FEMA. The work performed will be corrective in nature as it will not be full reclamation of the ROW.

The distribution work will be performed as the 38 kV work in how the circuits have been chosen for FY2025 and FY2026. Approximately 600 miles will be cleared in FY2025 and LUMA anticipates the same will be completed in FY2026. This work will focus on trees that might be in close contact with a conductor or may contact a line thru growth prior to the FF project obligation.

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FY2025 Vegetation Maintenance Planned Work

- 230 kV system will have quarterly helicopter flights and cycle work will be performed on L50300, L51000, L50900, L50700
- 115 kV planned preventative work
 - L37400 Dos Bocas – Cambalache TC segment
 - L37900 Monacillos TC – Sabana Llana TC segment
 - L36400 Ponce TC – Dos Bocas
- Additional 115 kV work will consist of mid span clearing of identified critical lines that may take on additional load.
- 38 kV Corrective Work will focus on 33 segments or approximately 237 miles impacting all regions.
- Distribution operation teams will have corrective work completed on about 607 miles or 127 circuits across all regions in FY2025.
 - Arecibo – 21 circuits
 - Bayamon – 18 circuits
 - Caguas – 22 circuits
 - Mayaguez – 20 circuits
 - Ponce – 17 circuits
 - San Juan – 27 circuits

For FY2026, a similar scope of work will be performed. A system reliability analysis that considers FY2025 completed work will determine priorities for the fiscal year.

6.0 ASAP

6.1 Description and Goal

The ASAP is an opportunity to add Battery Energy Storage Systems (BESS) at existing Independent Power Provider (IPP) locations. This will allow deployment of BESS on an accelerated basis and at a lower cost compared to alternatives. ASAP fits well with Puerto Rico public energy policy goals and is another part of LUMA's commitment to providing cleaner, more reliable and resilient energy service for customers at reasonable prices. These batteries will provide greater operational flexibility (such as frequency regulation and meeting peak demand) at a lower cost to the customer and a much shorter implementation timeframe than current market. ASAP may add up to 360 MW² of BESS capacity at the 12 existing IPP facilities (Figure 3) through a "Standard Offer" (SO) for all generators. There has been strong interest in the program from IPPs.

² The capacity (MW) of ASAP and its Phases is a preliminary estimate based on interested IPPs, this number can change as program develops.

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ASAP will be implemented in 2 phases:

- Phase 1 (~185 MW)¹ can begin immediately, does not require network upgrades or interconnection costs, with some IPP facilities claiming they could be commercial in less than 12 months.
- Phase 2 (~175 MW)¹ will begin after Phase 1 with minor interconnection work.

The SO is expected to be made available to all existing generators with operating Points of Interconnection (POIs) and PPOAs. The SO concept is frequently adopted in many jurisdictions as a way to allow all potentially interested generators to pursue a model that utilities know is in the interest of rate payers and priced at a level that offers economic benefits to rate payers. The SO concept is often associated with California, where it was first deployed since the 1980s. Each IPP generator will be responsible for the funding, Engineering, Procurement and Construction of the new BESS facility. The generator's investment costs would be recovered through a capacity payment that would then pass through to the quarterly PPCA process.

