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

IN RE: REVIEW OF THE PUERTO RICO ELECTRIC POWER AUTHORITY INTEGRATED RESOURCE PLAN	**CASE NO.:** NEPR-AP-2023-0004 **SUBJECT**: Motion Submitting 2025 IRP Second Interim Filing, Request for Confidential Treatment, and Memorandum in Support of Confidentiality

MOTION SUBMITTING 2025 IRP SECOND INTERIM FILING, REQUEST FOR CONFIDENTIAL TREATMENT, AND MEMORANDUM IN SUPPORT OF CONFIDENTIALITY

TO THE HONORABLE PUERTO RICO ENERGY BUREAU:

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

I. Introduction

1. One of LUMA's core system planning responsibilities as operator of the Puerto Rico transmission and distribution system ("T&D System") pursuant to the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement dated June 22, 2020 ("T&D OMA"), is developing and proposing an Integrated Resource Plan ("IRP"). As such, the Puerto Rico Energy Bureau ("Energy Bureau") initiated this instant proceeding for the review of the proposed 2025 IRP to be filed by LUMA as the agent of the Puerto Rico Electric Power Authority ("PREPA").

2. LUMA is committed to supporting and advancing the transformation of Puerto Rico's energy system into one that is more resilient, cleaner, and sustainable for everyone. As operator of the T&D System, LUMA is responsible for developing an IRP that maps out the

transformation of the Island's energy resources over the next two decades. See PR Laws Ann. Tit. 22 § 1054v (2024); T&D OMA, Section 5. 6 (f), p. 67. LUMA's goal is to ensure that the 2025 IRP presents a diverse and analytically robust set of future scenarios and resource portfolios to map a sustainable and reliable energy future for Puerto Rico that is responsive to customer needs and Puerto Rico's energy public policy objectives.

3. After a series of procedural events, on October 29, 2024, the Energy Bureau issued a Resolution and Order ("October 29 R&O") approving a revised schedule for the 2025 IRP Filing. Specifically, it directed LUMA to submit information at two interim milestone dates, the first on November 27, 2024, and the second on February 28, 2025, to share preliminary findings and demonstrate the progress of the 2025 IRP Filing. Moreover, it directed LUMA to file the 2025 IRP Report on May 16, 2025, in compliance with the Regulation on Integrated Resource Plan for the Puerto Rico Electric Power Authority, Regulation No. 9021, dated April 20, 2018 ("Regulation 9021").

4. On November 25, 2024, LUMA filed a *Motion Submitting the First Interim Filing of the IRP in Compliance with the Resolution and Order of October 29, 2024, Request for Confidential Treatment, and Memorandum in Support of Confidentiality* ("First Interim 2025 IRP Filing"). Therewith, LUMA submitted the First Interim 2025 IRP Filing with: (i) preliminary results of PLEXOS® modeling to define the preliminary least-cost resource portfolios for the 2025 IRP Revised Core Scenarios 1 through 4, including input assumptions; (ii) available information on the existing LUMA Transmission, Distribution and Advanced Grid Control facilities and equipment as described in Section 2.03(J)(1)(a)-(c) of Regulation 9021, consistent with the partial waiver granted by the Energy Bureau in its Resolution and Order dated April 15, 2024; and (iii) a

summary and qualitative description of how LUMA expects planned transmission facilities will support its Preferred Resource Plan.[1]

5. In compliance with the October 29 R&O, for the second interim milestone, LUMA submits as *Exhibit 1* to this Motion the Second Interim 2025 IRP Filing with: (i) updated preliminary results describing the least-cost resource portfolios for 2025 IRP Core Scenarios 1 through 4, previously submitted as part of the First Interim Filing; (ii) input assumptions and results describing the least-cost resource portfolios for Scenarios 5 through 10, (iii) preliminary Flexibility Analysis results for the least-cost resource portfolios for Scenarios 1 through 6; (iv) summary of LUMA's recommended Preliminary Preferred Resource Plan ("PPRP"); and (v) results from the stakeholder meetings held to share preliminary results and seek feedback prior to the selection of the Preferred Resource Plan.

6. The results submitted in the Second Interim Filing are preliminary and subject to change prior to the planned May 16, 2025, filing of the Final 2025 IRP Report. In addition, LUMA will assess the impact of energy public policy changes of the recently enacted Act 1-2025 and determine together with the Energy Bureau whether implementation will shift the direction of the 2025 IRP, including whether the current assumptions and inputs must be modified.

7. On March 19, 2025, the Energy Bureau issued a Resolution and Order ("March 19th Order") in the proceeding *In re: Competitive Procurement for New Generation Sources*, Case No. NEPR-MI-2025-0001 indicating that: "[t]he IRP is developed using enacted policy as a guide to make assumptions and future projections. If there are policy changes, the IRP must be modified to

[1] On January 10, 2025, LUMA filed a *Motion Submitting Revised First Interim Filing of the 2025 IRP, Request for Confidential Treatment, and Memorandum in Support of Confidentiality*. LUMA re-submitted the First Interim IRP Filing and working papers with minor data corrections. It also submitted emission capacity generation and battery data not filed on November 25th due to an unintentional oversight.

reflect these changes. House Bill 267 has been enacted into law ("Act 1-2025"), amending Puerto Rico's Energy Public Policy Act ("Act 17-2019") and the Energy Diversification Act, as amended ("Act 82-2010"). Act 1-2025 extends the lawful use of coal-based power generation until 2032, allowing the AES power plant in Guayama to continue operations. It also adjusts the Island's energy transition goals to reflect current energy conditions and ensure system reliability. Additionally, it eliminates the interim renewable energy targets of 40% by 2025 and 60% by 2040 while maintaining the goal of achieving 100% renewable energy by 2050. The law also includes provisions to enhance energy efficiency and promote the integration of renewable energy sources into the grid." *See* Resolution and Order dated March 19, 2025, issued in Case No. NEPR-MI-2025-0001, p. 1.

8 Based on the new energy public policy changes, LUMA will assess, alongside the Energy Bureau, Act 1-2025 requirements to submit and determine the adequate process to incorporate into the 2025 IRP analysis. LUMA believes that it is unlikely that any modifications to the assumptions or any additional resource modeling can be completed in time to be included in the planned May 16, 2025, filing of the Final 2025 IRP Report. However, the preliminary results and PPRP will still provide valuable insights. LUMA will work alongside the Energy Bureau to determine the preferred way to compare Act 1-2025's impact on the current findings.

II. Procedural Background

9. On July 12, 2023, the Energy Bureau issued a Resolution and Order ("July 12 R&O") whereby it initiated the instant administrative proceeding for the review of the proposed IRP to be filed by LUMA as the agent for PREPA.

10. After a series of procedural events, on June 28, 2024, LUMA filed a *Motion in Compliance with Resolution and Order of June 18, 2024, and Submitting Second Revised IRP*

Filing Schedule ("June 28 Motion"). Therein, LUMA requested a modification for the IRP Filing to be extended to May 16, 2025. LUMA explained that, after resolving the known modeling software issues encountered, it was able to provide an estimate of the time required to complete an IRP that meets applicable legal and regulatory requirements.

11. On August 20, 2024, the Energy Bureau entered a Resolution and Order denying LUMA's request to file the IRP on May 16, 2025. As such, the Energy Bureau declined to adopt LUMA's proposed revised IRP schedule, which considered the necessary time to thoughtfully and accurately develop the IRP and complete the modeling and scheduled tasks in order to submit all scenarios together ("August 20 R&O"). In the August 20 R&O, the Energy Bureau instructed LUMA to file the Preferred Resource Plan and salient components of Regulation 9021 requirements by no later than Friday, November 29, 2024. Further, the Energy Bureau ordered LUMA to file certain transmission and distribution-related requirements of Regulation 9021 by no later than February 28, 2025.

12. On September 18, 2024, the Confidential Technical Conference was held before the Energy Bureau. LUMA explained the modeling issues faced when modeling the base case and the fact that existing and new modeling issues kept arising, which required program corrections by the software provider, or for LUMA or the model provider to develop time-intensive procedures to work around the model issues. Notwithstanding, LUMA explained that they had resolved the issues, achieved a preliminary base case, and were confident in filing a complete and robust IRP by May 16, 2025.

13. On September 27, 2024, LUMA filed a *Motion Requesting Reconsideration of the Resolution and Order Dated August 20, 2024, and Modification of the IRP Filing Schedule*. Therein, LUMA requested the Energy Bureau to reconsider the August 20 R&O. LUMA reiterated

its proposal to provide the Energy Bureau information at two interim milestone dates, the first on November 27, 2024, and the second on February 28, 2025, to share preliminary findings and demonstrate the progress of the 2025 IRP Filing. In addition, LUMA expected that on May 16, 2025, it would file the 2025 IRP Report in compliance with Regulation 9021, as modified by any exception approved by the Energy Bureau.

14. On October 29, 2024, the Energy Bureau issued a Resolution and Order and approved the aforementioned revised schedule for the 2025 IRP Filing, including the first interim filing subject of this Motion. Also, it instructed LUMA that the Base Case Scenario modeling shall include a new Combined Cycle Gas Turbine ("CCGT") with the characteristics contemplated in the Resolution and Order issued by the Energy Bureau on August 3, 2022, in the proceeding *In Re: Preliminary Studies for New Combined Cycle Power Plant in Palo Seco*, Case NEPR-MI-2021-0003. Any variation to said characteristics shall be included in a sensitivity analysis.

15. On November 25, 2024, LUMA filed a *Motion Submitting the First Interim Filing of the IRP in Compliance with the Resolution and Order of October 29, 2024, Request for Confidential Treatment, and Memorandum in Support of Confidentiality* ("First Interim 2025 IRP Filing"). Therewith, LUMA submitted the First Interim 2025 IRP Filing with: (i) preliminary results of PLEXOS® modeling to define the preliminary least-cost resource portfolios for the 2025 IRP Revised Core Scenarios 1 through 4, including input assumptions; (ii) available information on the existing LUMA Transmission, Distribution, and Advanced Grid Control facilities and equipment, as described in Section 2.03(J)(1)(a)-(c) of Regulation 9021, consistent with the partial waiver granted by the Energy Bureau in its Resolution and Order dated April 15, 2024; and (iii) a summary and qualitative description of how LUMA expects planned transmission facilities will support its Preferred Resource Plan.

16. On December 10, 2024, LUMA filed a *Motion Submitting Supporting Materials to First Interim Filing of the 2025 IRP, Request for Confidential Treatment, and Memorandum in Support of Confidentiality*. Therein, LUMA included the work papers for the information on the existing LUMA Transmission, Distribution, and Advanced Grid Control facilities and equipment to supplement the First Interim Filing of the 2025 IRP.

17. On January 10, 2025, LUMA filed a *Motion Submitting Revised First Interim Filing of the 2025 IRP, Request for Confidential Treatment, and Memorandum in Support of Confidentiality*. LUMA re-submitted the First Interim IRP Filing and work papers with corrected data. It also submitted emission capacity generation and battery data not filed on November 25 due to an unintentional oversight.

18. On January 24, 2025, the Energy Bureau issued a Resolution and Order ("January 24 R&O"), including the Seventh Set of 2025 IRP Prefiling Request for Information ("7th Set of 2025 IRP Prefiling RFI"), ordering LUMA to submit responses to a total of eight (8) questions in two separate filings. Responses to questions 1 to 7 were required to be filed by February 14, 2025, and question number 8 by April 1, 2025.

19. On February 14, 2025, LUMA filed the responses to questions 1 to 7 of the 7th Set of 2025 IRP Prefiling RFI addressing assumptions used by LUMA regarding: (i) Battery energy storage system cost assumption; (ii) Biodiesel fuel price projection in PLEXOS® model; (iii) Build Costs, Outage Rates, and Heat Rate for new 460 MW Unit; (iv) PVRR Tables of Scenarios 1 to 4; (v) Load Forecast; (vi) Solar Rebound Effect; and (vii) Capacity reserve margin modeling.

20. On February 26, 2025, *LUMA filed a Motion Requesting Extension of Time to Submit 2025 IRP Second Interim Filing*. Therein, LUMA requested the Energy Bureau to grant an

extension until March 27, 2025, to present the 2025 IRP Second Interim Filing, compiling all ten scenarios in a single filing.

21. On February 27, 2025, the Energy Bureau issued a Resolution and Order granting LUMA until March 27, 2025, to file Second Interim Filing.

III. Legal Framework of the 2025 IRP

22. PREPA and the Puerto Rico Public-Private Partnerships Authority ("P3A") entered into the T&D OMA with LUMA to (i) provide management, operation, maintenance, repair, restoration and replacement, and other related services for the transmission and distribution system ("T&D System"), in each case that are customary and appropriate for a utility transmission and distribution system service provider, and (ii) establish policies, programs, and procedures with respect thereto ((i) and (ii), collectively, the "O&M Services")[2]. *See* T&D OMA, Section 5.1, p. 62.

23. LUMA is tasked with (i) representing PREPA before the Energy Bureau with respect to any matter related to the performance of any of the O&M Services provided by LUMA under the T&D OMA; (ii) preparing all related filings and other submissions before the Energy Bureau; and (iii) represent PREPA before any Governmental Body and any other similar industry

[2] The O&M Services are to be provided in accordance with the "Contract Standards," requiring compliance with Applicable Law, Prudent Utility Practice, and other standards, terms, conditions, and requirements specified in the T&D OMA (for purposes of this submission, "Contract and Policy Standards"). Contract and Policy Standards necessarily require acting consistently with policy mandates and directives in Act 57-2014, as amended, known as the "Puerto Rico Energy Transformation and RELIEF Act" ("Act 57-2014"), Act 120-2018, as amended, known as the Electric Power System Transformation Act ("Act 120- 2018") and Act 17-2019, known as the "Puerto Rico Energy Public Policy Act" ("Act 17-2019"), among others. This term includes "any foreign, national, federal, state, Commonwealth, municipal or local law, constitution, treaty, convention, statute, ordinance, code, rule, regulation, common law, case law or other similar requirement enacted, adopted, promulgated or applied by any [governmental body][…]" in each case applicable to the parties to the T&D OMA. *Id.*, Section 1.1, p. 3. "Prudent Utility Practice" is defined, in pertinent part, as "…at any particular time, the practices, methods, techniques, conduct and acts that, at the time they are employed, are generally recognized and accepted by companies operating in the United States electric transmission and distribution business as such practices, methods, techniques, conduct and acts appropriate to the operation, maintenance, repair and replacement of assets, facilities and properties of the type covered by the [T&D OMA][. . .]." *Id*., p. 26.

or regulatory institutions or organizations having regulatory jurisdiction. *See* T&D OMA, Section 5.6(a), p. 66.

24. Additionally, LUMA shall prepare a proposed IRP for review and approval by the Energy Bureau. *See* T&D OMA, Section 5.6(f), p. 67. "The proposed IRP shall be designed in accordance with Applicable Law and a manner to ensure that, if approved by the Energy Bureau and subject to the assumptions specified therein, LUMA can provide safe and adequate transmission and distribution service at the lowest reasonable rates consistent with budgetary and T&D System requirements, and with sound fiscal operating practices." *Id*.

25. As the main entity in charge of ensuring compliance with energy public policy and carrying out energy policy mandates, the Energy Bureau has the authority to review this submission pursuant to Act 57-2014 and Act 17-2019. Specifically, Act 57-2014 gives the Energy Bureau authority and regulatory oversight over electric services and companies such as PREPA and LUMA. *See* Sections 6.3 and 6.4 of Act 57-2014, PR Laws Ann. Tit. 22 §§ 1054b and 1054c (2024). Among other powers, the Energy Bureau may establish energy public policy standards concerning electric service companies, establish by regulations the public policy rules regarding electric power service companies, and adopt the rules, orders, and regulations needed to carry out its duties, issue orders, and impose fines to comply with the powers granted by law, as well as for the implementation of Act 57-2014. *Id*.

26. Furthermore, pursuant to Section 6.23 of Act 57-2014, the electric power company responsible for operating the electrical system shall submit to the Energy Bureau an IRP consistent with Section 1.9 of Act 17-2019. *See* Section 6.23(a) of Act 57-2014, PR Laws Ann. Tit. 22 § 1054v(a). The electric power company shall devise the IRP with the companies operating the power plants' input. *Id*. The Energy Bureau, addressing the comments of interested people and

organizations, shall review, approve, and, as applicable, modify said plans to ensure full compliance with the public policy on energy of Puerto Rico and the provisions of Act 57-2014. *See* Section 6.23(c) of Act 57-2014, PR Laws Ann. Tit. 22 § 1054v(c). Upon the approval of the IRP, the Energy Bureau shall supervise and oversee compliance therewith. *See* Section 6.23(d) of Act 57-2014, PR Laws Ann. Tit. 22 § 1054v(d).

27. Implementing its authority under Act 57-2014, the Energy Bureau issued Regulation 9021. "The purpose of [. . .] Regulation [9021] is to ensure that the IRP serves as an adequate and useful tool to guarantee the orderly and integrated development of Puerto Rico's electric power system, and to improve the system's reliability, resiliency, efficiency, and transparency, as well as the provision of electric power services at reasonable prices." *See* Section 1.03 of Regulation 9021. The IRP shall consider a planning period of twenty (20) years and shall remain in effect until the approval of a subsequent IRP. *See* Section 2.01 of Regulation 9021. Any proposal for a new IRP, or any proposed update, review, or amendment to an existing IRP must be submitted to the Energy Bureau for evaluation and approval. *Id*.

IV. Submission of the Second Interim 2025 IRP Filing

28. In compliance with the October 29th Order, for the second interim milestone, LUMA submits as *Exhibit 1* to this Motion the Second Interim 2025 IRP Filing with: (i) updated results describing the least cost resource portfolios for 2025 IRP Core Scenarios 1 through 4, previously submitted as part of the First Intermit Filing; (ii) input assumptions and results describing the least cost resource portfolios for Scenarios 5 through 10, (iii) Flexibility Analysis results for the least cost resource portfolios for Scenarios 1 through 6; (iv) summary of LUMA's recommended Preferred Plan; and (v) results from the stakeholder meetings held to share preliminary results and seek feedback prior to the selection of the Preferred Plan.

29. As introduced before, on March 19, 2025, the Energy Bureau issued the March 19th Order in Case No. NEPR-MI-2025-0001 indicating that the IRP is developed using enacted policy as a guide to making assumptions and future projections. If there are policy changes, the IRP must be modified to reflect these changes. The recently enacted Act 1-2025 extends the lawful use of coal-based power generation until 2032. It also adjusts the island's energy transition goals to reflect current energy conditions and ensure system reliability. Additionally, it eliminates the interim renewable energy targets while maintaining the goal of achieving 100% renewable energy by 2050. Moreover, the statute also includes provisions to enhance energy efficiency and promote the integration of renewable energy sources into the grid. *See* Resolution and Order dated March 19, 2025, issued in Case No. NEPR-MI-2025-0001, p. 1.

30. The results submitted in the Second Interim Filing are preliminary and subject to change prior to the planned May 16, 2025, filing of the Final 2025 IRP Report. In addition, LUMA will assess the impact of the energy public policy changes of Act 1-2025 enacted on March 18, 2025, and determine with the Energy Bureau whether implementation will shift the direction of the 2025 IRP, including whether the current assumptions and inputs must be modified. LUMA believes that it is unlikely that any modifications to the assumptions or any additional resource modeling can be completed in time to be included in the planned May 16, 2025, filing of the Final 2025 IRP Report. However, the preliminary results and preferred resource plan will still provide valuable insights. LUMA will work with the Energy Bureau to determine the preferred way to compare the Act 1-2025 impact to the current findings.

31. As noted above, the results submitted in the Second Interim Filing are subject to change based on the recently approved Act 1-2025 that modifies the current energy public policy of the Puerto Rico energy system. LUMA will assess the impact of energy public policy changes

and determine with the Energy Bureau, whether its implementation will shift the direction of the current 2025 IRP and if the current assumptions and inputs must be modified. This will probably require additional time and effort that will impact the current schedule. The preliminary results and preliminary preferred resource plan will offer insight into the effects of the possible changes, providing a comparative analysis of the conditions before and after modifications to current energy public policy.

32. The Preliminary Preferred Resource Plan ("PPRP") proposed in this Second Interim 2025 IRP Filing was selected from Preliminary Portfolios A through F, resulting from the Core Scenarios 1 through 6. *See* Exhibit 1, p. 15. To select the potential PPRP, a process called Flexibility Analysis is performed by testing each of the six Core Portfolios (A to F) against each of the six Core Scenarios (1 to 6). The Flexibility Analysis assessed the ability of each Portfolio to adapt and perform to the range of potential future conditions of the core scenarios, resulting in a matrix of 36 combinations., Id., p. 83. Each core portfolio was then assessed against the objectives and performance indicators included in the IRP Scorecard which was created with the input of numerous stakeholders that participated in the Solutions for the Energy Transformation of Puerto Rico ("SETPR") meetings held around the island. The potential PPRP was selected based on IRP Scorecard results, with the Present Value Revenue Requirement ("PVRR") providing the primary selection criteria. *Id*. LUMA selected Portfolio E as the potential PPRP. *Id*., p. 5.

V. Request for Confidential Treatment

33. LUMA respectfully submits that certain information included in the Second Interim 2025 IRP Filing, *Exhibit 2* to this Motion, should be designated as confidential material protected from disclosure. Certain information included in the Second Interim 2025 IRP Filing is protected

from disclosure as trade secrets; *see, e.g.*, Act 80-2011, P.R. Laws Ann. tit. 10, §§ 4131-4144 (2023).

A. Applicable Laws and Regulations to Submit Information Confidentially Before the Energy Bureau

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

35. The confidential information shall be provided "only to the lawyers and external consultants involved in the administrative process after the execution of a confidentiality agreement." *Id.* § 1054n(b). Finally, Act 57-2014 provides that this Energy Bureau "shall keep the documents submitted for its consideration out of public reach only in exceptional cases. In these cases, the information shall be duly safeguarded and delivered exclusively to the personnel of the [Energy Bureau] who need to know such information under nondisclosure agreements. However, the [Energy Bureau] shall direct that a nonconfidential copy be furnished for public review." *Id.* § 1054n(c).

36. Relatedly, in connection with the duties of electric power service companies, Section 1.10(i) of Act 17-2019 states that electric power service companies shall provide the

information requested by customers, except for confidential information under the Rules of Evidence of Puerto Rico.

37. Moreover, the Energy Bureau's Policy on Confidential Information details the procedures a party should follow to request that a document or portion thereof be afforded confidential treatment. In essence, the referenced Policy requires identifying confidential information and filing a memorandum of law explaining the legal basis and support for a request to file information confidentially. *See* CEPR-MI-2016-0009, Section A, as amended by the Resolution of September 20, 2016, CEPR-MI-2016-0009. The memorandum should also include a table that identifies the confidential information, a summary of the legal basis for the confidential designation, and why each claim or designation conforms to the applicable legal basis of confidentiality. *Id.* at ⁋ 3. The party who seeks confidential treatment of information filed with the Energy Bureau must also file both a "redacted" or "public version" and an "unredacted" or "confidential" version of the document that contains confidential information. *Id.* at ⁋ 6.

B. Grounds for Confidentiality

38. The Energy Bureau's Policy on Management of Confidential Information states the following with regard to access to validated Trade Secret Information:

> 1. Trade Secret Information
>
> > Any document designated by the [Energy Bureau] as Validated Confidential Information because it is a trade secret under Act 80-2011 may only be accessed by the Producing Party and the [Energy Bureau], unless otherwise set forth by the [Energy Bureau] or any competent court.

Id. at § D (on Access to Validated Confidential Information).

39. Under the Industrial and Trade Secret Protection Act of Puerto Rico, Act 80-2011, P.R. Laws Ann. tit. 10, §§ 4131-4144 (2023), industrial or trade secrets are deemed to be any information:

> (a) That has a present or a potential independent financial value or that provides a business advantage, **insofar as such information is not common knowledge or readily accessible** through proper means by **persons who could make a monetary profit from the use or disclosure of such information**, and
> (b) for which reasonable security measures have been taken, as circumstances dictate, to maintain its confidentiality.

Id. § 4131, Section 3, Act. 80-2011.[3] They include, but are not limited to, processes, methods and mechanisms, manufacturing processes, formulas, projects, or patterns to develop machinery, and lists of specialized clients that may afford an advantage to a competitor. *See* Statement of Motives, Act 80-2011; *see also* Puerto Rico Open Data Law, Act 122-2019, Article 4 (ix) (exempting from public disclosure trade secrets) and Article 4(x) (exempting from public disclosure commercial or financial information whose disclosure will cause competitive harm).

40. The Puerto Rico Supreme Court has explained that the trade secrets privilege protects free enterprise and extends to commercial information that is confidential in nature. *Ponce Adv. Med. v. Santiago Gonzalez,* 197 DPR 891, 901-02 (2017) (citation omitted).

41. The Energy Bureau should protect the work papers on the results, assumptions, and inputs of the 2025 IRP Revised Scenarios 1 through 10, the PPRP, and the Flexibility Analysis for the least cost resource portfolios for Core Scenarios 1 through 6 included as *Exhibit 2* of this Motion. The workpapers are designated as commercially sensitive or trade secret information.

[3] Relatedly, Rule 513 of the Rules of Evidence of Puerto Rico provides that the owner of a trade secret may invoke the privilege to refuse to disclose, and to prevent another person from disclosing trade secrets, provided that these actions do not tend to conceal fraudulent actions or lead to an injustice. 32 P.R. Laws Ann. Ap. VI, R. 513. If a court of law mandates disclosure of a trade secret, precautionary measures should be adopted to protect the interests of the owner of the trade secret. *Id.*

42. LUMA respectfully submits that part of the Fixed Capacity Additions in generation, the Preliminary Portfolios of the different Scenarios, and the work papers on the results, assumptions, and inputs of the 2025 IRP Revised Core Scenarios 1 through 10 presented as part of LUMA's response in *Exhibits 1 and 2* should be designated as commercially sensitive or trade secret information. This designation is a reasonable and necessary measure to protect the information and enable LUMA to compete fairly in the future. LUMA takes reasonable security measures, such as this one, to maintain the confidentiality of its data and information in draft form.

43. The protection of the specific information pertaining to the information will not hinder nor preclude the public in a material way from gaining access to relevant and necessary information. As such, the interest in the public viewing the information that LUMA hereby requests be kept confidential is outweighed by the harm that LUMA would be exposed to should the information be made available to the public.

VI. Identification of Confidential Information

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

Document	**Name**	**Pages in which Confidential Information is Found**	**Summary of Legal Basis for Confidentiality Protection**	**Date Filed**
Exhibit 2	Workpapers a. Results of Preliminary Portfolios A to J, resulting from Scenarios 1 to 10 b. Flexibility Analysis results for	Entire File	Trade Secret Information under Section D (1) of the Energy Bureau's Policy on Confidential Information,	March 27, 2025

Document	Name	Pages in which Confidential Information is Found	Summary of Legal Basis for Confidentiality Protection	Date Filed
	the least cost resource portfolios for scenarios number 1 through 6 c. Assumptions, Parameters, and Costs d. Forecasts e. Transmission Transfer Capability		CEPR-MI-2016-0009	

WHEREFORE, LUMA respectfully requests the Energy Bureau to **take notice** of the foregoing, **accept** the Second Interim 2025 IRP Filing, and **approve the request for confidential treatment** of the information submitted in *Exhibit 2* to this Motion.

WE HEREBY CERTIFY that this Motion was filed using the electronic filing system of this Energy Bureau and that electronic copies of this Motion will be notified to the Puerto Rico Electric Power Authority: lionel.santa@prepa.pr.gov and through its attorneys of record González & Martínez, Mirelis Valle-Cancel, mvalle@gmlex.net; and Alexis G. Rivera Medina, arivera@gmlex.net; and Genera PR, LLC: brannen@genera-services.com; kbolanos@genera-pr.com; regulatory@genera-pr.com.

RESPECTFULLY SUBMITTED.

In San Juan, Puerto Rico, on March 27, 2025.

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Exhibit 1

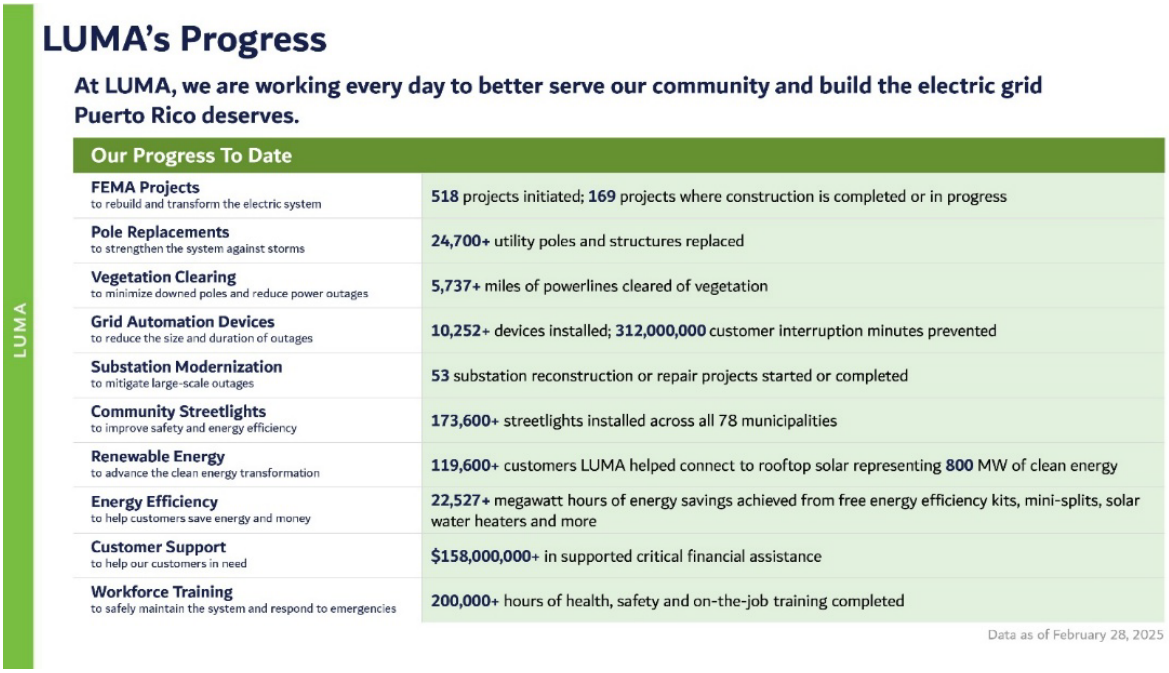
Revised Second Interim 2025 IRP Filing

NEPR-AP-2023-0004

March 27, 2025

Executive Summary

Since assuming operations over Puerto Rico's electric transmission and distribution system ("T&D System"), LUMA has focused on critical priorities, consistent with the System Remediation Plan ("SRP"), to make real and sustainable progress toward providing better electric service for all its customers. In just three years, LUMA has improved grid resilience by installing more than 24,700 new storm-resilient poles,[1] clearing vegetation from over 5,737 miles of powerlines,[2] and installing more than 10,252 grid automation devices to reduce outage impacts.[3] LUMA has also replaced more than 173,600 streetlights[4] to improve road safety and has connected over 119,600 customers to rooftop solar.[5]



LUMA

LUMA's Progress

At LUMA, we are working every day to better serve our community and build the electric grid Puerto Rico deserves.

Our Progress To Date	
FEMA Projects to rebuild and transform the electric system	**518** projects initiated; **169** projects where construction is completed or in progress
Pole Replacements to strengthen the system against storms	**24,700+** utility poles and structures replaced
Vegetation Clearing to minimize downed poles and reduce power outages	**5,737+** miles of powerlines cleared of vegetation
Grid Automation Devices to reduce the size and duration of outages	**10,252+** devices installed; **312,000,000** customer interruption minutes prevented
Substation Modernization to mitigate large-scale outages	**53** substation reconstruction or repair projects started or completed
Community Streetlights to improve safety and energy efficiency	**173,600+** streetlights installed across all 78 municipalities
Renewable Energy to advance the clean energy transformation	**119,600+** customers LUMA helped connect to rooftop solar representing **800** MW of clean energy
Energy Efficiency to help customers save energy and money	**22,527+** megawatt hours of energy savings achieved from free energy efficiency kits, mini-splits, solar water heaters and more
Customer Support to help our customers in need	**$158,000,000+** in supported critical financial assistance
Workforce Training to safely maintain the system and respond to emergencies	**200,000+** hours of health, safety and on-the-job training completed

Data as of February 28, 2025

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[1] See Quarterly LUMA Reports: https://energia.pr.gov/en/dockets/?docket=nepr-mi-2021-0004 FY 2025: https://energia.pr.gov/wp-content/uploads/sites/7/2024/11/20241114-MI20210004-Motion-to-Submit-Quarterly-Report-for-the-First-Quarter-of-Fiscal-Year-2025.pdf FY 2024: https://energia.pr.gov/wp-content/uploads/sites/7/2024/08/20240813-MI20210004-Motion-to-Submit-of-Quarterly-Report-for-the-Fourth-Quarter-of-Fiscal-Year-2024.pdf

[2] See Quarterly Progress Reports for Vegetation Management Program: https://energia.pr.gov/en/dockets/?docket=nepr-mi-2019-0005 FY 2025: https://energia.pr.gov/wp-content/uploads/sites/7/2024/11/20241114-MI20190005-Exhibit-1_Q1-FY2025-Vegetation-Management-Progress-Report.xlsx FY 2024: https://energia.pr.gov/wp-content/uploads/sites/7/2024/08/20240821-MI20190005-Exhibit-1_-Motion-Submitting-Vegetation-Management-Progress-Report-for-the-4th-Quarter-of-FY-2024.xlsx

[3] See LUMA's key progress milestones press release of November 21, 2024 related to the Quarterly Legacy Performance Metrics Report filed with the Energy Bureau on November 20, 2024 at: https://lumapr.com/news/importante-avance-en-las-metricas-de-desempeno-de-luma-del-primer-trimestre/

[4] See November 13th, 2024, Motion at https://energia.pr.gov/wp-content/uploads/sites/7/2024/11/20241113-MI20200001-Motion-Subm-Quarterly-Report-on-Streetlight-July-to-Sept-2024.pdf

[5] See November 14th, 2024 Motion at https://energia.pr.gov/wp-content/uploads/sites/7/2024/11/20241114-MI20190016-Motion-Submitting-Interconnections-Progress-Report-for-July-through-September-2024-and-Supporting-Materials-1.pdf
See also Juan Saca's testimony at the hearing "*Examining Puerto Rico's Electrical Grid and the need for Reliable Energy*" held on Sept. 26, 2024 before the Subcommittee on Indian and Insular Affairs: https://naturalresources.house.gov/uploadedfiles/testimony_saca926iia.pdf and LUMA's letter to Hon. Harriet M. Hageman dated Oct. 17, 2024, in response to Questions For the Record (QFR) in relation to Juan Saca's testimony: https://www.congress.gov/118/meeting/house/117665/documents/HHRG-118-II24-20240926-SD012.pdf

Puerto Rico's 2025 Integrated Resource Plan ("2025 IRP")

In 2022, LUMA began working cooperatively and diligently to develop a realistic and pragmatic 2025 IRP that reflects industry standards, is built on accurate and comprehensive data and analyses, and reflects the future energy needs and priorities of LUMA's customers as Puerto Rico moves toward a more reliable, more resilient, and cleaner electric grid. While developing the 2025 IRP, LUMA prioritized stakeholder engagement through the Solutions for the Energy Transformation of Puerto Rico ("SETPR") initiative. This collaborative process is designed to engage with a broad variety of customers and stakeholders and gain their input regarding Puerto Rico's energy future. Gathering and understanding diverse views and opinions on Puerto Rico's energy future is an important part of the 2025 IRP process and will help ensure that the final 2025 IRP report incorporates broad stakeholder input.

Despite the unique complexities and challenges that Puerto Rico's electric grid has faced, LUMA is committed to developing a 2025 IRP that works best for its customers. IRP planning processes involve extensive data collection, iterative stakeholder outreach, complex data analysis and scenario planning. The growth of inverter-based resources (including solar and wind generation) and the expanding role of resources controlled by customers (including demand response "DR" and distributed generation "DG") require more probabilistic approaches and risk metrics to assess variable resources and flexibility. In Puerto Rico, the planning challenge is compounded by the immediate vulnerabilities of an electric grid that is severely short of necessary resources to meet current demand and infrastructure that is out of configuration, with many elements beyond their expected life. Although improvements have been made, the system remains in a vulnerable state and requires significant repairs.

This Second Interim 2025 IRP Filing demonstrates that LUMA is making progress. The current filing reflects high utility industry standards, meets current regulatory requirements, and is built on the objectives that the Energy Bureau and LUMA's customers share, to reach Puerto Rico's clean energy goals at the most reasonable cost.

Second Interim 2025 IRP Filing

In accordance with the Energy Bureau's Resolution and Order dated October 29, 2024 ("October 29 R&O")[6], this filing serves as the Second Interim Filing of the 2025 IRP ("Second Interim 2025 IRP Filing"). Per the October 29 R&O, LUMA will submit the Final 2025 IRP Report on May 16, 2025.

All results submitted in the Second Interim Filing are preliminary and subject to change prior to the planned May 16, 2025, filing of the Final IRP Report. In addition, LUMA will assess the impact of energy public policy changes of the recently enacted Act 1-2025 and determine together with the Energy Bureau whether its implementation will shift the direction of the 2025 IRP, including whether the current assumptions and inputs must be modified. This will require additional time and effort, which will have an impact on the current schedule. LUMA believes that it is unlikely that any modifications to the assumptions or any additional resource modeling can be completed in time to include in the planned May 16, 2025, filing of the Final IRP Report. However, the preliminary results and Preliminary Preferred Resource Plan ("PPRP") will still provide valuable insights. On March 19, 2025, the Energy Bureau issued a Resolution and Order ("March 19 R&O") of Case No. NEPR-MI-2025-0001 where it indicates that "[t]he IRP is the centerpiece for carrying out the legislative intent to modernize the electric system. The goal of the IRP, according to Act 1-2025, is to evaluate PREPA's resources to develop

[6] See October 29, 2024, R&O at https://energia.pr.gov/wp-content/uploads/sites/7/2024/10/20241029-AP20230004-Resolution-and-Order.pdf

a cost-effective (least cost) plan to meet Puerto Rico's energy needs."[7] LUMA will work alongside the Energy Bureau to determine the preferred way to compare Act 1-2025 impact to the current findings. The preliminary results and PPRP will offer insight into the effects of the possible changes, providing a comparative analysis of the conditions before and after modifications to current energy public policy.

Revised 2025 IRP Scenarios and Characteristics

Table 1 shows the Revised 2025 IRP Scenarios and Characteristics selected with the recommendations of Stakeholders and the Energy Bureau. They represent the possible futures and conditions evaluated in the development of the 2025 IRP and the source of the resulting Portfolios.

Table 1: Revised 2025 IRP Scenarios and Characteristics

No.	Scenario Name	Load Growth	DER Growth / PV / BESS[8]	PV Cost	Agriculture Land Use	Storage Cost	Resource Capital Cost	Fossil Fuel Cost	Energy Efficiency	DBESS Control (%)			
										2025	2030	2035	2040
1	Base	Base	Base/ Base	Base	Less Land	Base	Base	Base	PR100-Base	5	10	10	10
2	System Stress Scenario	High	Low/ Low	High	Less Land	High	High	Base	PR100-Base	0	0	0	0
3	More Agriculture Land Use	Base	Base/ Base	Base	More Land	Base	Base	Base	PR100-Base	5	10	10	10
4	Optimistic Load Growth and costs	High	High/ High	Low	More Land	Low	Low	Low	PR100-Base	5	15	20	20
5	Accelerated Load Loss	Low	Base/ Base	Base	Less Land	Base	Base	High	PR100-Base	5	15	20	20
6	Max DBESS Control Scenario- High EE	Base	High/ High	Low	More Land	Low	Low	Base	Act 17 EE hi ramp	10	30	50	60
7	Less Ag land use - Max DBESS Control Scenario	Base	High/ High	Low	Less Land	Low	Base	Base	PR100-Base	10	30	50	50
8	Accelerated Load Loss and High EE	Low	Base/ Base	Base	Less Land	Base	Base	High	Act 17 EE	5	10	10	10
9	High Distributed Solar and Storage Growth	Base	High/ High	Low	More Land	Low	Low	Base	PR100-Base	5	20	30	40
10	Marine Cable to Dominican Republic	Base	Base	Base	Less Land	Base	Base	Base	PR100-Base	5	10	10	10

A summary of the principal differences in the Preliminary Portfolio results is provided below. A more detailed summary of the Preliminary Portfolio results is provided in Section 4 of this filing.

Core Portfolios

1. **Updated Preliminary Portfolio A** provides the optimal set of resources resulting from the conditions described in Scenario 1, representing the most likely assumptions for all inputs. In this Updated Preliminary Portfolio, Liquated Natural Gas ("LNG")-fueled units are added to meet the capacity requirements of retiring legacy generation. Several of the new LNG units and some legacy units are eventually converted to biodiesel to meet the increasing Renewable Portfolio Standard ("RPS") requirements. It is notable that Updated Preliminary Portfolio A does not add any additional utility-scale solar photovoltaic ("PV") resources beyond the fixed decision projects included in the Tranche 1 and 2 solar PV additions. The PLEXOS®

[7] The Energy Bureau issued on March 19, 2025 a Resolution and Order of Docket Number NEPR-MI-2025-0001 located at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001

[8] Solar Photovoltaic ("PV") / DER / Distributed Battery Energy Storage / Distributed Battery Energy Storage ("BESS")

modeling indicated additional transmission capacity would be needed for the Carolina to San Juan and Ponce OE to Arecibo links to support this portfolio.

2. **Updated Preliminary Portfolio B** provides the optimal set of resources resulting from the conditions described in Scenario 2, representing the stress case scenario with an increased load forecast and reduced contributions from distributed solar PV. In this portfolio, as in Updated Preliminary Portfolio A, new LNG units are built and converted to biodiesel along with some existing units. This Portfolio also includes a substantial increase in the number of batteries built as compared to those built for Updated Preliminary Portfolio A. In addition, no additional utility-scale solar PV resources are added beyond the fixed decision projects included in the Tranche 1 and 2 solar PV additions. The PLEXOS® modeling indicated additional transmission capacity would be needed for the Carolina to San Juan link to support this portfolio.

3. **Updated Preliminary Portfolio C** provides the optimal set of resources resulting from the conditions described in Scenario 3, which is identical to Scenario 1, except that Scenario 3 has additional land to build more utility-scale solar and wind resources at a lower average levelized cost of energy ("LCOE") than the land available for Scenario 1. However, even with this additional and more productive land, no new solar or wind is built in Updated Preliminary Portfolio C, and its energy resources are identical to those defined for Updated Preliminary Portfolio A. The PLEXOS® modeling indicated additional transmission capacity would be needed for the Transmission and Distribution Planning Areas ("TPAs") from Carolina to San Juan, Mayagüez to Ponce OE and Ponce OE to Arecibo links to support this portfolio.

4. **Updated Preliminary Portfolio D** provides the optimal set of resources resulting from the conditions described in Scenario 4, which has a higher load forecast, but also has lower resource costs and more land available for renewable development. This combination of assumptions results in significantly more utility-scale solar PV being built beyond the projects identified in Tranches 1 and 2. The Portfolio also includes significative additions of batteries and new LNG units that are again partially converted to biodiesel fueled units to meet the growing RPS requirements. The PLEXOS® modeling indicated additional transmission capacity would be needed for the Carolina to San Juan and San Juan to Bayamon links to support this portfolio.