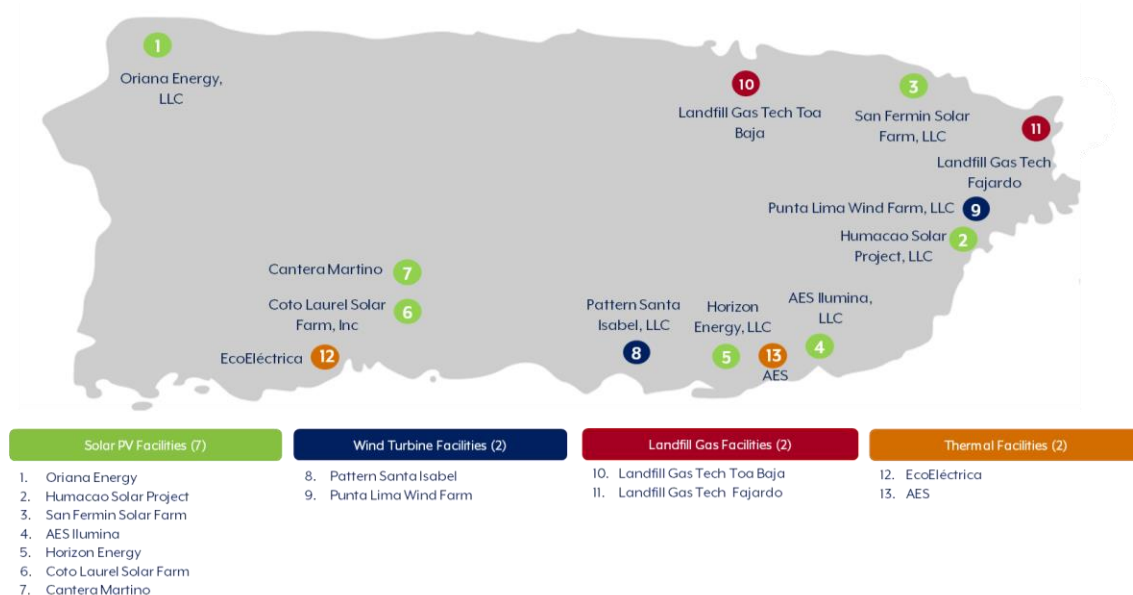


Figure 3 - Existing IPPs with PPOA's eligible to participate in ASAP.

6.2 Impact of ASAP on the grid

Figure 4 illustrates at a high level, how the addition of ASAP could help mitigate load shed events. Approximately 3/4 of load shed events in Calendar Year (CY) 2023 were below 185 MW in size, the estimated capacity of ASAP Phase 1. Only one load shed was above 360 MW, which is the total estimated size of ASAP Phase 1 and 2. It is important to note that ASAP is not guaranteed to eliminate all load shed events, but it is expected to eliminate the majority of load shed events.

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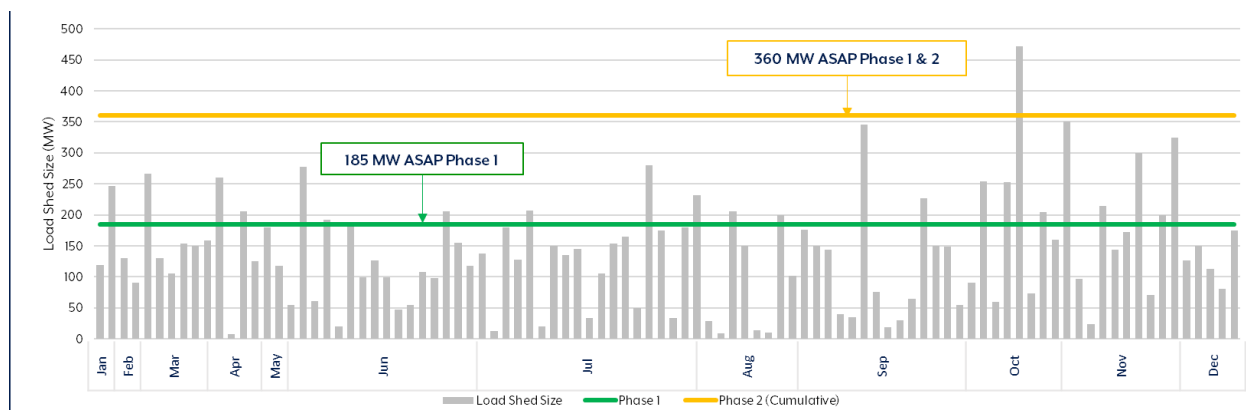


Figure 4 - 2023 CY Historical Load Shed Sizes. Includes under-frequency and manual load sheds.

Figure 5 illustrates how 185 MW of BESS would reduce Loss of Load Expectation (LOLE) of the system from a theoretical, or modeled perspective. This modeled analysis is based upon current planned outage schedules and load forecasts (FY2025). The model compares the expected LOLE of today's generation portfolio against a portfolio that would have 185 MW of Phase I BESS deployed by January 1, 2026. Although it is assumed BESS will be installed by January 1, this timing is uncertain and might vary depending on SO execution date and each IPPs procurement and development timeline.