5. **Preliminary Portfolio E** provides the optimal set of resources resulting from the conditions described in Scenario 5, which features a low load forecast with high fossil fuel costs. This Portfolio includes the construction of a new LNG unit and a new biodiesel unit. Moreover, existing LNG units are converted to biodiesel. Furthermore, no additional utility-scale solar PV or BESS resources are added beyond the fixed decision projects included in Tranches 1 and 2, as well as Genera and Accelerated Storage Addition Program ("ASAP") additions. The PLEXOS® modeling indicated additional transmission capacity would be needed for the Carolina to San Juan, Ponce ES to Bayamon, Ponce OE to Arecibo, and San Juan to Bayamon links to support this portfolio.

6. **Preliminary Portfolio F** provides the optimal set of resources resulting from the conditions described in Scenario 6, which features a base growth forecast with a high energy efficiency goal. In addition, this Scenario considers lower resource, solar PV, and storage costs, leading to high Distributed Energy Resources ("DER") growth. This Scenario also benefits from more agricultural land available for renewable development and includes a high Distributed Battery Energy Storage System ("DBESS") control percentage. This combination of assumptions results in a high amount of utility-scale solar PV being built. In addition, this Portfolio also includes the installation of LNG units, as well as batteries and biodiesel generation. The PLEXOS® modeling indicated additional transmission capacity would be needed for the Carolina to San Juan and Ponce ES to Caguas links to support this portfolio.

7. **Preliminary Portfolio G** provides the optimal set of resources resulting from the conditions described in Scenario 7, which features a base growth forecast with low solar PV and storage costs, leading to a high DER growth. Moreover, this scenario considers less agricultural land available for renewable development and includes a high DBESS control percentage. As such, in this Portfolio, additional solar PV and battery resources from fixed decisions are built. This Portfolio includes a high amount of LNG to meet capacity requirements, while some of these units are eventually converted to biodiesel to meet RPS requirements. The PLEXOS® modeling indicated additional transmission capacity would be needed for the Carolina to San Juan and Mayaguez to Ponce OE links to support this portfolio.

8. **Preliminary Portfolio H** provides the optimal set of resources resulting from the conditions described in Scenario 8, which features a low growth forecast, with high fossil fuel costs and a high energy efficiency goal. This combination of assumptions results in the installation of a new LNG and a new biodiesel unit. In addition, existing LNG units are converted to biodiesel. Furthermore, no additional utility-scale solar PV resources are added beyond the fixed decision projects included in the Tranche 1 and 2 solar PV additions. The PLEXOS® modeling indicated additional transmission capacity would be needed for the Carolina to San Juan, Ponce ES to Caguas and Ponce OE to Arecibo links to support this portfolio.

9. **Preliminary Portfolio I** provides the optimal set of resources resulting from the conditions described in Scenario 9, which features a base growth forecast with low solar PV and storage costs, leading to a high DER growth. Moreover, this scenario considers more agricultural land available for renewable development and includes a high DBESS control percentage. This combination of assumptions results in the installation of several LNG units, and additional battery resources from fixed decisions are built. Furthermore, no additional utility-scale solar PV resources are added beyond the fixed decision projects included in the Tranche 1 and 2 solar PV additions. The PLEXOS® modeling indicated additional transmission capacity would be needed for the Carolina to San Juan and Mayaguez to Ponce OE links to support this portfolio.

10. **Preliminary Portfolio J** provides the optimal set of resources resulting from the conditions described in Scenario 10, which features the same assumptions as included for Scenario 1 and adds a marine cable connection to the Dominican Republic. Scenario 10 also includes a solar and biodiesel-fueled combined cycle generation plant in Dominican Republic. The marine cable and the generation located in the Dominican Republic were forced in and then was available to PLEXOS® to dispatch to serve the energy needs in Puerto Rico. The PLEXOS® modeling indicated additional transmission capacity would be needed for the Carolina to San Juan, Ponce ES to Caguas and Ponce OE to Arecibo links to support this portfolio.

Resumen Ejecutivo

Desde que asumió la operación del sistema de transmisión y distribución ("Sistema de T&D") de Puerto Rico, LUMA se ha enfocado en prioridades críticas, consistentes con el Plan de Remediación del Sistema ("PRS") para garantizar un progreso real y sostenible y así lograr un mejor servicio eléctrico para todos sus clientes. En solo tres años, LUMA ha mejorado la resiliencia de la red, instalando más de 24,700 nuevos postes resilientes a tormentas,[9] despejando vegetación en más de 5,737 millas de cableado eléctrico[10] e instalando más de 10,252 equipos de automatización de la red para reducir los impactos causados por apagones.[11] Además, LUMA ha reemplazado más de 173,600 luminarias[12] para mejorar la seguridad vial y ha conectado a más de 119,600 clientes a sistemas de energía solar de azotea.[13]

Progreso de LUMA

En LUMA, trabajamos cada día para brindarle un mejor servicio a nuestra comunidad y construir la red eléctrica que Puerto Rico merece.

El progreso de LUMA hasta hoy	
Proyectos de FEMA para reconstruir y transformar el sistema eléctrico	**518** proyectos iniciados; **169** proyectos en los que la construcción está completada o en proceso
Reemplazo de postes para fortalecer el sistema contra tormentas	**Sobre 24,700** postes y estructuras reemplazados
Despeje de vegetación para reducir la cantidad de postes caídos y de interrupciones de servicio	**Sobre 5,737** millas de líneas eléctricas despejadas de vegetación
Aparatos automatizados en la red para reducir la magnitud y duración de las interrupciones de servicio	**Sobre 10,252** aparatos instalados; **312,000,000** minutos de interrupciones evitados en el servicio de los clientes
Modernización de subestaciones para mitigar las interrupciones de servicio a gran escala	**53** proyectos de reconstrucción o reparación de subestaciones comenzados o completados
Alumbrado público para aumentar la seguridad y la eficiencia energética	**Sobre 173,600** luminarias instaladas en los 78 municipios
Energía renovable para impulsar la transformación de la energía limpia	**Sobre 119,600** clientes de LUMA conectados con placas solares, lo que representa **800** MW de energía limpia
Eficiencia energética para ayudar a los clientes a ahorrar energía y dinero	**Más de 22,527** megavatios-hora de ahorro de energía gracias a kits gratuitos de eficiencia energética, minisplits, calentadores solares de agua y mucho más
Apoyo al cliente para ayudar a quienes lo necesitan	**Sobre $158,000,000** en ayuda económica crítica
Adiestramientos de la fuerza laboral para darle mantenimiento al sistema eléctrico de manera segura y responder a las emergencias	**Sobre 200,000** horas completadas de adiestramiento sobre salud, seguridad y capacitación práctica

Información hasta el 28 de febrero de 2025

[9] Localizado en los Reportes Trimestrales de LUMA: https://energia.pr.gov/en/dockets/?docket=nepr-mi-2021-0004 FY 2025: https://energia.pr.gov/wp-content/uploads/sites/7/2024/11/20241114-MI20210004-Motion-to-Submit-Quarterly-Report-for-the-First-Quarter-of-Fiscal-Year-2025.pdf FY 2024: https://energia.pr.gov/wp-content/uploads/sites/7/2024/08/20240813-MI20210004-Motion-to-Submit-of-Quarterly-Report-for-the-Fourth-Quarter-of-Fiscal-Year-2024.pdf

[10] Localizado en los Reportes Trimestrales sobre el Progreso del Programa de Manejo de Vegetación: https://energia.pr.gov/en/dockets/?docket=nepr-mi-2019-0005 FY 2025: https://energia.pr.gov/wp-content/uploads/sites/7/2024/11/20241114-MI20190005-Exhibit-1_Q1-FY2025-Vegetation-Management-Progress-Report.xlsx FY 2024: https://energia.pr.gov/wp-content/uploads/sites/7/2024/08/20240821-MI20190005-Exhibit-1_-Motion-Submitting-Vegetation-Management-Progress-Report-for-the-4th-Quarter-of-FY-2024.xlsx

[11] Localizado en el comunicado de prensa publicado el 21 de noviembre de 2024 sobre logros clave de LUMA relacionados al Reporte de Métricas de Desempeño Heredado presentado al Negociado de Energía el 20 de noviembre de 2024: https://lumapr.com/news/importante-avance-en-las-metricas-de-desempeno-de-luma-del-primer-trimestre/

[12] Localizado en la Moción del 13 de noviembre de 2024: https://energia.pr.gov/wp-content/uploads/sites/7/2024/11/20241113-MI20200001-Motion-Subm-Quarterly-Report-on-Streetlight-July-to-Sept-2024.pdf

[13] Localizado en la Moción del 14 de noviembre: https://energia.pr.gov/wp-content/uploads/sites/7/2024/11/20241114-MI20190016-Motion-Submitting-Interconnections-Progress-Report-for-July-through-September-2024-and-Supporting-Materials-1.pdf
Ver también el testimonio de Juan Saca durante la vista *"Examinando la Red Eléctrica de Puerto Rico y la Necesidad de Energía Renovable"*, llevada a cabo el 26 de septiembre de 2024 ante el Subcomité de Asuntos Indígenas e Insulares: https://naturalresources.house.gov/uploadedfiles/testimony_saca926iia.pdf and LUMA's letter to Hon. Harriet M. Hageman dated Oct.17, 2024, in response to Questions For the Record (QFR) in relation to Juan Saca's testimony: https://www.congress.gov/118/meeting/house/117665/documents/HHRG-118-II24-20240926-SD012.pdf

El Plan Integrado de Recursos 2025 ("PIR 2025") de Puerto Rico

En 2022, LUMA comenzó a trabajar cooperativa y diligentemente para desarrollar un PIR 2025 realista y pragmático que refleje los estándares de la industria, se base en datos y análisis certeros y comprehensivos y que refleje las futuras necesidades y prioridades energéticas de sus clientes a medida que Puerto Rico avanza hacia una red eléctrica más confiable, resiliente y limpia. Al desarrollar el PIR 2025, LUMA ha priorizado obtener el insumo de partes interesadas a través de la iniciativa Soluciones Energéticas para la Transformación de Puerto Rico ("SETPR"). Este es un proceso colaborativo diseñado para engranar con una amplia variedad de clientes y partes interesadas y obtener su insumo en cuanto al futuro energético de Puerto Rico. Recolectar y entender diversos puntos de vista y opiniones sobre el futuro energético de Puerto Rico son una parte importante del proceso del PIR 2025 y ayudará a garantizar que el reporte final del PIR 2025 incorpore un amplio insumo de las partes interesadas.

A pesar de las complejidades y retos únicos que ha enfrentado la red eléctrica de Puerto Rico, LUMA está comprometida con desarrollar el PIR 2025 que mejor funcione para sus clientes. Los procesos de planificación de PIR requieren recolección extensa de datos, comunicación recurrente con las partes interesadas, análisis de datos complejos y planificación de escenarios. El crecimiento de recursos basados en inversores (incluyendo generación solar y eólica) y el creciente rol de recursos controlados por los clientes (incluyendo respuesta a demanda, "DR" y generación distribuida, "DG") requieren más acercamientos probabilísticos y métricas de riesgo para evaluar varios recursos y flexibilidades. En Puerto Rico, se suma al reto de la planificación las vulnerabilidades inmediatas de una red eléctrica escasa de los recursos necesarios para atender la demanda actual, además de infraestructura obsoleta con elementos cuya vida útil ha caducado. Aunque se han realizado mejoras, el sistema permanece vulnerable y requiere reparaciones significativas.

Esta Segunda Radicación Interina del PIR 2025 demuestra que LUMA ha progresado. La radicación actual refleja estándares altos para la industria de utilidades, cumple con los requerimientos regulatorios y se basa en los objetivos compartidos por el Negociado de Energía y los clientes de LUMA, para alcanzar las metas de energía limpia para Puerto Rico al costo más razonable.

Segunda Radicación Interina del PIR 2025

De acuerdo con la Resolución y Orden del 29 de octubre de 2024 del Negociado de Energía ("R&O del 29 de octubre del 2024"),[14] esta radicación sirve como Segunda Radicación Interina del PIR 2025 ("Segunda Radicación Interina del PIR 2025"). Según lo establecido en la R&O del 29 de octubre, LUMA presentará el Reporte Final del PIR 2025 el 16 de mayo de 2025.

Todos los resultados incluidos en la Segunda Radicación Interina son preliminares y sujetos a cambio previo al envío del Reporte Final del PIR, pautado para el 16 de mayo de 2025. Además, LUMA evaluará qué tipo de impacto tendrán los cambios en política pública ocasionados por la recién aprobada Ley 1-2025 y determinará junto al Negociado de Energía si su implementación pudiese cambiar el rumbo del PIR 2025 y si se deben modificar los supuestos y entradas actuales. Esto requerirá más tiempo y esfuerzo, lo cual tendrá un impacto en el calendario actual. LUMA prevé que no será viable modificar los supuestos ni llevar a cabo modelajes de los recursos antes de la radicación del Reporte Final del PIR el próximo 16 de mayo de 2025. No obstante, los resultados preliminares y el Plan Preferido de Recursos Preliminar ("PPRP") proveerán un insumo invaluable. El 19 de marzo de 2025, el Negociado de Energía emitió una Resolución y Orden ("R&O del 19 de marzo del

[14] Localizado en: https://energia.pr.gov/wp-content/uploads/sites/7/2024/10/20241029-AP20230004-Resolution-and-Order.pdf

2025") relacionada al Número de Caso NEPR-MI-2025-0001, donde indicó que "el PIR es la pieza clave para llevar a cabo esfuerzos legislativos para modernizar el sistema eléctrico. La meta del PIR, según la Ley 1-2025, es evaluar los recursos de la Autoridad de Energía Eléctrica de Puerto Rico ("AEEPR") y desarrollar un plan costo efectivo (de menor costo) para atender las necesidades energéticas de Puerto Rico."[15] LUMA trabajará junto al Negociado de Energía para determinar cuál será el método más adecuado para comparar el impacto de la Ley 1-2025 a los hallazgos actuales. Los resultados preliminares y el PPRP ofrecerán un insumo sobre los efectos que podrían tener los cambios en legislación, proveyendo así un análisis comparativo de las condiciones antes y después de los cambios en la política pública energética.

Escenarios y Características Revisados del PIR 2025

La tabla 2 muestra los Escenarios y Características Revisados del PIR 2025 que fueron seleccionados considerando las recomendaciones de las partes interesadas y del Negociado de Energía. Representan los posibles futuros y condiciones evaluadas en el desarrollo del PIR 2025 y las fuentes de donde se originan las carteras de recursos, producto de los escenarios.

Table 2: Escenarios y Características Revisados del PIR 2025

No	Nombre del Escenario	Crecimiento de la Carga	Crecimiento DER / PV / BESS[16]	Costos de PV	Uso Terreno Ag	Costos Almacenamiento	Costos Recursos de Capital	Costos Combustible Fósil	Eficiencia Energética	Control DBESS (%)			
										2025	2030	2035	2040
1	Base	Base	Base/ Base	Base	Menos Ag	Base	Base	Base	PR100-Base	5	10	10	10
2	Estrés en el sistema	Alto	Bajo/ Bajo	Alto	Menos Ag	Alto	Alto	Base	PR100-Base	0	0	0	0
3	Mas uso de terreno agrícola	Base	Base/ Base	Base	Mas Ag	Base	Base	Base	PR100-Base	5	10	10	10
4	Crecimiento de la carga y costes optimista	Alto	Alto/ Alto	Bajo	Mas Ag	Bajo	Bajo	Bajo	PR100-Base	5	15	20	20
5	Pérdida de carga acelerada	Bajo	Base/ Base	Base	Menos Ag	Base	Base	Alto	PR100-Base	5	15	20	20
6	Control DBESS máximo-Alta EE	Base	Alto/ Alto	Bajo	Mas Ag	Bajo	Bajo	Base	Act 17 EE hi ramp	10	30	50	60
7	Menor uso de terreno Ag-control DBESS máximo	Base	Alto/ Alto	Bajo	Menos Ag	Bajo	Base	Base	PR100-Base	10	30	50	50
8	Pérdida de carga acelerada y Alta EE	Bajo	Base/ Base	Base	Menos Ag	Base	Base	Alto	Act 17 EE	5	10	10	10
9	Alto crecimiento de energía solar distribuida y almacenamiento	Base	Alto/ Alto	Bajo	Mas Ag	Bajo	Bajo	Base	PR100-Base	5	20	30	40
10	Cable submarino a República Dominicana	Base	Base/ Base	Base	Menos Ag	Base	Base	Base	PR100-Base	5	10	10	10

A continuación, un resumen de las diferencias principales entre los resultados de las Carteras Preliminares. En la Sección 4 de esta radicación, se ofrece un resumen más detallado de los resultados de las Carteras Preliminares.

[15] Localizado en: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001
[16] Distributed Energy Resources ("DER") / Solar Photovoltaic ("PV") / Distributed Battery Energy Storage ("BESS")

Carteras Principales

1. **La Cartera Preliminar Actualizada A** proporciona el conjunto de recursos de menor costo que resulta de las condiciones descritas en el Escenario 1, el cual representa el supuesto más probable de todos los supuestos las entradas (inputs). En esta Cartera Preliminar Actualizada A, se añaden unidades alimentadas con Gas Natural Licuado ("GNL") para cubrir las necesidades de capacidad de la generación heredada que se retira. Varias de las nuevas unidades de GNL y algunas unidades heredadas se convierten finalmente a biodiésel para cumplir con los crecientes requisitos de la Cartera de Energía Renovable (Renewable Portfolio Standard o "RPS" por sus siglas en inglés). Cabe destacar que la Cartera Preliminar Actualizada A no añade ningún recurso solar fotovoltaico a escala de servicio público más allá de los proyectos de decisión fija incluidos en los Tranches 1 y 2 de energía solar fotovoltaica. El modelaje de PLEXOS® indicó que, para apoyar esta Cartera de recursos, se requeriría capacidad adicional de transmisión para las conexiones de Carolina hacia San Juan y de Ponce OE hacia Arecibo.

2. **La Cartera Preliminar Actualizada B** proporciona el conjunto de recursos de menor coste que resulta de las condiciones descritas en el Escenario 2, que representa el escenario de estrés con un pronóstico de carga aumentada y contribuciones reducidas de la energía solar fotovoltaica distribuida. En esta cartera, al igual que en la Cartera Preliminar Actualizada A, se construyen nuevas unidades de GNL y luego se convierten a biodiésel junto con algunas de las unidades existentes. Esta Cartera también incluye un aumento sustancial del número de baterías construidas en comparación con las construidas para la Cartera Preliminar Actualizada A. Además, no se añaden recursos solares fotovoltaicas a escala de servicio público adicionales más allá de los proyectos de decisión fija incluidos en las adiciones fotovoltaicas solares de los Tranches 1 y 2. El modelaje de PLEXOS® indicó que, para apoyar esta Cartera de recursos, se requeriría capacidad adicional de transmisión para la conexión entre Carolina y San Juan.

3. **La Cartera Preliminar Actualizada C** proporciona el conjunto de recursos de menor costo que resulta de las condiciones descritas en el Escenario 3, que es idéntico al Escenario 1, excepto en que añaden terrenos adicionales para construir más recursos solares y eólicos a un costo inferior promedio de energía nivelado al de los terrenos disponibles para el Escenario 1. Sin embargo, incluso con este agregado más productivo de terrenos, no se construye ningún nuevo recurso solar o eólico adicional en el Porfolio Preliminar Actualizado C, y sus recursos energéticos son idénticos a los definidos para la Cartera Preliminar Actualizada A. El modelaje de PLEXOS® indicó que, para apoyar esta Cartera de recursos, se requeriría capacidad adicional de transmisión para las conexiones de Carolina hacia San Juan, Mayagüez hacia Ponce OE y Ponce OE hacia Arecibo.

4. **La Cartera Preliminar Actualizada D** proporciona el conjunto de recursos de menor costo que resulta de las condiciones descritas en el Escenario 4, el cual tienen un pronóstico de carga más alto, pero también tiene costos de recursos más bajos y mayor terreno disponible para el desarrollo de renovables. Esta combinación de supuestos se traduce en la construcción de una cantidad significativamente mayor de energía solar fotovoltaica a gran escala, en adición a los proyectos identificados en los Tranches 1 y 2. Esta Cartera también incluye adiciones significativas de baterías y nuevas unidades de GNL que, nuevamente, se convierten parcialmente en unidades alimentadas con biodiésel para cumplir con el aumento requerido para el RPS. El modelaje de PLEXOS® indicó que, para apoyar este Cartera de recursos, se requeriría capacidad adicional de transmisión para las conexiones de Carolina hacia San Juan y San Juan hacia Bayamón.

5. **La Cartera Preliminar E** proporciona el conjunto de recursos de menor costo que resulta de las condiciones descritas en el Escenario 5, el cual presenta un pronóstico de carga baja con altos costos de

combustibles fósiles. Esta Cartera incluye la construcción de una nueva unidad de GNL y una nueva unidad alimentada por biodiésel. Además, parte de las unidades de GNL existentes son convertidas a biodiésel. Por último, no se agregan recursos adicionales de energía solar fotovoltaica ni baterías a escala de servicio público más allá de los proyectos incluidos en las decisiones fijas incluidas en los Tranches 1 y 2, así como las unidades de Genera y del Programa Acelerado de Ampliación de Almacenamiento (Accelerated Storage Addition Program o "ASAP", por sus siglas en inglés). El modelaje de PLEXOS® indicó que, para apoyar esta Cartera de recursos, se requeriría capacidad adicional de transmisión para las conexiones de Carolina hacia San Juan, Ponce ES hacia Bayamón, Ponce OE hacia Arecibo y San Juan hacia Bayamón.