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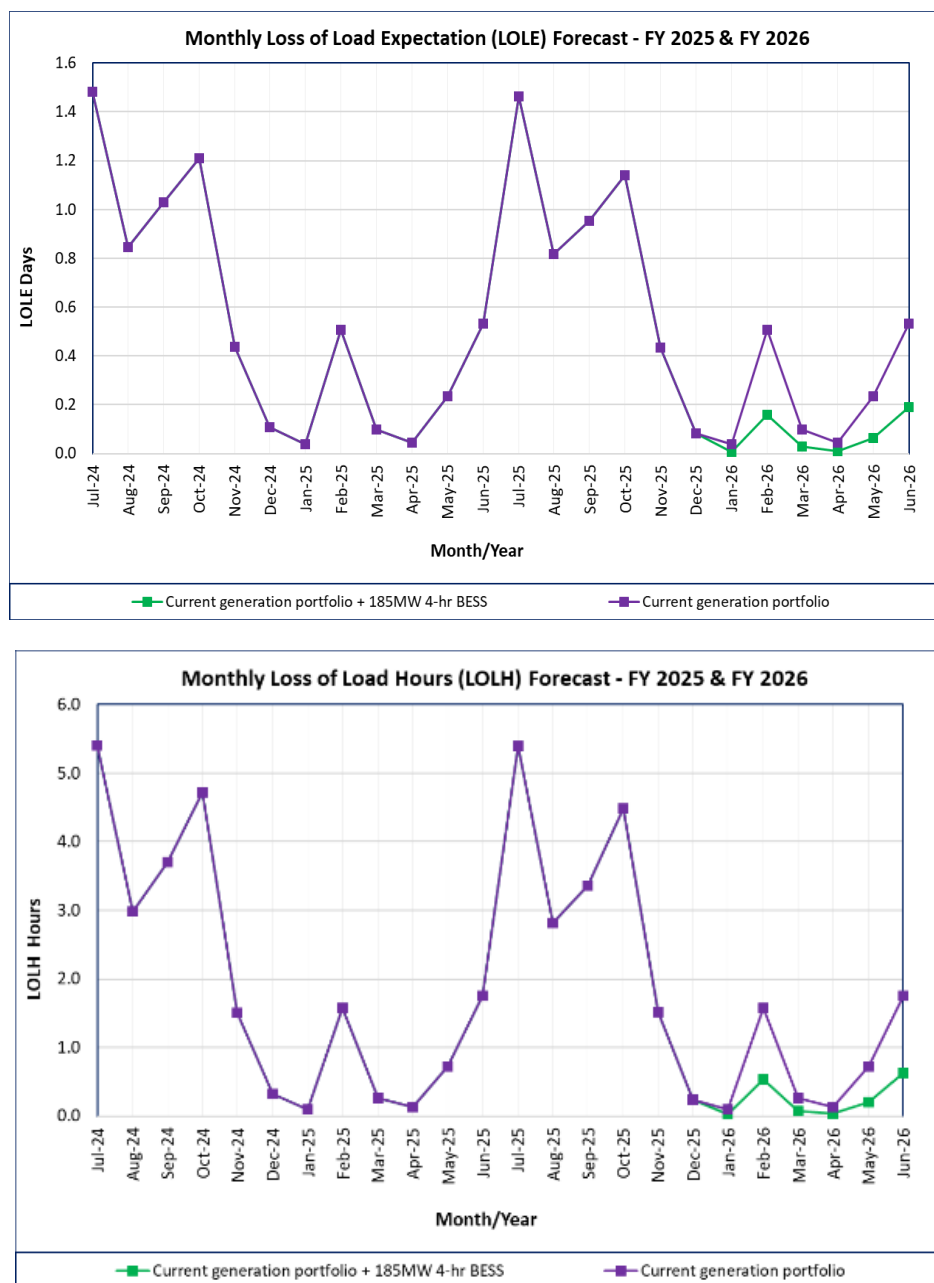


Figure 5 - Impact of ASAP on Monthly LOLE and LOLH.