6. **La Cartera Preliminar F** proporciona el conjunto de recursos de menor costo, resultado de las condiciones descritas en el Escenario 6, el cual presenta un pronóstico de crecimiento base con una meta de alta eficiencia energética. Además, este Escenario considera costos más bajos en cuanto a recursos, solar fotovoltaica y de almacenamiento, lo cual conduce a un alto crecimiento de Recursos de Energía Distribuida (Distributed Energy Resources o "DER" por sus siglas en inglés). Este Escenario también se beneficia de más terreno agrícola disponible para el desarrollo de renovables e incluye un alto porcentaje de control de Sistemas Distribuidos de Baterías de Almacenamiento de Energía ("DBESS", por sus siglas en inglés). Esta combinación de supuestos resulta en la construcción a gran escala de sistemas solares para servicio público. De igual forma, esta Cartera incluye la instalación de unidades de GNL, al igual que baterías y generación utilizando biodiésel. El modelaje de PLEXOS® indicó que, para apoyar esta Cartera de recursos, se requeriría capacidad adicional de transmisión para las conexiones de Carolina hacia San Juan y Ponce ES hacia Caguas.

7. **La Cartera Preliminar G** proporciona el conjunto de recursos de menor costo como resultado de las condiciones descritas en el Escenario 7, el cual presenta un pronóstico de crecimiento base con bajos costos de solar fotovoltaica y almacenamiento, conduciendo a un alto crecimiento de DER. Además, este Escenario considera menos terreno agrícola disponible para el desarrollo de renovables e incluye un alto porcentaje de control de DBESS. Por tanto, en esta Cartera, se construyen recursos adicionales de solar fotovoltaica y baterías más allá de los establecidos en las decisiones fijas. Esta Cartera incluye una alta cantidad de GNL para cumplir con requerimientos de capacidad, mientras que algunas de estas unidades eventualmente se convierten a biodiésel para cumplir con requerimientos del RPS. El modelaje de PLEXOS® indicó que, para apoyar esta Cartera de recursos, se requeriría capacidad adicional de transmisión para las conexiones de Carolina hacia San Juan y Mayagüez hacia Ponce OE.

8. **La Cartera Preliminar H** proporciona el conjunto de recursos de menor costo, el cual resulta de las condiciones descritas en el Escenario 8 que presenta un pronóstico de crecimiento bajo, con altos costos de combustible fósil y una alta meta de eficiencia energética. Esta combinación de supuestos resulta en la instalación de nuevas unidades de GNL y biodiésel. Además, unidades existentes de GNL se convertirían a biodiésel. Del mismo modo, no se añaden recursos de solar fotovoltaica a nivel de servicio público más allá de los proyectos de las decisiones fijas para los Tranches 1 y 2. El modelaje de PLEXOS® indicó que, para apoyar esta Cartera de recursos, se requeriría capacidad adicional de transmisión para las conexiones de Carolina hacia San Juan, Ponce ES hacia Caguas y Ponce OE hacia Arecibo.

9. **La Cartera Preliminar I** provee el conjunto óptimo de recursos que resulta de las condiciones descritas en el Escenario 9, el cual presenta un pronóstico de crecimiento base con costos bajos de solar fotovoltaica y de almacenamiento, conduciendo a un alto crecimiento de DER. Del mismo modo, este escenario considera más terreno agrícola disponible para el desarrollo de proyectos renovables e incluye un alto

porcentaje de control de DBESS. Esta combinación de supuestos resulta en la instalación de varias unidades de GNL y en la construcción de recursos de baterías adicionales. Además, no se añaden recursos de solar fotovoltaica de servicio público más allá de los proyectos ya establecidos en las decisiones fijas para los Tranches 1 y 2. El modelaje de PLEXOS® indicó que, para apoyar esta Cartera de recursos, se requeriría capacidad adicional de transmisión para las conexiones de Carolina hacia San Juan y Mayagüez hacia Ponce OE.

10. **La Cartera Preliminar J** provee el conjunto óptimo de recursos que resulta de las condiciones descritas en el Escenario 10, el cual presenta los mismos supuestos que los incluidos en el Escenario 1, añadiendo una conexión desde la República Dominicana a Puerto Rico utilizando un cable de trasmisión submarino. El Escenario 10 también incluye una planta de generación de ciclo combinado alimentada con biodiesel y energía solar fotovoltaica en la República Dominicana. El cable de transmisión submarino y la generación localizada en la República Dominicana fueron forzadas en el modelo de PLEXOS®, para que cubrieran las necesidades energéticas de Puerto Rico. El modelaje de PLEXOS® indicó que, para apoyar esta Cartera de recursos, se requeriría capacidad adicional de transmisión para las conexiones de Carolina hacia San Juan, Ponce Este hacia Caguas y Ponce OE hacia Arecibo.

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Tables

Figures

List of Acronyms

Acronym	Definition
ASAP	Accelerated Storage Addition Program
BESS	Battery Energy Storage System
CC	Combined Cycle
CHP	Combine Heat and Power
CO_2	Carbon Dioxide
CS	Costa Sur
CT	Combustion Turbine
DBESS	Distributed Battery Energy Storage
DPV	Distributed Photovoltaic
DER	Distributed Energy Resources
DR	Demand Response
EcoElec	EcoEléctrica
EE	Energy Efficiency
EUE	Expected Unserved Energy
FOMB	Financial Oversight and Management Board for Puerto Rico
FO&M	Fixed Operation and Maintenance
GT	Gas turbine
GWh	Gigawatt hour
IRP	Integrated Resource Plan
kV	Kilovolt
kW	Kilowatt
kWh	Kilowatt-hour
LCOE	Levelized Cost of Electricity
LNG	Liquefied Natural Gas

Acronym	Definition
LNG RICE	Liquefied Natural Gas Reciprocating Internal Combustion Engine
LOLE	Loss of Load Expectation
LOLP	Loss of Load Probability
LT	Long-Term
MW	Megawatt
NEM	Net Energy Metering
NERC	North American Electric Reliability Corporation
O&M	Operation and Maintenance
PR100	The Puerto Rico Grid Resilience and Transitions to 100% Renewable Energy Study of the US Department of Energy
PREPA	Puerto Rico Electric Power Authority
PPRP	Preliminary Preferred Resource Plan
PV	Solar Photovoltaic
PVRR	Present Value Revenue Requirement
RPS	Renewable Portfolio Standard
SCADA	Supervisory Control and Data Acquisition
SETPR	Soluciones Energéticas para Transformar a Puerto Rico
SJ	San Juan
SRP	System Remediation Plan
ST	Short-Term
TPAs	Transmission Planning Areas
T&D	Transmission and Distribution
UPV	Utility-Scale Solar PV
VO&M	Variable Operation and Maintenance

1.0 Introduction

This document serves as the Second Interim Filing in accordance with the September 27th, 2024, Motion Requesting Reconsideration of the Resolution and Order Dated August 20th, 2024, and Modification of the IRP Filing Schedule[17] submitted by LUMA, and the subsequent Resolution and Order of October 29th, 2024, [18]issued by the Puerto Rico Energy Bureau ("Energy Bureau") approving the proposed 2025 IRP filing schedule. LUMA submits the Second Interim 2025 IRP Filing with: (i) updated results describing the least cost resource portfolios for scenarios number 1 through 4 previously submitted as part of the First Interim Filing; (ii) input assumptions and results describing the least cost resource portfolios for scenarios number 5 through 10, (iii) flexibility analysis results for the least cost resource portfolios for scenarios number 1 through 6; (iv) summary of LUMA's recommended Preferred Plan; and (v) results from the stakeholder meetings held to share preliminary results and seek feedback prior to the selection of the Preferred Plan.

Over the past several years, a significant amount of work has been undertaken with respect to Puerto Rico's electric grid to improve its reliability and efficiency. LUMA is committed to transforming Puerto Rico's electric grid into one that is more reliable, resilient, cleaner, and cost-effective for all its approximately 1.5 million customers. As operator of the T&D System, LUMA is responsible for developing an Integrated Resource Plan ("IRP") that maps out the transformation of the Island's energy resources over the next two decades. LUMA's goal is to ensure that the 2025 IRP presents a diverse and analytically robust set of future scenarios and resource portfolios to map a sustainable and reliable energy future for Puerto Rico that is responsive to customer needs and Puerto Rico's energy public policy objectives.

The 2025 IRP study complies with the requirements of applicable laws and regulations in effect as of December 2024. The results submitted in the Second Interim Filing are preliminary and subject to change prior to the planned May 16, 2025, filing of the Final IRP Report. The recently passed Act 1-2025 and Act 82-2010, as amended, which amends Act 17- 2019, modifies the existing legal framework and will impact the 2025 IRP results presented in this Second Interim Filing. LUMA will assess the impact of energy public policy changes of the recently enacted Act 1-2025 and determine together with the Energy Bureau whether its implementation will shift the direction of the current 2025 IRP and if and how the current assumptions and inputs must be modified. LUMA believes that it is unlikely that any modifications to the assumptions or any additional resource modeling can be completed in time to be included in the planned May 16, 2025, filing of the Final IRP Report. However, the preliminary results and preliminary preferred resource plan will still provide insight into the effects of the policy changes, and through additional modeling enable a comparison of the impacts the Act 1-2025's modifications to the energy public policy.

[17] See: https://energia.pr.gov/wp-content/uploads/sites/7/2024/09/20240927-AP20230004-Motion-Req-of-Resol.-Aug-20-2024-and-Modification-of-2024-IRP-Filing-Schedule.pdf
[18] See: https://energia.pr.gov/wp-content/uploads/sites/7/2024/10/20241029-AP20230004-Resolution-and-Order.pdf

2.0 Preliminary Assumptions

All the information provided herein regarding Scenarios 1 through 10, and their respective Preliminary Portfolios A through J, was obtained after resolving numerous programming issues through complex and time-consuming processes and workarounds. These solutions allowed LUMA to make the necessary updates to model the scenarios while complying with all legal and administrative mandates

2.1 2025 IRP Fixed Decisions

LUMA has included as fixed decisions of the 2025 IRP analysis a list of conditions with unchangeable aspects applied to all the Scenarios. These include mandated retirements of certain existing generation units and the generation resource projects that have received government approval or are currently in advanced stages of development. In addition, Puerto Rico must comply with an established list of additional planning criteria applied to all 10 Scenarios. LUMA collectively refers to this work in the 2025 IRP as "Fixed Decisions."

2.1.1 Fixed Capacity Additions and Retirements

The following fixed decisions were incorporated into the analysis to ensure consistency and alignment with existing and approved projects.

Fixed Additions:

- Tranche 1: 578.8 MW Utility-Scale Solar "PV" + 350 MW Distributed Battery Energy Storage ("BESS") between 2025 and 2026
- Tranche 2: 66 MW Utility-Scale Solar ("PV") + 60 MW Distributed Battery Energy Storage ("BESS") in 2026
- Accelerated Storage Addition Program ("ASAP") batteries: 360 MW BESS in 2026
- Genera Peaking Units: 186 MW Liquid Natural Gas Reciprocating Internal Combustion ("LNG RICE") and Combustion Turbine ("CT") in 2027
- Genera Batteries: 430 MW BESS in 2026
- PREPA Hydroelectric 67 MW in 2026
- Thermal Generation 454 MW LNG in 2028

Fixed Retirements:

- Gas Turbine ("GT") 1, 2, 11, 19, 20, 21 and 22 Peaking Units: 147 MW Diesel in 2027
- AES 1 and AES 2: 454 MW Coal in 2028[19]

These Fixed decisions were made prior to recently introduced energy public policy changes that will shift the direction of the 2025 IRP. The Energy Bureau indicated in the March 19 R&O[20] that: "[t]he IRP is developed using enacted policy as a guide to make assumptions and future projections. If there are policy changes, the IRP must be modified to reflect these changes. House Bill 267 has been enacted into law

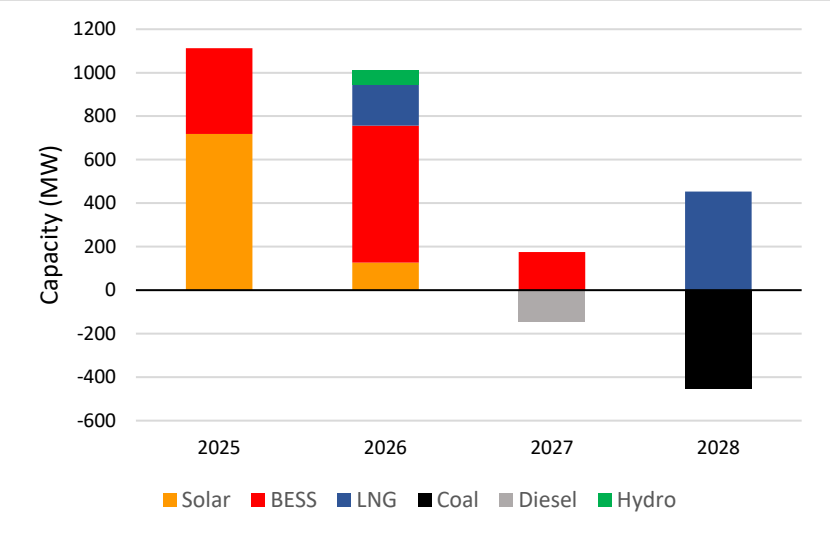
[19] AES 1 and AES 2 retirements are based on the requirements of Act 17- 2019 that mandated the phase-out of coal-fired power generation by 2028. The recently enacted Act 1- 2025 extends the phase-out of coal fired generation to on or before December 31, 2032.

[20] The Energy Bureau issued on March 19, 2025, a Resolution and Order of Docket Number NEPR-MI-2025-0001 located at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001

("Act 1-2025"), amending Puerto Rico's Public Energy Policy Act ("Act 17-2019") and the Energy Diversification Act, as amended ("Act 82-2010"). Act 1-2025 extends the lawful use of coal -based power generation, until 2032, allowing the AES[21] power plant in Guayama to continue operations. It also adjusts the island's energy transition goals to reflect current energy conditions and ensure system reliability. Additionally, it eliminates the interim renewable energy targets of 40% by 2025 and 60% by 2040, in Act 17-2019 and the interim goals for Renewable Portfolio Standards in Act 82-2010, while maintaining the goal of achieving 100% renewable energy by 2050." Based on the new energy public policy changes, LUMA will assess, alongside the Energy Bureau, Act 1-2025 requirements to submit and determine the adequate process to incorporate into the 2025 IRP analysis[22].

Figure 1 below shows the fixed capacity additions and retirements incorporated into the model of Scenarios 1 to 10 before the recently approved Act 1-2025. The capacity additions and retirements are expected to change once then new energy public policy changes are incorporated into the model.

Figure 1: Fixed Decisions Capacity



2.1.2 Additional Planning Criteria and Outputs for Multiple Categories

LUMA has established a list of planning criteria and outputs for multiple categories in addition to the Fixed Decisions in section 2.1.1 that are applied to all scenarios. These were created with the input of stakeholders who participated in the Solutions for the Energy Transformation of Puerto Rico ("SETPR") meetings held around the Island.

The additional planning criteria include, among others:

- Attain the Renewable Portfolio Standard requirements of Act 82-2010, as amended, per Section 2.03(H)(2)(a)(ix) of Regulation 9021

[21] AES Puerto Rico, Inc. ("AES")
[22] Act 1- 2025 modifies the current legal framework and impact the results of all Scenarios.

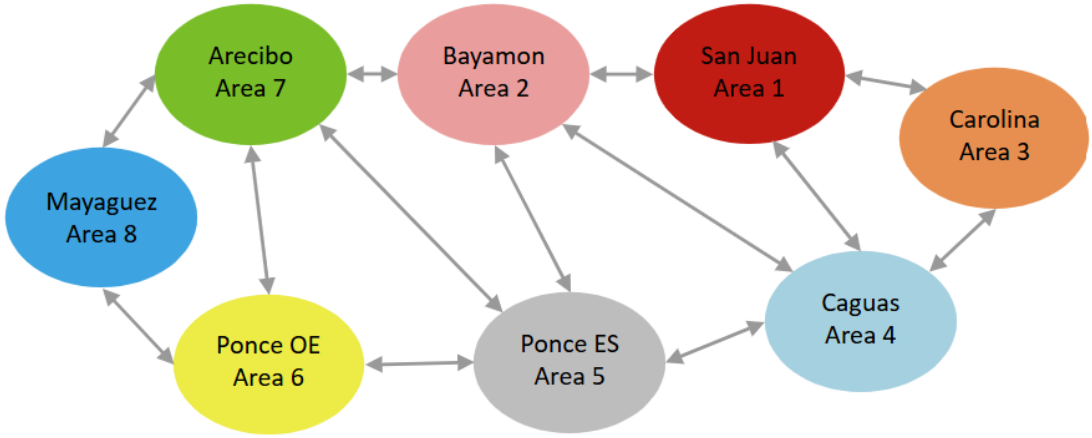
- Improve Loss of Load Expectation ("LOLE") to attain an industry-standard performance for Puerto Rico of 0.1 days/year (equivalent to 2.4 hrs./year) within the 2025 to 2044 IRP planning horizon if possible
- Minimize Expected Unserved Energy ("EUE")[23]
- Improve the geographic and technological diversity of energy resources
- Retire the existing heavy fuel-fired units as soon as practical

Results reported in this filing include multiple categories including year-by-year values for the following:

- Capacity additions (generation and transmission) and retirements
- Emissions of Carbon Dioxide ("CO_2")
- Expected Unserved Energy ("EUE")
- Fuel diversity and energy production by source
- Renewable Portfolio Standard ("RPS") compliance
- System capacity balance
- System costs measured in terms of the Present Value Revenue Requirements ("PVRR")

It is important to note that all Scenarios have the same 8 Transmission and Distribution Planning Areas ("TPAs") and start with the same 13 transmission links between the planning areas as shown in Figure 2 graph below. Additions to the 13-transmission links were evaluated during the expansion planning process, and were added for some of the portfolios, as detailed in the portfolio descriptions.

Figure 2: Transmission and Distribution Planning Areas



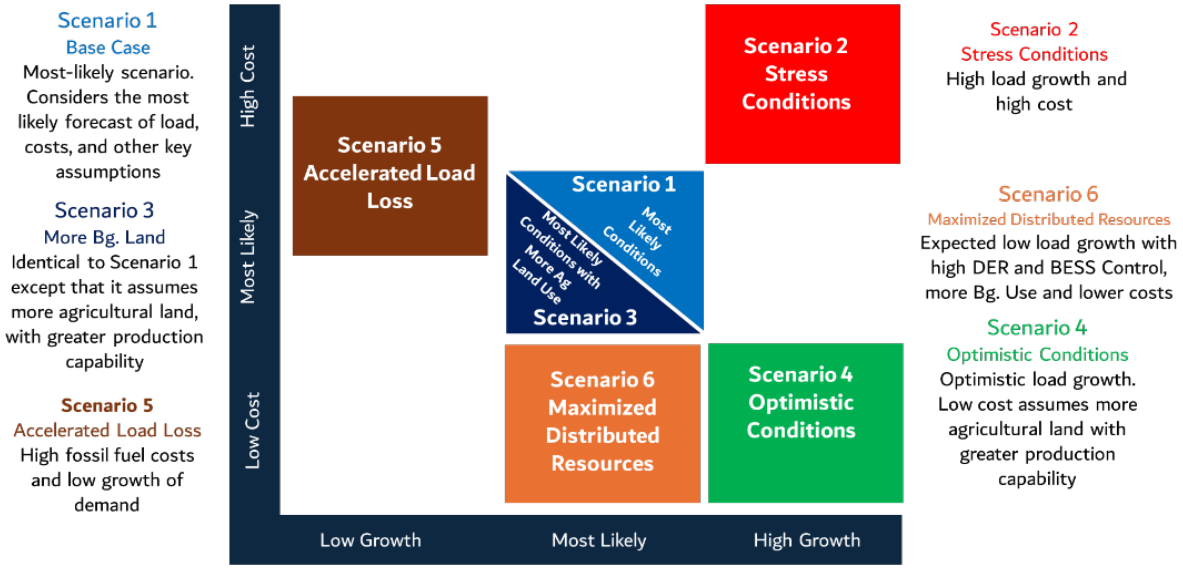
[23] EUE: The summation of the expected number of megawatt (MW) hours of load that will not be served in a specific time interval because of demand exceeding the available generation capacity. This energy-centric measure considers the frequency, magnitude and duration for all hours of the period. See page 44 of Resource Adequacy Study at https://energia.pr.gov/wp-content/uploads/sites/7/2023/12/20231220-AP20230004-Motion-Submitting-Final-Version-of-Resource-Adequacy-Analysis-Report.pdf

3.0 Preliminary Preferred Resource Plan

The Preliminary Preferred Resource Plan ("PPRP") proposed in this Second Interim Filing was selected from Portfolios A through F resulting from the Core Scenarios 1 through 6. As previously informed by LUMA in the Motion Submitting Revised 2025 IRP Scenarios and Characteristics, filed on March 11, 2024, the six Core Scenarios "provide sufficient coverage of possible characteristics to enable LUMA to execute a comprehensive portfolio analysis." [24]

Figure 3 depicts a graphical representation summarizing the cost and load growth characteristics of Scenarios 1 through 6.

Figure 3: Scenarios 1-6 Load Growth and Characteristics



Each of the 6 core scenarios were used to define 6 corresponding Core Portfolios which were optimized for the conditions described by each scenario. The designation assigned to the resulting optimized portfolios are shown in Table 3.

[24] Find at: https://energia.pr.gov/wp-content/uploads/sites/7/2024/03/20240311-AP20230004-Motion-Submitting-Revised-2024-Integrated-Resource-Plan-Scenarios-and-Characteristics.pdf

Table 3: Designation of Core Scenarios Resulting in the Corresponding Optimized Core Portfolios

Core Scenarios	Optimized Core Portfolios
Scenario 1 – Most Likely	Portfolio A
Scenario 2 - Stress	Portfolio B
Scenario 3 – More Ag Land	Portfolio C
Scenario 4 – Optimistic Growth	Portfolio D
Scenario 5 – Accelerated Load Loss	Portfolio E
Scenario 6 – Max DBESS and High EE	Portfolio F

To select the potential PPRP, a process called Flexibility Analysis is performed by testing each of the six Core Portfolios (A to F) against each of the six Core Scenarios (1 to 6). The Flexibility Analysis assessed the ability of each Portfolio to adapt and perform to the range of potential future conditions of the core scenarios, resulting in a matrix of 36 combinations.

Each of the core portfolios were then assessed against the objectives and performance indicators included in the IRP Scorecard which was created with the input of stakeholders that participated in the Solutions for the Energy Transformation of Puerto Rico ("SETPR") meetings held around the Island. The performance indicators incorporated the results from the Flexibility Analysis described above, the Present Value Revenue Requirement ("PVRR"), and other performance indicators are provided in Section 6.0.

The potential PPRP was selected based on IRP Scorecard results, with PVRR providing the primary selection criteria, together with the requirement to reliably meet the load. Consequently, the selected PPRP is **Portfolio E,** resulting from Scenario 5, under the conditions of **Scenario 1,** as it is the most cost-effective plan to meet Puerto Rico's energy needs. [25]

3.1.1 Preliminary Preferred Resource Plan – System Capacity Balance, Capacity Additions, and Retirements

Portfolio E under the conditions of Scenario 1 was selected as the potential PPRP. This section presents the resource additions and retirements that resulted in the PPRP. It also includes a capacity balance that compares the total installed resources and the total firm resources against the projected peak load for each year in the planning horizon.

Table 4 presents the Preliminary Preferred Resource Plan year-by-year resource balances from 2025 to 2044. For each year shown, the total installed resource figure reflects the total MW of installed resources, regardless of type. These resources include conventional generation, renewable generation, BESS, distributed storage under utility control, distributed solar export to the grid, and the capacity impact of Demand Response ("DR") programs. Also shown in this table are the firm resources available each year. Firm resources are less than the total installed resources due to reduced capacity values for intermittent renewable generation (wind, solar, and hydro) and energy storage resources, as well as for some existing and unreliable generating units with high outage rates.

[25] https://energia.pr.gov/wp-content/uploads/sites/7/2025/03/20250319-MI202500001-Resolution-and-Order.pdf

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Table 5 and Table 6 present the capacity of energy resource additions and retirements that occur under the Preliminary Preferred Resource Portfolio. Combined, the information on those tables shows significant activity with additions and retirements over the planning period. The ramping primarily drives this activity up of renewable energy resources to meet the RPS targets[26] reduction of EUE levels and systematic retirements of the legacy fossil fueled generation. Two (2) 230 kV transmission lines were added in the PPRP as a component of the optimal expansion plan. The two (2) transmission lines are added in the year 2030. The lines added are a Carolina-San Juan 230 kV line and a Mayagüez-Ponce OE 230 kV line.

Table 4: Preliminary Preferred Resource Plan Capacity Balance

Measure MW	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Peak Demand	2875	2784	2741	2693	2684	2654	2632	2608	2599	2596	2593	2553	2532	2512	2491	2489	2472	2443	2430	2419
Total Res.* MW	5075	6816	6905	6941	6985	7303	7371	7681	7141	6846	7118	6690	6702	6539	7190	6704	6849	7018	7198	7345
Firm Res. MW	3451	3977	4018	3903	3929	4548	4555	4871	4519	4200	4497	4069	4102	3901	4574	4038	4215	4222	4326	4483
Firm Res. Above Peak Demand,	576	1193	1277	1210	1245	1894	1923	2263	1920	1604	1904	1516	1570	1389	2083	1549	1743	1779	1896	2064
Firm Capacity % Above Peak	20.0	42.8	46.6	44.9	46.4	71.4	73.0	86.7	73.9	61.8	73.4	59.3	62.0	55.3	83.6	62.2	70.5	72.8	78	85.4

*Resources.

[26] The RPS targets in this interim filing are based on Act 17- 2019 and do not include the amendments to the RPS targets included Act 1-2025. As indicated by the Energy Bureau on March 19, 2025, Resolution and Order of Docket Number NEPR-MI-2025-0001 at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001. Act 1-2025 will modify the current legal framework and impact the RPS results.

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Table 5: Capacity Addition Summary (MW) for Preliminary Preferred Resource Plan

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
CHP	47	24	13	15	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
DPV	131	39	14	17	21	25	30	36	39	38	32	32	38	46	54	63	72	81	89	97	**997**
DBESS- Controlled	5	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	**29**
DR	-	-	-	3	14	22	36	31	21	16	13	19	27	41	55	59	74	90	90	48	**658**
Hydro	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**67**
New Genera Units	-	430	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**616**
Thermal Gen.	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**
Tranche 1 & 2 BESS	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**410**
Tranche 1 & 2 Solar	35	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**620**
ASAP BESS, Phase 1	-	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**185**
Biodiesel Conversions	-	-	-	-	-	111	210	454	-	-	-	-	-	-	-	-	-	-	-	551	**1,326**
BESS, 4 HR	-	-	20		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**20**
New Gas Gen.*	-	-	-	-	-	551	-	244	-	-	226	-	-	-	540	-	-	-	-	-	**1561**
Total	**218**	**1,742**	**235**	**490**	**44**	**711**	**277**	**766**	**61**	**54**	**273**	**52**	**66**	**88**	**651**	**123**	**147**	**172**	**180**	**698**	**7,048**

*Includes LNG SJ (San Juan), CS (Costa Sur) and Trucked.

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Table 6: Preliminary Preferred Resource Plan Resource Capacity Retirements (MW)

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
Coal	-	-	-	(454)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(454)**
Diesel	-	-	(147)	-	-	-	-	-	-	(100)	-	(100)	-	-	-	(340)	-	-	-	-	**(687)**
Fuel Oil	-	-	-	-	-	(300)	-	-	(580)	(250)	-	-	-	-	-	-	-	-	-	-	**(1130)**
Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2.4)	(2.4)	-	-	**(5)**
LNG Retirements*	-	-	-	-	-	(93)	(210)	(454)	-	-	-	(350)	-	(250)	-	(270)	-	-	-	(551)	**(2,177)**
UPV	-	-	-	-	-	-	-	(2)	(20)	-	-	(30)	(55)	-	-	-	-	-	-	-	**(107)**
Total			**(147)**	**(454)**	**-**	**(393)**	**(210)**	**(456)**	**(600)**	**(350)**	**-**	**(480)**	**(55)**	**(250)**	**-**	**(609)**	**(2)**	**(2)**	**-**	**(551)**	**(4560)**

Includes LNG SJ, CS, EcoElec (EcoEléctrica) and Trucked. These retirements include conversions to biodiesel. Units converted to biodiesel are listed in the ***Addition Summary* table under the **Biodiesel Conversions** category.

3.1.2 Preliminary Preferred Resource Plan – Energy Production and Resource by Fuel

Figure 4 provides a year-by-year source of energy information and Figure 5 shows the source of energy for selected years from 2025 to 2044 for the PPRP.

Figure 4: Preferred Resource Portfolio- Energy Production by Fuel or Resource for All Years (GWh)

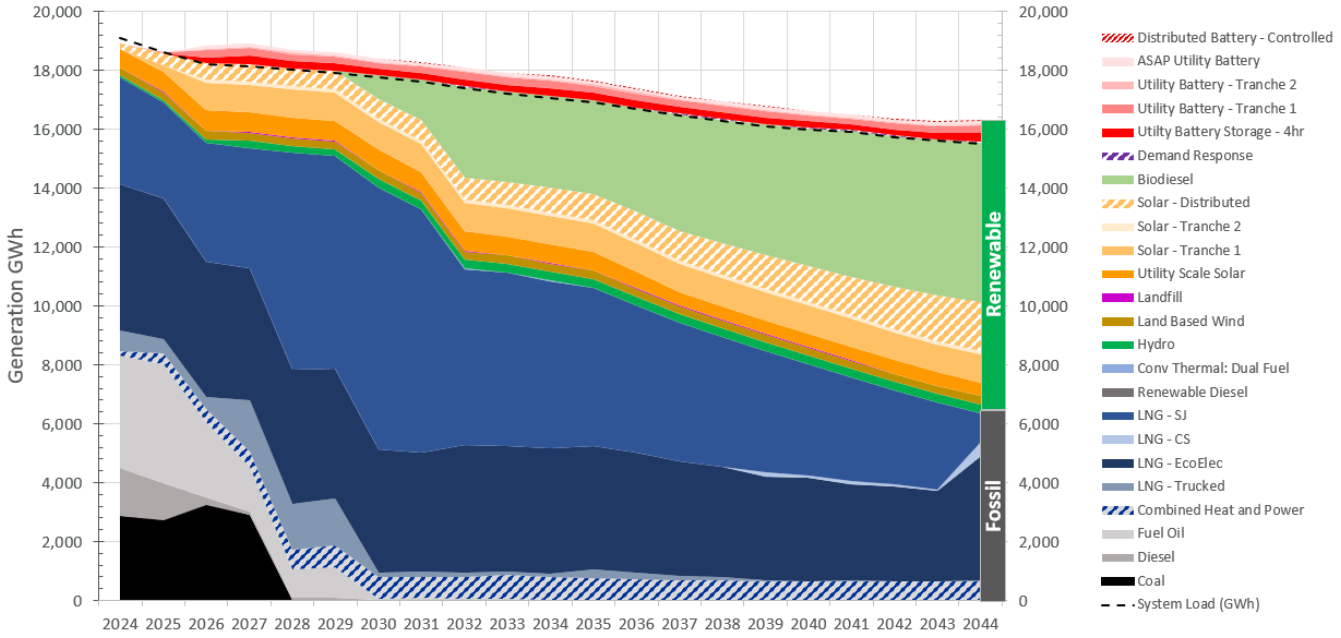

Figure 5: Preferred Resource Portfolio- Energy Production by Fuel or Resource for Selected Years (GWh)

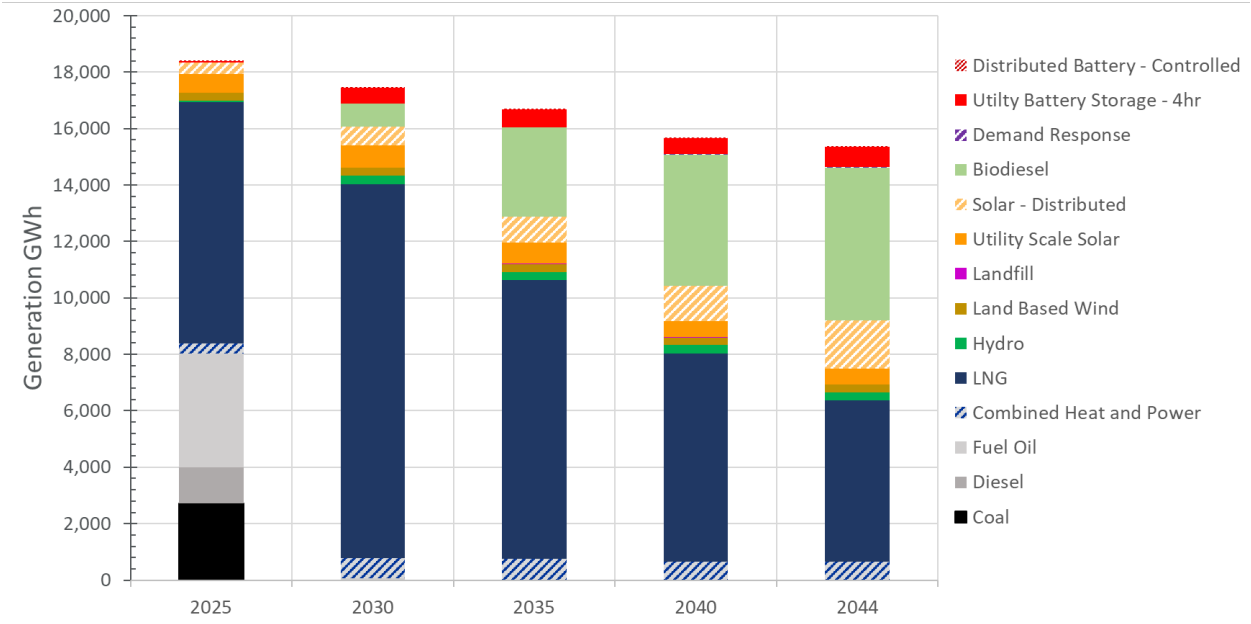

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Table 7 provides additional details on the source of energy production by fuel type and resource. This table also shows the contribution of various renewable generation sources to the overall energy production mix.

Table 7: Preferred Resource Portfolio - Energy Production by Fuel or Resource (GWh)

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Coal	2729	3252	2903	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diesel	1267	237	116	102	83	9	11	26	6	4	7	1	1	1	1	1	1	-	1	-
Fuel Oil	4036	2569	1520	941	1048	45	74	17	55	-	-	-	-	-	-	-	-	-	-	-
LNG - EcoElec	4783	4572	4477	4591	4412	4207	4037	4337	4265	4258	4200	4069	3889	3736	3524	3498	3280	3219	3075	4202
LNG-SJ	3273	4055	4082	7339	7211	8888	8283	5969	5877	5704	5368	4973	4679	4412	4118	3779	3539	3194	2942	972
LNG-CS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	128	83	88	57	39	479
Hydro	67	116	243	244	243	301	300	301	300	300	300	301	300	300	300	301	300	300	300	301
UPV	658	677	677	679	676	677	676	675	633	633	632	576	459	459	458	459	459	458	459	460
Land Based Wind	262	270	269	271	269	269	269	271	269	269	270	270	269	270	270	270	269	269	269	271
Landfill	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	11	-	-	-
LNG – Trucked	493	441	1756	1549	1573	156	180	160	114	99	279	231	143	110	25	5	13	3	5	47
Biodiesel	0	0	0	0	0	805	1360	3089	3050	3125	3175	3537	3987	4217	4457	4667	4957	5115	5279	5406
Solar - Tranche 1	235	944	946	948	945	945	946	947	945	946	945	948	944	944	945	948	946	944	945	947
Solar - Tranche 2	-	111	111	111	111	111	111	111	111	111	110	111	111	111	111	111	111	111	111	111
CHP	347	426	511	667	751	730	698	742	803	788	757	727	699	677	661	653	654	654	652	653
DPV	406	545	579	602	628	661	704	753	805	862	915	961	1009	1070	1146	1232	1327	1438	1565	1701
DR	0	0	0	0	0	2	2	4	0	6	2	6	8	10	10	14	16	19	25	27
Conv. Thermal: Dual Fuel	0	0	0	0	0	0	0	26	18	19	10	10	8	6	2	2	3	2	2	0
BESS- 4 HR	0	189	278	261	266	223	232	256	244	262	248	248	227	233	228	224	204	213	220	277
BESS- Tranche 1	45	249	257	228	232	213	225	237	241	250	239	236	224	227	223	209	196	210	221	271
BESS- Tranche 2	0	55	57	48	52	36	38	43	42	45	46	44	39	38	38	33	30	33	34	43
ASAP BESS	0	100	96	84	90	88	94	106	103	111	105	101	96	97	94	90	87	91	92	114
DBESS	7	9	11	13	15	18	18	20	21	22	22	24	26	28	29	31	31	34	36	42

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3.1.3 Preliminary Preferred Resource Plan – RPS Compliance and Emissions

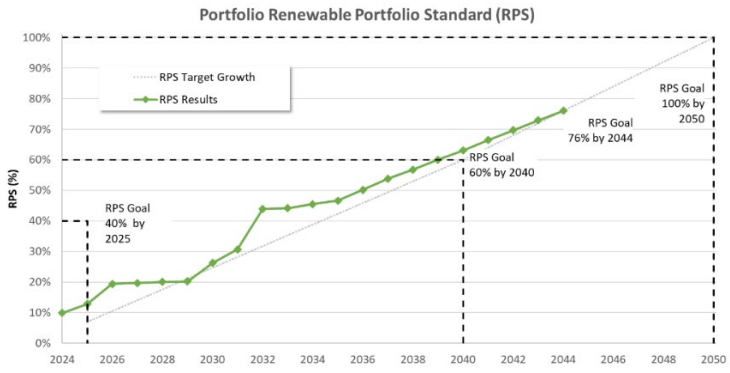
The results shown in the Second Interim Filing were based on the previous RPS targets of 40% by 2025, 60% by 2040, and 100% by 2050 as required by Act 17- 2019 prior to the amendments put into effect by the recently enacted Act 1 of 2025[27]. The RPS level in 2024 was below 10% making it unrealistic to reach the previously required RPS target for 2025. LUMA's goal for the 2025 IRP is to aggressively increase renewables to attain the 40% RPS target as soon as practical, then meet the 60% RPS by 2040, and then attain 76% RPS by 2044, which places the system on pace to achieve the 100% RPS by 2050, while reflecting realistic timeframes for implementing new options that will help meet the RPS targets.

Figure 6 shows the RPS results for the Preliminary Preferred Resource Plan. The green line shows the year-by-year RPS percentage achieved for the generation portfolio. The results achieved are compared to a theoretical ramp rate in the grey dotted line that allows the overall system to quickly ramp up from the low actual levels of renewable generation achieved in 2024 to meet the targeted 60% mark by 2040. In the Preliminary Preferred Resource Plan, the RPS levels represented by the grey line were adopted as a "soft" target. Results were then reviewed to determine if the "soft" target was met or exceeded during the planning period. A "soft" target is referred to a non-mandatory goal that the model aims to achieve, but which can be adjusted if necessary. Unlike "hard" constraints, to which the model must strictly adhere, "soft" targets offer flexibility in optimization.

As shown in Figure 6, the Preliminary Preferred Resource Plan expansion plan complies with the "soft" RPS targeted ramp rate during the years leading up to 2040 and exceeds the 60 percent mandate in 2040. Thereafter, the RPS percentage continues to increase through 2044 leaving the system in a position to meet the 2050 objective of attaining the 100% RPS level. Achieving these aggressive RPS targets helps explain the many resource additions to the system that are reflected in the resource additions and retirements tables.

In addition to this, the Preliminary Preferred Resource Plan's aggressive shift toward meeting RPS targets and away from fossil fuel generation results in a significant reduction of CO_2 emissions over the planning period, as showcased in Figure 8.

Figure 6: Preferred Resource Plan RPS Compliance



[27] Act 1-2025 modifies the current legal framework and impact the RPS results.

Table 8: Preferred Resource Plan RPS Compliance and Emissions

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
RPS Soft Target, %	7%	11%	14%	18%	21%	25%	28%	32%	35%	39%	42%	46%	49%	53%	56%	60%	64%	68%	72%	76%
RPS Results, %	13%	19%	20%	20%	20%	26%	31%	44%	44%	45%	47%	50%	54%	57%	60%	63%	66%	70%	73%	76%
Difference	6%	8%	6%	2%	-1%	1%	3%	12%	9%	6%	5%	4%	5%	4%	4%	3%	2%	2%	1%	0%
RPS Target, GWh	1073	1560	2056	2551	3044	3501	3955	4376	4793	5211	5612	5963	6312	6651	6977	7304	7702	8009	8327	8637
RPS Results, GWh	1972	2868	2880	2900	2904	3501	3950	5320	5332	5485	5613	5953	6313	6628	6967	7302	7701	7997	8327	8640
Difference, GWh	899	1308	824	349	-140	0	-5	944	539	274	1	-10	1	-23	-10	-2	-1	-12	0	3
CO_2 Emissions, Thousands of Tons	13109	10740	9353	6932	6717	6032	5802	5780	5597	5437	5351	5158	4988	4826	4672	4501	4389	4209	4047	4224

3.1.4 Preliminary Preferred Resource Portfolio – Expected Unserved Energy

An important component of the expansion plan under consideration in the 2025 IRP is the ability of the portfolio to improve system reliability. An unreliable power system results in EUE and consequently in a large number of events that could disrupt power supply. Table 9 lists the EUE amounts and the EUE events for the 2025 to 2044 planning period.

Another important indicator of system reliability is the LOLE. LUMA has defined the LOLE target as an indicator to define a progressive improvement in reliability targeted to achieve an industry-standard level of LOLE performance of 0.1 days / year by 2038, which is equivalent to no more than 2.4 hours / year (2.4 hours equals 0.1 days) of EUE per year. Table 9 also shows the target improvement in EUE hours from 2030 onward.

Table 9: Preferred Resource Portfolio Expected Unserved Energy

Target/ Results	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
LOLE Target Hours	-	-	-	-	-	60.6	40.4	26.9	18.0	12.0	8.0	5.3	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Results EUE Hours	313	107	27	40	33	-	-	28	-	-	3	-	-	-	-	-	-	-	-	-
Results EUE, GWh	48.0	20.1	3.7	8.3	12.5	-	-	4.2	-	-	0.3	-	-	-	-	-	-	-	-	-
Results Max EUE, MW	886.7	694.7	403.5	506.0	980.4	-	-	570.9	-	-	170.5	-	-	-	-	-	-	-	-	-
Results EUE Events	18	1	3	4	3	1	0	0	1	0	0	0	0	0	0	0	3	0	0	0

3.1.5 Preliminary Preferred Resource Plan – System Costs and PVRR

Minimizing system costs is another important consideration for the recommended expansion planning scenario.

Table 10 shows the cost components of the PPRP throughout each of the years of the planning period and the total PVRR needed to recover the costs of PPRP.

Table 10 includes the production costs of the system each year, including fuel costs, fixed O&M costs, variable O&M costs, and costs associated with unit starts and shutdowns. Also listed are the fixed costs associated with the program costs for demand response programs, distributed BESS programs, and other unit additions. For each year, the total system cost in Table 10 equals the sum of the production and fixed costs.