ASAP will also increase a project's utilization of the point of interconnection. BESS charging and discharging will be scheduled without interfering with existing generation facility current output. BESS can be charged with energy provided by the grid and delivered to the Interconnection Point via the T&D System at the direction of T&D Operator. Additional BESS could conceivably be added in the long term to utilize POI to a greater utilization of potential. In this case study (Figure 6), ASAP would represent approximately an additional 16% utilization of the IPP contracted capacity by allowing the batteries to be charged from the grid and then discharged between 8-11 pm in this example, represented by the green

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rectangle. The difference between the light and dark blue monthly average production reflects the difference in solar intensity between winter and summer.

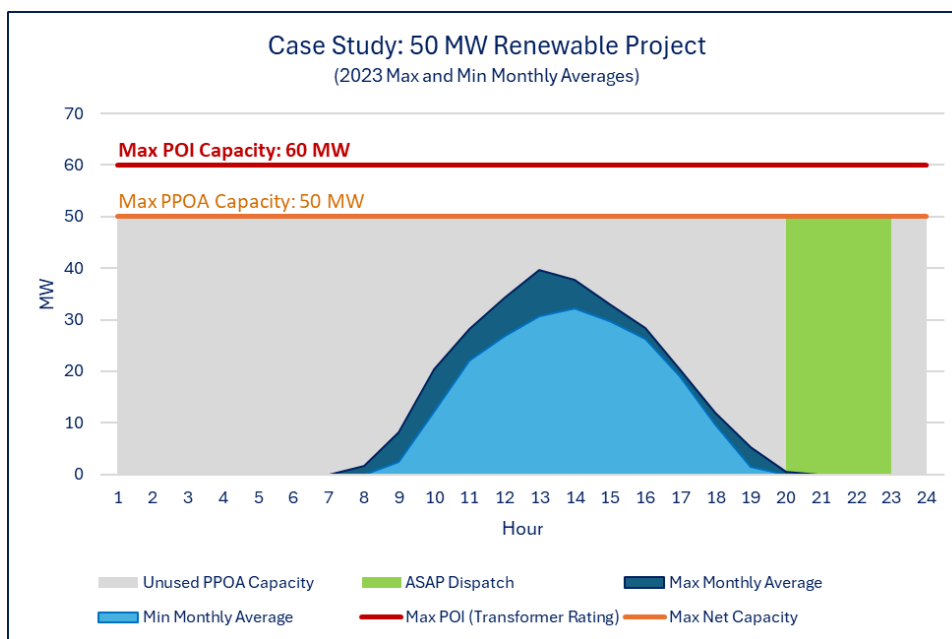


Figure 6 - Illustrative 50 MW Case Study of ASAP installed at a Renewable Project POI.

6.3 Timeline for implementation

Through docket NEPR-MI-2024-0002 on April 26, 2024, PREB determined that the ASAP concept is consistent with the current Integrated Resources Plan and Modified Action Plan (IRP), which considers 1,500MW of BESS as part of the renewable procurement efforts (Tranches). PREB approved LUMA's ASAP concept and authorized LUMA and the IPPs to proceed with the development of the SO (SO) Agreements.

LUMA is currently developing the detailed SO with the IPPs. Once these are finalized and signed, some IPPs have indicated they could potentially have batteries online as soon as 12 months following approval of SO. The global supply chain for batteries is quite dynamic and this assumption will need to be confirmed after the SO are finalized.

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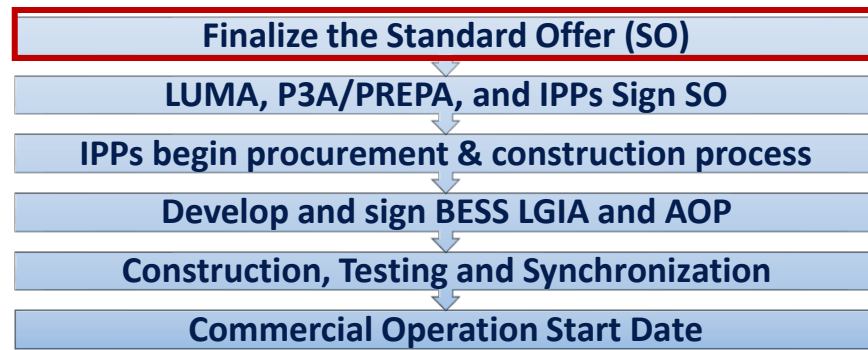


Figure 7 - Next Steps following PREB's ASAP framework approval.