Table 10: Preferred Resource Portfolio System Costs and PVRR

Cost ($M)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Fuel Production Cost	2053	1492	1359	1294	1296	1212	1278	1461	1483	1510	1544	1584	1670	1728	1767	1817	1906	1942	1987	2042
VO&M Production Cost	117	104	116	104	103	93	96	93	92	91	92	90	92	94	96	97	101	100	102	95
FO&M Production Cost	707	851	857	711	718	724	733	747	715	693	707	681	665	653	677	627	634	638	647	658
Start & Shutdown Production Cost	19	9	6	5	5	2	2	3	3	3	3	3	3	3	3	3	3	3	4	8
Variable Production Costs	2189	1605	1481	1403	1404	1307	1376	1556	1577	1604	1639	1677	1766	1824	1866	1916	2011	2046	2093	2145
Total Production Cost	2896	2456	2337	2113	2122	2031	2109	2304	2292	2296	2346	2358	2430	2477	2543	2543	2645	2684	2740	2803
DR Programs Lev. Cost	0	0	0	0	2	4	8	11	14	16	19	24	31	42	57	72	91	115	138	150
DBESS Program Cost	1	2	2	2	3	3	4	4	4	5	5	5	6	7	7	8	8	9	10	11
Additions Annualized Cap. Costs	10	297	431	506	561	703	710	757	759	762	806	809	812	815	940	943	946	949	952	955
Additions Capital Costs	0	0	93	0	0	1357	36	427	0	0	398	0	0	0	1171	0	0	0	0	0
Total System Costs	3034	2862	2838	2696	2741	2800	2889	3137	3132	3114	3212	3197	3280	3341	3547	3567	3913	3789	3865	3942
PVRR	2601	4873	6959	8794	10521	12155	13716	15285	16736	18071	19347	20522	21639	22692	23727	24691	25670	26548	27378	28161
Total Production Cost, $/kWh	0.16	0.14	0.13	0.12	0.12	0.11	0.12	0.13	0.13	0.13	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18
Total System Cost, $/kWh*	0.16	0.16	0.16	0.15	0.15	0.16	0.16	0.18	0.18	0.18	0.19	0.19	0.20	0.21	0.22	0.22	0.25	0.24	0.25	0.25

*Total system costs are not equivalent to tariffs.

4.0 Resource Planning Assumptions and Preliminary Results

4.1 Updated Preliminary Portfolio A Resulting from Scenario 1

4.1.1 Updated Preliminary Portfolio A Resulting from Scenario 1 – System Capacity Balance, Capacity Additions, and Retirements

The resource additions and retirements for the Updated Preliminary Portfolio A are presented in this section. Also presented is a capacity balance, which compares the total installed resources and the total firm resources to the projected peak load for each year in the planning horizon.

Table 11 presents the Updated Preliminary Portfolio A, year-by-year resource balances from 2025 to 2044. For each year shown, the value of the total resources reflects the total MW of installed resources regardless of type. These resources include conventional generation, renewable generation, BESS, distributed storage under utility control, distributed solar export to the grid, and the capacity impact of demand response programs. Also shown in this table are the firm resources available each year. Firm resources are less than the total installed resources due to reduced capacity values for intermittent renewable generation (wind, solar, and hydro) and energy storage resources.

Table 12 and Table 13 present the capacity of energy resource additions and retirements that occur under the Updated Preliminary Portfolio A. Combined, the information of the tables shows significant activity with numerous additions and retirements over the planning period. The changes in the resource portfolio are primarily driven by the addition of renewable energy resources and the systematic retirements of the legacy fossil-fueled resources to meet the RPS targets and improve the EUE performance.

Table 11: Updated Preliminary Portfolio A Resulting from Scenario 1 Capacity Balance

Measure MW	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Peak Demand	2875	2784	2741	2693	2684	2654	2632	2608	2599	2596	2593	2553	2532	2512	2491	2489	2472	2443	2430	2419
Total Res.*	5075	6816	6905	6941	6985	7487	7575	7481	7082	7036	7082	6654	6666	6753	7172	7286	8110	6558	6721	6868
Firm Res.	3451	3977	4018	3903	3929	4432	4912	4796	4477	4373	4461	4033	4066	4115	4556	4500	5379	3779	3866	4006
Firm Res. Above Peak Demand,	576	1193	1277	1210	1245	1778	2280	2188	1878	1777	1868	1480	1534	1603	2065	2011	2907	1336	1436	1587
Firm Capacity % Above Peak	20.0	42.8	46.6	44.9	46.4	28.8	73.1	55.6	66.0	68.5	61.9	57.9	60.6	63.8	64.3	80.8	76.5	54.7	59.1	59.1

*Resources.

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Table 12: Capacity Summary (MW) for Updated Preliminary Portfolio A Resulting from Scenario 1

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
CHP	47	24	13	15	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
DPV	131	39	14	17	21	25	30	36	39	38	32	32	38	46	54	63	72	81	89	97	**997**
DBESS-Controlled	5	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	**29**
DR	0	0	0	3	14	22	36	31	21	16	13	19	27	41	55	59	74	90	90	48	**658**
Hydro	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**67**
New Genera Units (LNG, BESS)	-	430	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**616**
Thermal Gen.	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**
Tranche 1 & 2 BESS	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**410**
Tranche 1 & 2 Solar	35	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**620**
ASAP BESS, Phase 1	-	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**185**
Biodiesel Conversions	-	-	-	-	-	463	-	-	-	-	-	-	17	67	36	-	210	-	-	551	**1344**
BESS, 4 HR	-	-	20		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**20**
New Gas Gen.**	-	-	-	-	-	453	551	-	-	-	-	-	-	-	522	-	679	-	-	-	**2204**
Total	**218**	**1,742**	**235**	**490**	**44**	**965**	**618**	**68**	**61**	**54**	**46**	**52**	**83**	**155**	**669**	**123**	**1,036**	**172**	**180**	**698**	**7,709**

*Includes LNG SJ, CS and Trucked.

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Table 13: Updated Preliminary Portfolio A Resulting from Scenario 1 Resource Capacity Retirements (MW)

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
Coal	-	-	-	(454)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(454)**
Diesel	-	-	(147)	-	-	-	-	-	-	(100)	-	(100)	-	-	-	-	-	(340)	-	-	**(687)**
Fuel Oil	-	-	-	-	-	-	(530)	(160)	(440)		-	-	-	-	-	-	-	-	-	-	**(1130)**
Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2.4)	(2.4)	-	-	**(5)**
LNG Retirements*	-	-	-	-	-	(463)	-	-	-	-	-	(350)	(17)	(67)	(250)	(9)	(210)	(1382)	(17)	(551)	**(3315)**
UPV	-	-	-	-	-	-	-	(2)	(20)	-	-	(30)	(55)	-	-	-	-	-	-	-	**(107)**
Total	-	-	**(147)**	**(454)**	-	**(463)**	**(530)**	**(162)**	**(460)**	**(100)**	-	**(480)**	**(72)**	**(67)**	**(250)**	**(9)**	**(212)**	**(1724)**	**(17)**	**(551)**	**(5698)**

*Include LNG SJ, CS, EcoElec and Trucked. These retirements include conversions to biodiesel. Units converted to biodiesel are listed in the ***Addition Summary*** table under the **Biodiesel Conversions** category.

4.1.2 Updated Preliminary Portfolio A Resulting from Scenario 1 – Energy Production by Fuel or Resource

Table 14 details on the source of energy production by fuel type and resource. There is notable growth in energy generation by biodiesel contributing to progress toward the RPS target. The table also shows the contribution of various renewable generation sources to the overall energy production mix.

Table 14: Updated Preliminary Portfolio A Resulting from Scenario 1 Energy Production by Fuel or Resource (GWh)

Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Coal	2719	3255	2903	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diesel	1262	241	111	102	81	24	10	30	2	1	8	1	1	1	1	0	0	1	1	3
Fuel Oil	4059	2513	1569	946	1015	133	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LNG - EcoElec	4783	4578	4459	4591	4430	4711	4272	4264	4270	4235	4210	3939	3832	3695	3498	3447	3309	3199	3109	4196
LNG-SJ	3270	4087	4067	7329	7220	4293	6234	5899	5833	5622	5376	5103	4857	4474	4104	3794	3520	3204	2889	914
LNG-CS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	164	114	106	68	66	591
Hydro	66	116	243	243	243	300	300	301	300	300	300	301	300	300	300	301	300	300	300	301
UPV	658	677	677	679	676	677	676	675	633	633	632	576	459	459	458	459	459	458	459	460
Land Based Wind	261	270	269	271	269	269	269	271	269	269	270	270	269	270	270	270	269	269	269	271
Landfill	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	11	-	-	-
LNG – Trucked	493	452	1743	1554	1581	1907	432	414	317	309	266	259	196	111	27	9	4	1	-	-
Biodiesel	-	-	-	-	-	3049	2998	3006	2960	3037	3176	3514	3820	4198	4447	4669	4949	5117	5279	5405
Solar– Tranche 1	235	944	946	948	945	945	946	947	945	946	945	948	944	944	945	948	946	944	945	947
Solar- Tranche 2	-	111	111	111	111	111	111	111	111	111	110	111	111	111	111	111	111	111	111	111
CHP	347	426	511	667	751	730	698	742	803	788	757	727	699	677	661	653	654	654	653	653
DPV	405	545	579	602	628	661	704	753	805	862	915	961	1009	1070	1146	1232	1327	1438	1565	1701
DR	-	-	-	0	0	2	3	4	-	6	4	7	8	10	12	14	15	21	25	27
BESS- 4 HR	-	189	279	263	266	251	232	232	231	249	242	234	226	221	189	214	227	213	220	268
BESS- Tranche 1	45	244	254	227	232	243	213	216	227	230	237	226	220	216	186	206	224	213	224	267
BESS- Tranche 2	-	55	58	49	52	38	40	39	41	41	41	40	39	39	32	34	39	33	34	45
ASAP BESS	-	100	91	84	90	100	98	96	99	100	100	99	97	94	78	94	96	90	96	113
DBESS	7	9	11	13	15	19	19	19	20	22	22	22	25	26	29	30	31	33	36	40

4.1.3 Updated Preliminary Portfolio A Resulting from Scenario 1 – RPS Compliance and Emissions

LUMA applied the same targets to all Scenarios to incrementally attain 76% RPS by 2044, and 100% RPS by 2050 as required by Act 17 of 2019 prior to the amendments of Act 1 of 2025 and the March 19 R&O.[28] The Updated Preliminary Portfolio A results in a significant reduction of CO_2 emissions over the planning period due to its aggressive shift toward RPS targets and away from fossil fuel generation, as showcased in Table15.

Table 15: Updated Preliminary Portfolio A Resulting from Scenario 1 RPS Compliance and Emissions

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
RPS Soft Target, %	7%	11%	14%	18%	21%	25%	28%	32%	35%	39%	42%	46%	49%	53%	56%	60%	64%	68%	72%	76%
RPS Results, %	13%	19%	20%	20%	20%	42%	42%	43%	44%	45%	47%	50%	52%	57%	60%	63%	66%	70%	73%	76%
Difference	6%	8%	6%	2%	-1%	17%	14%	11%	9%	6%	5%	4%	3%	4%	4%	3%	2%	2%	1%	0%
RPS Target, GWh	1073	1560	2056	2551	3044	3501	3955	4376	4793	5211	5612	5963	6312	6651	6977	7304	7702	8009	8327	8637
RPS Results, GWh	1970	2868	2880	2900	2904	5116	5162	5257	5262	5415	5614	5934	6170	6611	6958	7304	7694	8000	8327	8638
Difference, GWh	897	1308	824	349	-140	1615	1207	881	469	204	2	-29	-142	-40	-19	0	-8	-9	0	1
CO_2 Emissions, Thousands of Tons	13107	10726	9356	6933	6713	6796	5970	5779	5614	5460	5352	5140	5043	4886	4715	4560	4396	4213	4050	4230

[28] As indicated by the Energy Bureau on March 19, 2025 Resolution and Order of Docket Number NEPR-MI-2025-0001 at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001. Act 1- 2025 will modify the current legal framework and impact the RPS results among other energy public policy requirements.

4.1.4 Updated Portfolio A Resulting from Scenario 1 – Expected Unserved Energy

An important component of the expansion plan under consideration in the 2025 IRP is the ability of the portfolio to improve system reliability. An unreliable power system results in EUE and consequently in a large number of events that could disrupt power supply onward.

lists the EUE amounts and EUE events for the 2025 to 2044 planning period.

Another important indicator of system reliability is the LOLE. LUMA has defined the LOLE target as an indicator to define a progressive improvement in reliability targeted to achieve an industry-standard level of LOLE performance of 0.1 days / year by 2038, which is equivalent to no more than 2.4 hours / year (2.4 hours equals 0.1 days) of EUE per year. Table 16 also shows the target improvement in EUE hours from 2030 onward.

Table 16: Updated Preliminary Portfolio A Resulting from Scenario 1 Expected Unserved Energy Target and Results

Target/ Results	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
LOLE Target Hours	-	-	-	-	-	60.6	40.4	26.9	18.0	12.0	8.0	5.3	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Results EUE Hours	312	110	29	35	33	-	-	42	-	-	5	-	-	-	-	-	-	-	-	2
Results EUE, GWh	47.7	20.1	3.7	8.3	12.5	-	-	6.8	-	-	0.3	-	-	-	-	-	-	-	-	0
Results Max EUE MW	887	765	518	562	836	-	-	607	-	-	155	-	-	-	-	-	-	-	-	27
Results EUE Events	67	20	8	5	4	0	0	8	0	0	4	0	0	0	0	0	0	0	0	1

4.1.5 Updated Preliminary Portfolio A Resulting from Scenario 1 – System Costs and PVRR

As explained above in Section 3. Preliminary Preferred Resource Plan, minimizing system costs is another important consideration in the 2025 IRP analysis.

Table 17 includes the production costs of the system each year, including fuel costs, fixed O&M costs, variable O&M costs, and costs associated with unit starts and shutdowns. Also listed are the fixed costs associated with the program costs for demand response programs, distributed BESS programs, and other unit additions. For each year, the total system cost in Table 17 equals the sum of the production and the fixed costs. In addition to achieving adopted targets for RPS and system reliability, minimizing cost is a leading consideration for the recommended expansion planning scenario. Table 17 shows the cost components of Updated Preliminary Portfolio A each year during the planning period and the total PVRR needed to recover the Updated Preliminary Portfolio A costs.

Table 17: Updated Preliminary Portfolio A Resulting from Scenario 1 System Costs and PVRR

Cost ($M)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Variable Production Costs	2,190	1,602	1,483	1,403	1,402	1,688	1,534	1,550	1,567	1,600	1,635	1,672	1,749	1,849	1,895	1,962	2,011	2,048	2,093	2,150
Total Production Cost	2,897	2,453	2,339	2,114	2,119	2,422	2,255	2,267	2,264	2,295	2,341	2,351	2,412	2,515	2,570	2,649	2,720	2,666	2,719	2,786
Total System Costs	3,035	2,859	2,840	2,697	2,739	3,144	3,107	3,127	3,131	3,140	3,192	3,175	3,247	3,364	3,566	3,664	4,130	3,913	3,986	4,066
PVRR	2,602	4,872	6,959	8,795	10,520	12,355	14,034	15,598	17,048	18,395	19,663	20,830	21,935	22,996	24,037	25,027	26,061	26,967	27,822	28,630
Total Production Cost, $/kWh*	0.16	0.13	0.13	0.12	0.12	0.14	0.13	0.13	0.13	0.13	0.14	0.14	0.15	0.15	0.16	0.17	0.17	0.17	0.17	0.18
Total System Cost, $/kWh*	0.16	0.16	0.16	0.15	0.15	0.18	0.18	0.18	0.18	0.18	0.19	0.19	0.20	0.21	0.22	0.23	0.26	0.25	0.26	0.26

*Total system costs are not equivalent to tariffs.

4.2 Updated Preliminary Portfolio B Resulting from Scenario 2

4.2.1 Updated Preliminary Portfolio B Resulting from Scenario 2 – System Capacity Balance, Capacity Additions, and Retirements

The resource additions and retirements for the Updated Preliminary Portfolio B are presented in this section. Also presented is a capacity balance, which compares the total installed resources and the total firm resources to the projected peak load for each year in the planning horizon.

Table 18 presents the Updated Preliminary Portfolio B, year-by-year resource balances from 2025 to 2044. For each year shown, the value of the total resources reflects the total MW of installed resources regardless of type. These resources include conventional generation, renewable generation, BESS, distributed storage under utility control, distributed solar export to the grid, and the capacity impact of DR programs. Also shown in this table are the firm resources available each year. Firm resources are less than the total installed resources due to reduced capacity values for intermittent renewable generation (wind, solar, and hydro) and energy storage resources.

Table 19 and Table 20 present the capacity of energy resource additions and retirements that occur under the Updated Preliminary Portfolio B. Combined, the information of the tables shows significant activity with numerous additions and retirements over the planning period. The changes in the resource portfolio are primarily driven by the addition of renewable energy resources and the systematic retirements of the legacy fossil-fueled resources to meet the RPS targets and improve the EUE performance. The changes in the resource portfolio are primarily driven by the addition of renewable energy resources and the systematic retirements of the legacy fossil-fueled resources to meet the RPS targets and improve the EUE performance.

Table 18: Updated Preliminary Portfolio B Resulting from Scenario 2 Capacity Balance

Measure MW	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Peak Demand	3455	3411	3407	3411	3414	3399	3392	3390	3401	3418	3435	3420	3420	3418	3415	3428	3421	3412	3411	3412
Total Res.*	5070	6815	6991	7032	7078	7445	7505	8010	8398	8382	8421	8462	8461	8405	8292	8285	8263	8238	8263	8292
Firm Res.	3448	3973	4061	3946	3971	4424	4465	4919	5284	5303	5321	5396	5429	5403	5270	5288	5273	5256	5264	5277
Firm Res. Above Peak Demand	-7	561	654	535	557	1025	1073	1529	1883	1885	1886	1976	2009	1984	1855	1861	1852	1844	1853	1865
Firm Capacity % Above Peak	-0.2	16.5	19.2	15.7	16.3	30.2	31.6	45.1	55.3	55.1	54.9	57.8	58.8	58.1	54.3	54.3	54.1	54.1	54.3	54.7

*Resources.

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Table 19: Capacity Addition Summary (MW) for Updated Preliminary Portfolio B Resulting from Scenario 2

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
CHP	47	24	13	15	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
DPV	131	44	23	24	24	25	25	26	26	27	27	28	28	29	30	30	31	31	32	33	**674**
DR	0	0	0	3	14	22	36	31	21	16	13	19	27	41	55	59	74	90	90	48	**658**
Hydro	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**67**
New Genera Units (LNG, BESS)	-	430	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**616**
New Solar	-	-	-	-	-	299	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**299**
Thermal Gen.	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**
Tranche 1 & 2 BESS	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**410**
Tranche 1 & 2 Solar	35	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**620**
ASAP BESS, Phase 1	-	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**185**
Biodiesel Conversions	-	-	-	-	-	93	454	-	-	-	-	-	210	-	54	210	-	-	-	-	**1021**
BESS, 4 HR	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**100**
New Gas Gen.*	-	-	-	-	-	551	-	453	453	453	-	226	-	226	-	-	-	-	-	-	**2361**
Total	**213**	**1745**	**323**	**495**	**46**	**990**	**515**	**510**	**499**	**495**	**40**	**273**	**265**	**296**	**139**	**299**	**105**	**121**	**122**	**81**	**7571**

*Includes LNG SJ, CS, EcoElec and Trucked.

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Table 20: Updated Preliminary Portfolio B Resulting from Scenario 2 Resource Capacity Retirements (MW)

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
Coal	-	-	-	(454)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(454)**
Diesel	-	-	(147)	-	-	-	-	-	-	-	-	(200)	-	-	-	(95)	(123)	(123)	-	-	**(687)**
Fuel Oil	-	-	-	-	-	(530)	-	-	(90)	(510)	-	-	-	-	-	-	-	-	-	-	**(1130)**
Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2.4)	(2.4)	-	-	**(5)**
LNG Retirements*	-	-	-	-	-	(93)	(454)	-	-	-	-	-	(210)	(350)	(250)	(210)	-	(20)	(95)	(50)	**(1732)**
UPV	-	-	-	-	-	-	(2)	(4)	(21)	(2)	(2)	(32)	(57)	(1)	(1)	(2)	(2)	(2)	(2)	(2)	**(128)**
Total	-	-	**(147)**	**(454)**	-	**(623)**	**(455)**	**(4)**	**(111)**	**(512)**	**(2)**	**(232)**	**(267)**	**(351)**	**(251)**	**(307)**	**(126)**	**(146)**	**(97)**	**(52)**	**(4136)**

*Includes LNG SJ, EcoElec and Trucked. These retirements include conversions to biodiesel. Units converted to biodiesel are listed in the ***Addition Summary*** table under the **Biodiesel Conversions** category.

4.2.2 Updated Preliminary Portfolio B Resulting from Scenario 2 – Energy Production by Resource and Fuel

The Updated Preliminary Portfolio B Resulting from Scenario 2 resource capacity additions shown in Table 21 provides details on the source of energy production by fuel type and resource.

Table 21: Updated Preliminary Portfolio B Resulting from Scenario 2 Energy Production by Fuel or Resource (GWh)

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Coal	2739	3264	2901	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel	1806	406	230	139	154	60	52	31	3	2	2	3	3	2	1	1	2	1	1	1
Fuel Oil	4204	3273	2496	2006	1935	326	380	57	55	0	0	0	0	0	0	0	0	0	0	0
LNG - EcoElec	5019	4829	4605	4735	4575	4285	4592	4251	4262	4276	4182	4038	4085	3967	3852	3885	3647	3520	3422	3304
LNG-SJ	3611	4348	4348	7658	7642	9795	6605	6822	7006	6712	6336	6091	5577	5494	5158	4787	4501	4170	3837	3574
LNG-CS	0	0	0	0	0	0	0	813	676	753	676	519	471	252	221	118	131	86	83	76
Hydro	67	116	243	244	243	301	301	301	300	300	300	301	301	300	300	301	300	300	301	302
UPV	651	677	677	679	676	1197	1195	1191	1146	1144	1140	1083	961	959	956	956	951	948	946	946
Land Based Wind	260	270	269	271	269	269	269	271	269	269	270	270	269	270	270	270	269	269	269	271
Landfill	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	11	0	0	0
LNG - Trucked	602	552	1862	1666	1756	351	431	104	40	153	147	135	122	45	27	9	11	20	13	4
Biodiesel	0	0	0	0	0	611	3276	3068	2989	3087	3601	4100	4666	5068	5458	5796	6224	6554	6847	7092
Solar - Tranche 1	228	944	946	948	945	945	946	947	945	946	945	948	944	944	945	948	946	944	945	947
Solar - Tranche 2	0	111	111	111	111	111	111	111	111	111	110	111	111	111	111	111	111	111	111	111
CHP	347	426	511	668	751	730	699	742	803	788	757	727	698	677	661	653	655	654	654	653
DPV	293	406	432	450	470	495	527	563	602	644	684	718	754	799	856	920	990	1073	1168	1269
DR	0	0	0	0	0	2	3	4	0	7	1	7	7	3	2	14	16	21	25	20
BESS- 4 HR	-	207	337	328	319	359	379	360	322	311	327	325	314	314	318	330	314	319	333	337
BESS- Tranche 1	38	248	250	238	238	288	299	249	236	238	237	237	241	237	246	278	260	274	282	299
BESS- Tranche 2	-	59	57	50	49	52	57	55	46	50	49	48	46	43	46	47	47	49	50	51
ASAP BESS	-	101	89	88	91	112	114	97	94	97	94	95	93	99	100	111	104	106	111	115

4.2.3 Updated Preliminary Portfolio B Resulting from Scenario 2 – RPS Compliance and Emissions

LUMA applied the same targets to all Scenarios to incrementally attain 76% RPS by 2044, and the 100% RPS by 2050 as required by Act 17 of 2019 prior to the amendments of Act 1 of 2025[29]. The Updated Preliminary Portfolio B results in a significant reduction of CO_2 emissions over the planning period due to its aggressive shift toward RPS targets and away from fossil fuel generation, as showcased in Table 22.

Table 22: Updated Preliminary Portfolio B Resulting from Scenario 2 RPS Compliance and Emissions

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
RPS Soft Target, %	7%	11%	14%	18%	21%	25%	28%	32%	35%	39%	42%	46%	49%	53%	56%	60%	64%	68%	72%	76%
RPS Results, %	12%	18%	18%	18%	18%	26%	43%	42%	42%	43%	47%	50%	53%	57%	60%	63%	67%	70%	73%	76%
Difference	5%	7%	4%	0%	-3%	1%	15%	10%	7%	4%	5%	4%	4%	4%	4%	3%	3%	2%	1%	0%
RPS Target, GWh	1158	1701	2248	2804	3356	3881	4407	4922	5438	5963	6475	6962	7445	7920	8383	8846	9384	9869	10353	10830
RPS Results, GWh	1956	2869	2880	2900	2904	3882	5885	5821	5798	5965	6471	6933	7400	7877	8366	8837	9384	9869	10350	10812
Difference, GWh	798	1168	632	96	-452	1	1478	899	360	2	-4	-29	-45	-43	-17	-9	0	0	-3	-18
CO_2 Emissions, Thousands of Tons	14286	12000	10661	8307	8051	6790	6818	6656	6620	6550	6455	6368	6179	6030	5860	5587	5479	5304	5152	4993

[29] As indicated by the Energy Bureau on March 19, 2025, Resolution and Order of Docket Number NEPR-MI-2025-0001 at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001. Act 1- 2025, will modify the current legal framework and impact the RPS results.

4.2.4 Updated Preliminary Portfolio B Resulting from Scenario 2 – Expected Unserved Energy

As explained above, an important component of the expansion plan under consideration in the 2025 IRP is the ability of the portfolio to improve system reliability. An unreliable power system results in EUE and consequently in a large number of events that could disrupt power supply. Table 23 lists the EUE amounts and EUE events for the 2025 to 2044 planning period.

Another important indicator of system reliability is the LOLE. LUMA has defined the LOLE target as an indicator to define a progressive improvement in reliability targeted to achieve an industry-standard level of LOLE performance of 0.1 days / year by 2038, which is equivalent to no more than 2.4 hours / year (2.4 hours equals 0.1 days) of EUE per year. Table 23 shows the EUE amounts and EUE events for the 2025 to 2044 planning period.

Table 23: Updated Preliminary Portfolio B Resulting from Scenario 2 Expected Unserved Energy Target and Results

Target/ Results	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
LOLE Target Hours	-	-	-	-	-	60.6	40.4	26.9	18.0	12.0	8.0	5.3	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Results EUE Hours	965	545	128	143	64	29	13	12	-	-	-	-	-	-	-	-	-	-	-	-
Results EUE GWh	112.9	61.0	22.1	24.1	16.8	6.3	1.0	0.8	-	-	-	-	-	-	-	-	-	-	-	-
Results Max EUE MW	991.8	1332.4	949.6	782.0	1000.9	500.1	156.3	145.2	-	-	-	-	-	-	-	-	-	-	-	-
Results EUE Events	161	99	26	26	15	4	5	6	0	0	0	0	0	0	0	0	0	0	0	0

4.2.5 Updated Preliminary Portfolio B Resulting from Scenario 2 – System Costs and PVRR

As explained above, minimizing system costs is another important consideration if the 2025 IRP analysis.

includes the production costs of the system each year, including fuel costs, fixed O&M costs, variable O&M costs, and costs associated with unit starts and shutdowns. Also listed are the fixed costs associated with the program costs for demand response programs, distributed BESS programs, and other unit additions. For each year, the total system cost in Table 24 equals the sum of the production and fixed costs. In addition to achieving adopted targets for RPS and system reliability, minimizing cost is a leading consideration for the recommended expansion planning scenario. Table 24 shows the cost components of Updated Preliminary Portfolio B for each year during the planning period and the total PVRR needed to recover the Updated Preliminary Portfolio B costs.

Table 24: Updated Preliminary Portfolio B Resulting from Scenario 2 System Costs and PVRR

Cost ($M)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Variable Production Costs	2426	1850	1742	1676	1681	1448	1728	1742	1796	1854	1954	2075	2173	2281	2358	2424	2563	2651	2743	2830
Total Production Cost	3122	2691	2584	2373	2386	2144	2433	2462	2513	2548	2658	2770	2851	2942	3016	3080	3209	3283	3380	3474
Total System Costs	3259	3096	3177	3048	3096	3068	3365	3499	3657	3771	3886	4024	4119	4280	4392	4479	4853	4762	4879	4986
PVRR	2794	5251	7586	9660	11612	13402	15220	16970	18664	20281	21825	23304	24707	26056	27338	28549	29763	30866	31913	32904
Total Production Cost, $/kWh*	0.16	0.14	0.13	0.12	0.12	0.11	0.13	0.13	0.13	0.13	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19
Total System Cost, $/kWh*	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.18	0.19	0.2	0.2	0.21	0.22	0.23	0.23	0.24	0.26	0.26	0.26	0.27

*Total system costs are not equivalent to tariffs.

4.3 Updated Preliminary Portfolio C Resulting from Scenario 3

4.3.1 Updated Preliminary Portfolio C Resulting from Scenario 3 – System Capacity Balance, Capacity Additions, and Retirements

The resource additions and retirements for the Updated Preliminary Portfolio C are presented in this section. Also presented is a capacity balance, which compares the total installed resources and the total firm resources to the projected peak load for each year in the planning horizon.

Table 25 presents the Updated Preliminary Portfolio C, year-by-year resource balances from 2025 to 2044. For each year shown, the value of the total resources reflects the total MW of installed resources regardless of type. These resources include conventional generation, renewable generation, BESS, distributed storage under utility control, distributed solar export to the grid, and the capacity impact of demand response programs. Also shown in this table are the firm resources available each year. Firm resources are less than the total installed resources due to reduced capacity values for intermittent renewable generation (wind, solar, and hydro) and energy storage resources.

Table 26 and Table 27 present the capacity of energy resource additions and retirements that occur under the Updated Preliminary Portfolio C. Combined, the information of the tables shows significant activity with numerous additions and retirements over the planning period. The changes in the resource portfolio are primarily driven by the addition of renewable energy resources and the systematic retirements of the legacy fossil-fueled resources to meet the RPS targets and improve the EUE performance.

Table 25: Updated Preliminary Portfolio C Resulting from Scenario 3 Capacity Balance

Measure MW	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Peak Demand	2875	2784	2741	2693	2684	2654	2632	2608	2599	2596	2593	2553	2532	2512	2491	2489	2472	2443	2430	2419
Total Res.*	5075	6816	6905	6941	6985	7884	7951	8586	7447	7251	7297	7119	7131	7218	7329	7452	7597	7766	7965	8408
Firm Res.	3451	3977	4018	3903	3929	5129	5170	5776	4892	4559	4700	4445	4478	4527	4713	4660	4743	4844	4966	5449
Firm Res. Above Peak Demand	576	1192	1277	1210	1246	2475	2538	3168	2293	1963	2107	1891	1947	2015	2222	2171	2271	2400	2536	1915
Firm Capacity % Above Peak	20.0	42.8	46.6	44.9	46.4	93.2	96.4	121.5	88.2	75.6	81.3	74.1	76.9	80.2	89.2	87.2	91.9	98.2	104.4	54.2

*Resources.

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Table 26: Capacity Addition Summary (MW) for Updated Preliminary Portfolio C Resulting from Scenario 3

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
CHP	47	24	13	15	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
DPV	131	39	14	17	21	25	30	36	39	38	32	32	38	46	54	63	72	81	89	97	**997**
DBESS- Controlled	5	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	**89**
DR	0	0	0	3	14	22	36	31	21	16	13	19	27	41	55	59	74	90	90	48	**658**
Hydro	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**67**
New Genera Units (LNG, BESS)	-	430	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**616**
Thermal Gen.	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**
Tranche 1 & 2 BESS	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**410**
Tranche 1 & 2 Solar	35	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**620**
ASAP BESS, Phase 1	-	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**185**
Biodiesel Conversions	-	-	-	-	-	454	-	-	-	-	-	-	18	111	-	226	-	551	-	-	**1,360**
BESS, 4 HR	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**20**
New Gas Gen.*	-	-	-	-	-	1150	-	569	-	-	-	-	-	-	-	-	-	-	18	297	**2033**
Total	**218**	**1742**	**235**	**490**	**44**	**1652**	**67**	**637**	**61**	**54**	**46**	**52**	**84**	**199**	**111**	**350**	**147**	**723**	**198**	**444**	**7554**

*Includes LNG SJ, CS and Trucked.

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Table 27: Updated Preliminary Portfolio C Resulting from Scenario 3 Resource Capacity Retirements (MW)

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
Coal	-	-	-	(454)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(454)**
Conv Thermal: Dual Fuel	-	-	-	-	-	-	-	-	-	-	-	-	-	(18)	-	-	-	-	-	-	**(18)**
Diesel	-	-	(147)	-	-	-	-	-	-	-	-	(200)	-	-	-	-	-	-	-	-	**(347)**
Fuel Oil	-	-	-	-	-	(300)	-	-	(580)	(250)	-	-	-	-	-	-	-	-	-	-	**(1130)**
Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2.4)	(2.4)	-	-	**(5)**
LNG Retirements*	-	-	-	-	-	(454)	-	-	(600)	-	-	-	(18)	(93)	-	(226)	-	(551)	-	-	**(1,942)**
UPV	-	-	-	-	-	-	-	(2)	(20)	-	-	(30)	(55)	-	-	-	-	-	-	-	**(107)**
Total	-	-	**(147)**	**(454)**	-	**(754**	-	**(2)**	**(1200)**	**(250)**	-	**(230)**	**(73)**	**(111)**	-	**(226)**	**(2)**	**(553)**	-	-	**(4003)**

*Includes LNG SJ, CS, EcoElec and Trucked. These retirements include conversions to biodiesel. Units converted to biodiesel are listed in the ***Addition Summary*** table under the **Biodiesel Conversions** category.

4.3.2 Updated Preliminary Portfolio C Resulting from Scenario 3 – Energy Production by Resources and Fuel

Table 28 provides detail on the source of energy production by fuel type and resource for the Updated Preliminary Portfolio C Resulting from Scenario 3.

Table 28: Updated Preliminary Portfolio C Resulting from Scenario 3 Energy Production by Fuel or Resource (GWh)

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Coal	2717	3240	2903	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel	1270	240	115	101	84	2	3	7	4	1	1	1	4	1	1	2	1	1	1	1
Fuel Oil	4050	2494	1526	991	1027	71	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LNG - EcoElec	4784	4592	4477	4571	4429	4489	4312	4236	4249	4249	4179	3920	3807	3691	3514	3478	3367	4137	4105	4130
LNG-SJ	3267	4098	4083	7310	7216	3720	3652	5296	5243	5108	5010	4758	4647	4323	4076	3839	3471	2087	1784	930
LNG-CS	0	0	0	0	0	1606	1627	817	759	641	512	445	356	186	143	0	0	0	0	535
Hydro	67	116	243	244	243	300	300	301	301	300	300	301	300	300	300	301	300	300	300	301
UPV	658	677	677	679	676	677	676	675	633	633	632	576	459	459	458	459	459	458	459	460
Land Based Wind	262	270	269	271	269	269	269	271	269	269	270	270	269	270	270	270	269	269	269	271
Landfill	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	11	0	0	0
LNG - Trucked	494	462	1750	1549	1570	1284	1347	282	178	170	155	174	133	69	61	46	79	244	180	113
Biodiesel	0	0	0	0	0	2908	2979	2975	2937	3024	3176	3511	3751	4205	4445	4669	4961	5127	5286	5406
Solar - Tranche 1	235	944	946	948	945	945	946	947	945	946	945	948	944	944	945	948	946	944	945	947
Solar - Tranche 2	0	111	111	111	111	111	111	111	111	111	110	111	111	111	111	111	111	111	111	111
CHP	347	426	510	667	751	729	698	742	803	788	757	727	699	677	661	653	654	654	654	653
DPV	406	545	579	602	628	661	704	753	805	862	915	961	1009	1070	1146	1232	1327	1438	1566	1701
Conv. Thermal: Dual Fuel	0	0	0	0	0	12	6	4	3	2	3	3	3	0	0	0	0	0	0	0
DR	0	0	0	0	0	2	3	4	0	6	1	7	8	10	12	11	17	21	25	27
BESS- 4 HR	-	192	281	258	270	162	171	217	207	214	230	212	203	208	192	202	196	241	266	278
BESS- Tranche 1	46	248	256	226	232	143	152	198	195	205	218	207	200	204	188	194	191	236	268	288
BESS- Tranche 2	-	54	57	48	51	26	29	37	34	38	38	37	35	35	31	32	29	40	45	48
ASAP BESS	-	100	93	88	89	64	70	92	89	93	99	91	90	92	84	89	89	100	110	117
DBESS	7	9	11	13	15	19	19	19	21	22	22	23	24	26	29	31	30	38	39	41

4.3.3 Updated Preliminary Portfolio C Resulting from Scenario 3 – RPS Compliance and Emissions

LUMA applied the same targets to all Scenarios to incrementally attain 76% RPS by 2044, and the 100% RPS by 2050 as required by Act 17 of 2019 prior to the amendments of Act 1 of 2025[30]. The Updated Preliminary Portfolio C's aggressive shift toward meeting RPS targets and away from fossil fuel generation results in a significant reduction of CO_2 emissions over the planning period, as showcased in Table 29.

Table 29: Updated Preliminary Portfolio C Resulting from Scenario 3 RPS Compliance and Emissions

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
RPS Soft Target, %	7%	11%	14%	18%	21%	25%	28%	32%	35%	39%	42%	46%	49%	53%	56%	60%	64%	68%	72%	76%
RPS Results, %	13%	19%	20%	20%	20%	41%	42%	43%	43%	45%	47%	50%	52%	57%	60%	63%	66%	70%	73%	76%
Difference	6%	8%	6%	2%	-1%	16%	14%	11%	8%	6%	5%	4%	3%	4%	4%	3%	2%	2%	1%	0%
RPS Target, GWh	1073	1560	2056	2551	3044	3501	3955	4376	4793	5211	5612	5963	6312	6651	6977	7304	7702	8009	8327	8637
RPS Results, GWh	1971	2868	2880	2900	2904	5015	5148	5234	5244	5404	5614	5932	6110	6617	6957	7304	7705	8009	8333	8639
Difference, GWh	898	1308	824	349	-140	1514	1193	858	451	193	2	-31	-202	-34	-20	0	3	0	6	2
CO_2 Emissions, Thousands of Tons	13104	10715	9356	6924	6718	6949	6757	5815	5644	5500	5351	5167	5070	4880	4709	4630	4553	4578	4359	4184

[30]As indicated by the Energy Bureau on March 19, 2025, Resolution and Order of Docket Number NEPR-MI-2025-0001 at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001. Act 1-2025 will modify the current legal framework and impact the RPS results.

4.3.4 Updated Preliminary Portfolio C Resulting from Scenario 3 – Expected Unserved Energy

An important objective of the expansion plan under consideration in the 2025 IRP is the ability of the plan to improve generation reliability. An important indicator of system reliability is the LOLE. LUMA has defined the LOLE target as an indicator to define a progressive improvement in reliability targeted to achieve an industry-standard level of LOLE performance of 0.1 days / year by 2038, which is equivalent to no more than 2.4 hours / year (2.4 hours equals 0.1 days) of EUE per year. Table 30 shows the EUE amounts and EUE events for the 2025 to 2044 planning period.

Table 30: Updated Preliminary Portfolio C Resulting from Scenario 3 Expected Unserved Energy Target and Results

Target/ Results	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
LOLE Target Hours	-	-	-	-	-	60.6	40.4	26.9	18.0	12.0	8.0	5.3	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Results EUE Hours	308	108	29	37	34	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Results EUE GWh	47.6	20.0	3.7	8.3	12.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Results Max EUE MW	886.4	635.3	431.9	638.3	966.7	0	0	0	33.8	0	0	0	0	0	0	0	0	0	0	0
Results EUE Events	66	16	6	5	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0

4.3.5 Updated Preliminary Portfolio C Resulting from Scenario 3 – System Costs and PVRR

In addition to achieving adopted targets for RPS and system reliability, minimizing costs is an important consideration for the recommended expansion planning scenario. Table 31 shows the cost components of Preliminary Portfolio C each year during the planning period, and it indicates the total PVRR needed to recover the costs of Updated Preliminary Portfolio C, including fuel costs.

Table 31: Updated Preliminary Portfolio C Resulting from Scenario 3 System Costs and PVRR

Cost ($M)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Variable Production Costs	2190	1602	1481	1405	1404	1692	1722	1558	1574	1605	1637	1676	1740	1848	1891	2024	2153	2086	2101	2127
Total Production Cost	2896	2453	2337	2116	2122	2428	2466	2321	2272	2284	2326	2355	2403	2515	2567	2712	2849	2788	2814	2862
Total System Costs	3034	2859	2838	2699	2741	3283	3329	3322	3280	3270	3318	3320	3379	3504	3576	3739	4122	3897	3949	4088
PVRR	2601	4871	6957	8794	10521	12437	14236	15897	17417	18819	20137	21358	22508	23613	24656	25667	26698	27601	28449	29261
Total Production Cost, $/kWh*	0.16	0.14	0.13	0.12	0.12	0.14	0.14	0.13	0.13	0.13	0.14	0.14	0.15	0.15	0.16	0.17	0.18	0.18	0.18	0.19
Total System Cost, $/kWh*	0.16	0.16	0.16	0.15	0.15	0.19	0.19	0.19	0.19	0.19	0.2	0.2	0.21	0.22	0.22	0.23	0.26	0.25	0.25	0.27

*Total system costs are not equivalent to tariffs.

4.4 Updated Preliminary Portfolio D Resulting from Scenario 4

4.4.1 Updated Preliminary Portfolio D Resulting from Scenario 4 – System Capacity Balance, Capacity Additions, and Retirements

The resource additions and retirements for the Updated Preliminary Portfolio D are presented in this section. Also presented is a capacity balance, which compares the total installed resources and the total firm resources to the projected peak load for each year in the planning horizon.

Table 32 presents the Updated Preliminary Portfolio D, year-by-year resource balances from 2025 to 2044. For each year shown, the value of the total resources reflects the total MW of installed resources regardless of type. These resources include conventional generation, renewable generation, BESS, distributed storage under utility control, distributed solar export to the grid, and the capacity impact of demand response programs. Also shown in this table are the firm resources available each year. Firm resources are less than the total installed resources due to reduced capacity values for intermittent renewable generation (wind, solar, and hydro) and energy storage resources.

Table 33 and Table 34 present the capacity of energy resource additions and retirements that occur under the Updated Preliminary Portfolio D. Combined, the information of the tables shows significant activity with numerous additions and retirements over the planning period. The ramping primarily drives this activity up of renewable energy resources to meet the RPS targets, reduction of EUE levels and systematic retirements of the legacy fossil-fueled generations.

Table 32: Updated Preliminary Portfolio D Resulting from Scenario 4 Capacity Balance

Measure (MW)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Peak Demand	3455	3411	3407	3411	3414	3399	3392	3390	3401	3418	3435	3420	3420	3418	3415	3428	3421	3412	3411	3412
Total Res.**	5075	6822	7027	7098	7177	7802	7897	8538	8828	8789	9455	9526	9570	9597	9550	9596	9657	9684	9732	9808
Firm Res.*	3451	3977	4067	3953	3980	4436	4478	5056	5293	5287	5308	5333	5367	5379	5259	5279	5297	5271	5261	5257
Firm Res. Above Peak Demand,	-4	566	660	543	566	1037	1086	1665	1892	1869	1872	1912	1947	1960	1844	1851	1876	1859	1850	1845
Firm Capacity % Above Peak	-0.1	16.6	19.4	15.9	16.6	30.5	32.0	49.1	55.6	54.7	54.5	55.9	57.0	57.4	54.0	54.0	54.8	54.5	54.2	54.1

*Resources.

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Table 33: Capacity Addition Summary (MW) for Updated Preliminary Portfolio D Resulting from Scenario 4

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
CHP	47	24	13	15	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
DPV	131	44	49	51	54	56	58	60	63	66	68	71	74	77	80	84	87	91	95	99	**1459**
DBESS-Controlled	5	2	3	3	3	4	3	3	3	4	4	3	3	3	3	3	4	4	4	4	**67**
DR	0	0	0	3	14	22	36	31	21	16	13	19	27	41	55	59	74	90	90	48	**658**
Hydro	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**67**
New Genera Units (LNG, BESS)	-	430	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**616**
New Solar	-	-	-	-	-	523	-	-	-	-	580	9	-	-	-	-	-	-	-	-	**1113**
Thermal Gen	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**
Tranche 1 & 2 BESS	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**410**
Tranche 1 & 2 Solar	35	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**620**
ASAP BESS, Phase 1	-	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**185**
Biodiesel Conversions	-	-	-	-	-	9	454	-	-	-	-	-	-	-	-	84	210	-	-	-	**757**
BESS, 4 HR	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**100**
New Gas Gen*	-	-	-	-	-	551	-	551	226	679	-	-	-	262	71	-	-	-	-	-	**2340**
Total	**218**	**1,748**	**352**	**526**	**78**	**1,165**	**551**	**646**	**313**	**764**	**665**	**102**	**104**	**383**	**209**	**230**	**375**	**185**	**189**	**151**	**8,951**

*Includes LNG SJ, CS and Trucked.

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Table 34: Updated Preliminary Portfolio D Resulting from Scenario 4 Resource Capacity Retirements (MW)

-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
Coal	-	-	-	(454)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(454)**
Diesel	-	-	(147)	-	-	-	-	-	-	(200)	-	-	-	-	-	(95)	(95)	(150)	-	-	**(687)**
Fuel Oil	-	-	-	-	-	(530)	-	-	-	(600)	-	-	-	-	-	-	-	-	-	-	**(1130)**
Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2.4)	(2.4)	-	-	**(5)**
LNG Retirements*	-	-	-	-	-	(9)	(454)	-	-	-	-	-	-	(350)	(250)	(84)	(210)	-	(135)	(70)	**(1,562)**
UPV	-	-	-	-	-	-	(3)	(5)	(23)	(3)	-	(30)	(61)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	**(163)**
Total	-	-	**(147)**	**(454)**	-	**(539)**	**(456)**	**(5)**	**(23)**	**(803)**	-	**(30)**	**(61)**	**(356)**	**(256)**	**(185)**	**(313)**	**(158)**	**(140)**	**(76)**	**(4000)**

*Includes LNG SJ, CS, EcoElec and Trucked. These retirements include conversions to biodiesel. Units converted to biodiesel are listed in the ***Addition Summary*** table under the **Biodiesel Conversions** category.

4.4.2 Updated Preliminary Portfolio D Resulting from Scenario 4 – Energy Production by Resource and Fuel

Table 35 provides details on the source of energy production by fuel type and resource for the Updated Preliminary Portfolio D Resulting from Scenario 4.

Table 35: Updated Preliminary Portfolio D Resulting from Scenario 4 Energy Production by Fuel or Resource (GWh)

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Coal	2810	3258	2893	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel	1622	404	239	128	142	47	44	14	5	2	2	2	2	2	1	2	1	1	1	1
Fuel Oil	4206	3166	2505	1931	1897	292	292	35	0	0	0	0	0	0	0	0	0	0	0	0
LNG - EcoElec	5062	4956	4625	4723	4646	4294	4369	3763	3712	3746	3569	3533	3483	3348	3205	3128	2960	2879	2768	2468
LNG-SJ	3673	4348	4340	7699	7586	9706	6323	7741	7797	7498	6644	6582	6560	6218	5844	5506	5148	4716	4355	4236
LNG-CS	0	0	0	0	0	0	0	0	0	214	179	182	178	148	150	75	88	64	74	61
Hydro	66	116	243	244	243	300	301	301	300	300	300	301	300	300	300	301	301	300	300	301
UPV	656	677	677	679	676	1587	1581	1587	1539	1543	2574	2526	2397	2406	2397	2411	2397	2400	2388	2403
Land Based Wind	262	270	269	271	269	269	269	271	269	269	270	270	269	270	270	270	269	269	269	271
Landfill	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	11	0	0	0
LNG - Trucked	587	541	1833	1680	1701	561	607	178	110	54	38	50	40	33	23	13	10	30	13	11
Biodiesel	0	0	0	0	0	30	3162	2821	2781	2809	2804	2788	2871	3228	3614	3965	4386	4721	5048	5314
Solar - Tranche 1	236	944	946	948	945	945	946	947	945	946	945	948	944	944	945	948	946	944	945	947
Solar - Tranche 2	0	111	111	111	111	111	111	111	111	111	110	111	111	111	111	111	111	111	111	111
CHP	347	426	511	668	751	729	699	742	803	788	756	727	699	677	658	653	652	654	651	653
DPV	304	406	453	505	567	628	695	758	829	898	964	1036	1121	1208	1303	1391	1490	1590	1699	1799
DR	0	0	0	0	0	2	3	4	0	6	6	8	8	9	11	12	17	21	25	24
Conv. Thermal, Dual Fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	5	4
BESS- 4 HR	0	206	330	327	321	395	412	292	235	226	316	310	305	301	331	365	386	412	422	451
BESS- Tranche 1	43	248	243	237	236	336	338	237	217	197	291	298	308	312	331	329	361	374	377	393
BESS- Tranche 2	0	59	55	50	51	59	64	45	37	37	50	53	56	54	55	58	60	64	64	66
ASAP BESS	0	97	91	92	92	129	132	102	90	82	116	114	119	121	130	133	142	147	150	157
DBESS	7	10	14	18	23	25	31	30	34	40	56	61	68	71	82	101	116	126	131	139

4.4.3 Updated Preliminary Portfolio D Resulting from Scenario 4 – RPS Compliance and Emissions

LUMA applied the same targets to all Scenarios to incrementally attain 76% RPS by 2044, and the 100% RPS by 2050 as required by Act 17 of 2019 prior to the amendments of Act 1 of 2025[31]. The Updated Preliminary Portfolio D's aggressive shift toward meeting RPS targets and away from fossil fuel generation results in a significant reduction of CO_2 emissions over the planning period, as showcased in Table 36.

Table 36: Updated Preliminary Portfolio D Resulting from Scenario 4 RPS Compliance and Emissions

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
RPS Soft Target, %	7%	11%	14%	18%	21%	25%	28%	32%	35%	39%	42%	46%	49%	53%	56%	60%	64%	68%	72%	76%
RPS Results, %	12%	18%	18%	18%	18%	25%	45%	44%	44%	44%	52%	52%	52%	55%	59%	62%	66%	69%	73%	76%
Difference	5%	7%	4%	0%	-3%	0%	17%	12%	9%	5%	10%	6%	3%	2%	3%	2%	2%	1%	1%	0%
RPS Target, GWh	1158	1701	2245	2796	3338	3854	4367	4869	5371	5880	6375	6838	7292	7736	8170	8607	9114	9572	10030	10490
RPS Results, GWh	1971	2869	2880	2900	2904	3854	6188	6029	6028	6142	7251	7274	7292	7704	8148	8607	9102	9562	10029	10490
Difference, GWh	813	1168	635	104	-434	0	1821	1160	657	262	876	436	0	-32	-22	0	-12	-10	-1	0
CO_2 Emissions, Thousands of Tons	14210	12024	10702	8243	8054	6422	6357	5883	5784	5783	5333	5271	5221	5075	4958	4856	4728	4598	4463	4308

[31] As indicated by the Energy Bureau on March 19, 2025, Resolution and Order of Docket Number NEPR-MI-2025-0001 at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001. Act 1-2025 will modify the current legal framework and impact the RPS results.

4.4.4 Updated Portfolio D Resulting from Scenario 4 – Expected Unserved Energy

An important objective of the expansion plan under consideration in the 2025 IRP is the ability of the plan to improve generation reliability. An important indicator of system reliability is the LOLE. LUMA has defined the LOLE target as an indicator to define a progressive improvement in reliability targeted to achieve an industry-standard level of LOLE performance of 0.1 days / year by 2038, which is equivalent to no more than 2.4 hours / year (2.4 hours equals 0.1 days) of EUE per year.

Table 37 shows the EUE amounts and EUE events for the 2025 to 2044 planning period.

Table 37: Updated Portfolio D Resulting from Scenario 4 Expected Unserved Energy Target and Results

Target/ Results	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
LOLE Target Hours	-	-	-	-	-	60.6	40.4	26.9	18.0	12.0	8.0	5.3	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Results EUE Hours	950	543	124	132	67	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-
Results EUE GWh	110.9	60.7	13.8	19.9	16.4	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Results Max EUE, MW	989.3	1,252.8	494.8	596.0	783.6	-	213.8	-	-	-	-	-	-	-	-	-	-	-	-	-
Results EUE Events	154	97	32	30	16	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0

4.4.5 Updated Portfolio D Resulting from Scenario 4 – System Costs and PVRR

In addition to achieving adopted targets for RPS and system reliability, minimizing costs is an important consideration for the recommended expansion planning scenario.

Table 38 shows the cost components of Preliminary Portfolio D each year during the planning period, and it indicates the total PVRR needed to recover the costs of Updated Preliminary Portfolio D.

Table 38: Updated Portfolio D Resulting from Scenario 4 System Costs and PVRR

Cost($M)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Variable Production Costs	2394	1850	1745	1666	1667	1297	1653	1562	1592	1643	1592	1612	1646	1705	1768	1882	1988	2070	2153	2229
Total Production Cost	3090	2691	2588	2362	2372	1998	2363	2288	2318	2335	2303	2321	2338	2382	2440	2552	2651	2717	2804	2887
Total System Costs	3229	3099	3119	2977	3025	2824	3198	3220	3289	3377	3419	3411	3440	3543	3641	3773	4124	4028	4137	4237
PVRR	2768	5229	7521	9548	11454	13101	14829	16440	17963	19411	20769	22023	23194	24311	25374	26394	27426	28359	29247	30088
Total Production Cost, $/kWh*	0.16	0.14	0.13	0.12	0.12	0.10	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.15	0.16
Total System Cost, $/kWh*	0.16	0.16	0.16	0.15	0.16	0.15	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.19	0.19	0.20	0.22	0.22	0.22	0.23

*Total system costs are not equivalent to tariffs.

4.5 Preliminary Portfolio E Resulting from Scenario 5

4.5.1 Preliminary Portfolio E Resulting from Scenario 5 – System Capacity Balance, Capacity Additions, and Retirements

The resource additions and retirements for Preliminary Portfolio E are presented in this section. Also presented is a capacity balance, which compares the total installed resources and the total firm resources to the projected peak load for each year in the planning horizon.

Table 39 presents the Preliminary Portfolio E, year-by-year resource balances from 2025 to 2044. For each year shown, the value of the total resources reflects the total MW of installed resources regardless of type. These resources include conventional generation, renewable generation, BESS, distributed storage under utility control, distributed solar export to the grid, and the capacity impact of demand response programs. Also shown in this table are the firm resources available each year. Firm resources are less than the total installed resources due to reduced capacity values for intermittent renewable generation (wind, solar, and hydro) and energy storage resources.

Table 40 and Table 41 present the capacity of energy resource additions and retirements that occur under the Preliminary Portfolio E. Combined, the information on the tables shows significant activity with numerous additions and retirements over the planning period. The ramping primarily drives this activity up of renewable energy resources to meet the RPS targets, reduction of EUE levels and systematic retirements of the legacy fossil-fueled generations.

Table 39: Portfolio E Resulting from Scenario 5 Capacity Balance

Measure MW	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Peak Demand	2534	2424	2361	2316	2250	2213	2161	2110	2066	2021	1983	1942	1869	1813	1757	1702	1662	1615	1559	1522
Total Res.*	5075	6817	6887	6924	6970	7526	6725	6702	6728	6275	6084	6107	5519	5608	5720	5845	5991	5727	5657	5805
Firm Res.	3451	3977	4007	3893	3920	4476	4162	4121	4133	3736	3559	3520	3022	3135	3200	3206	3354	3024	2860	2942
Firm Res. Above Peak Demand	917	1553	1646	1577	1671	2263	2000	2011	2067	1716	1576	1578	1153	1321	1443	1504	1691	1409	1300	1420
Firm Capacity % Above Peak	36.2	64.1	69.7	68.1	74.3	102.2	92.6	95.3	100.0	84.9	79.5	81.3	61.7	72.9	82.1	88.3	101.7	87.2	83.4	93.3

*Resources

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Table 40: Capacity Addition Summary (MW) for Preliminary Portfolio E Resulting from Scenario 5

Unit	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
CHP	47	24	13	15	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
DPV	131	39	14	17	21	25	30	36	39	38	32	32	38	46	54	63	72	81	89	97	**997**
DBESS- Controlled	5	2	2	3	3	3	2	3	3	3	3	2	2	3	3	3	3	3	3	3	**57**
DR	0	0	0	3	14	22	36	31	21	16	13	19	27	41	55	59	74	90	90	48	**658**
Hydro	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**67**
New Genera Units (LNG, BESS)	-	430	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**616**
Thermal Gen	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**
Tranche 1 & 2 BESS		410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**410**
Tranche 1 & 2 Solar	35	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**620**
ASAP BESS, Phase 1	-	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**185**
Biodiesel Conversions	-	-	-	-	-	43	210	-	-	-	18	454	-	-	-	-	-	-	-	-	**725**
New Gas Gen*	-	-	-	-	-	505	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**505**
Total	**218**	**1,743**	**216**	**491**	**46**	**599**	**279**	**70**	**63**	**57**	**67**	**507**	**67**	**89**	**112**	**125**	**148**	**173**	**182**	**148**	**5,400**

*Includes LNG SJ, CS and Trucked.

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Table 41: Preliminary Portfolio E Resulting from Scenario 5 Resource Capacity Retirements (MW)

Unit	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
Coal	-	-	-	(454)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(454)**
Conv Thermal: Dual Fuel	-	-	-	-	-	-	-	-	-	-	(18)	-	-	-	-	-	-	-	-	-	**(18)**
Diesel	-	-	(147)	-	-	-	(340)	-	-	-	(200)	-	-	-	-	-	-	-	-	-	**(687)**
Fuel Oil	-	-	-	-	-	-	(530)	(90)	-	(510)	-	-	-	-	-	-	-	-	-	-	**(1130)**
Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2.4)	(2.4)	-	-	**(5)**
LNG Retirements*	-	-	-	-	-	(43)	(210)	-	(17)	-	(40)	(454)	(600)	-	-	-	-	(435)	(252)	-	**(2,050)**
UPV	-	-	-	-	-	-	-	(2)	(20)	-	-	(30)	(55)	-	-	-	-	-	-	-	**(107)**
Total	-	-	**(147)**	**(454)**	-	**(43)**	**(1,080)**	**(92)**	**(37)**	**(510)**	**(258)**	**(484)**	**(655)**	-	-	-	**(2)**	**(437)**	**(252)**	-	**(4451)**

*Includes LNG SJ, EcoElec and Trucked. These retirements include conversions to biodiesel. Units converted to biodiesel are listed in the ***Addition Summary*** table under the **Biodiesel Conversions** category.

4.5.2 Preliminary Portfolio E Resulting from Scenario 5 – Energy Production by Resource and Fuel

Table 42 provides detail on the source of energy production by fuel type and resource for the Preliminary Portfolio E Resulting from Scenario 5.

Table 42: Preliminary Portfolio E Resulting from Scenario 5 Energy Production by Fuel or Resource (GWh)

Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Coal	2653	3258	2900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel	1001	130	61	40	32	10	2	2	3	1	2	1	0	1	0	0	2	1	4	1
Fuel Oil	3797	1651	695	400	336	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LNG - EcoElec	4421	4372	4437	4340	4379	4420	4319	4339	4253	4161	3924	4334	4240	4202	4102	3888	3597	3232	2747	2193
LNG-SJ	2867	3766	3525	6663	6463	6650	5723	5279	4651	4196	3865	1387	1111	842	483	302	268	238	148	150
LNG-CS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydro	66	116	243	243	243	300	300	301	300	300	300	301	302	300	300	301	300	300	300	301
UPV	658	677	677	679	676	677	676	675	633	633	632	576	459	459	458	459	459	458	458	460
Land Based Wind	263	270	269	271	269	269	269	271	269	269	270	270	269	270	270	270	269	269	269	271
Landfill	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	11	0	0	0
LNG - Trucked	379	353	1446	1221	1010	553	835	420	304	179	139	337	320	176	158	104	101	75	132	219
Biodiesel	0	0	0	0	0	140	554	874	1206	1436	1653	3119	3121	3099	3093	3065	2984	2916	2896	2870
Solar - Tranche 1	236	944	946	948	945	945	946	947	945	946	945	948	944	944	945	948	946	944	944	947
Solar - Tranche 2	0	111	111	111	111	111	111	111	111	111	110	111	111	111	111	111	111	111	111	111
CHP	326	426	510	667	751	729	698	742	803	789	757	727	703	678	661	653	655	654	654	653
DPV	398	545	579	602	628	661	704	753	805	862	915	961	1009	1070	1146	1232	1327	1438	1564	1701
DR	0	0	0	0	0	2	3	4	2	6	5	7	8	10	12	14	12	21	24	27
Conv Thermal: Dual Fuel	0	0	0	0	0	9	13	8	4	2	0	0	0	0	0	0	0	0	0	0
BESS- 4 HR	0	190	274	281	267	201	230	225	227	229	244	260	250	247	248	269	275	279	290	318
BESS- Tranche 1	41	259	257	253	239	198	229	226	242	240	250	279	263	262	262	281	283	287	316	351
BESS- Tranche 2	0	55	60	57	53	35	38	38	38	32	38	39	36	35	34	41	41	44	51	57
ASAP BESS	0	104	91	93	89	86	99	98	101	99	104	114	111	114	111	117	120	120	127	137
DBESS	8	11	13	17	20	27	30	32	34	37	37	46	52	57	63	66	63	73	68	75

4.5.3 Preliminary Portfolio E Resulting from Scenario 5 – RPS Compliance and Emissions

LUMA applied the same targets to all Scenarios to incrementally attain 76% RPS by 2044, and the 100% RPS by 2050 as required by Act 17 of 2019 prior to the amendments of Act 1 of 2025[32]. The preliminary Portfolio E's aggressive shift toward meeting RPS targets and away from fossil fuel generation results in a significant reduction of CO_2 emissions over the planning period, as showcased in Table 43.

Table 43: Preliminary Portfolio E Resulting from Scenario 5 RPS Compliance and Emissions

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
RPS Soft Target, %	7%	11%	14%	18%	21%	25%	28%	32%	35%	39%	42%	46%	49%	53%	56%	60%	64%	68%	72%	76%
RPS Results, %	14%	21%	22%	22%	23%	25%	29%	33%	38%	41%	45%	62%	63%	67%	70%	74%	77%	81%	87%	93%
Difference	7%	10%	8%	4%	2%	0%	1%	1%	3%	2%	3%	16%	14%	14%	14%	14%	13%	13%	15%	17%
RPS Target, GWh	984	1416	1844	2273	2666	3022	3357	3651	3909	4150	4375	4546	4674	4785	4865	4922	5022	5051	5017	4979
RPS Results, GWh	1974	2869	2880	2900	2904	3022	3353	3637	3894	4134	4365	5602	5569	5644	5740	5827	5847	5887	5990	6103
Difference, GWh	990	1453	1036	627	238	0	-4	-14	-15	-16	-10	1056	895	859	875	905	825	836	973	1124
CO_2 Emissions, Thousands of Tons	11877	9397	8099	5558	5402	5509	5216	4924	4552	4268	4023	3933	3668	3389	3107	2856	2642	2426	2166	1942

[32]As indicated by the Energy Bureau on March 19, 2025, Resolution and Order of Docket Number NEPR-MI-2025-0001 at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001. Act 1-2025 will modify the current legal framework and impact the RPS results.

4.5.4 Preliminary Portfolio E Resulting from Scenario 5 – Expected Unserved Energy

An important objective of the expansion plan under consideration in the 2025 IRP is the ability of the plan to improve generation reliability. An important indicator of system reliability is the LOLE. LUMA has defined the LOLE target as an indicator to define a progressive improvement in reliability targeted to achieve an industry-standard level of LOLE performance of 0.1 days / year by 2038, which is equivalent to no more than 2.4 hours / year (2.4 hours equals 0.1 days) of EUE per year. Table 44 shows the EUE amounts and EUE events for the 2025 to 2044 planning period.

Table 44: Preliminary Portfolio E Resulting from Scenario 5 Expected Unserved Energy Target and Results

Target/ Results	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
LOLE Target Hours	-	-	-	-	-	60.6	40.4	26.9	18	12	8	5.3	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Results EUE Hours	109	2	29	14	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Results EUE, GWh	18.4	0.2	11	1.5	10.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Results Max EUE, MW	707.4	198.3	803.7	211.9	568	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Results EUE Events	18	1	3	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

4.5.5 Preliminary Portfolio E Resulting from Scenario 5 – System Costs and PVRR

In addition to achieving adopted targets for RPS and system reliability, minimizing costs is an important consideration for the recommended expansion planning scenario. Table 45 shows the cost components of Portfolio E each year during the planning period, and it indicates the total PVRR needed to recover the costs of Preliminary Portfolio E.

Table 45: Preliminary Portfolio E Resulting from Scenario 5 System Costs and PVRR

Cost ($M)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Variable Production Costs	1960	1345	1215	1136	1104	1107	1159	1168	1186	1192	1209	1333	1311	1275	1231	1202	1177	1135	1100	1073
Total Production Cost	2667	2196	2072	1846	1821	1844	1837	1849	1865	1844	1861	1982	1907	1873	1838	1818	1800	1735	1701	1684
Total System Costs	2805	2602	2563	2420	2432	2582	2586	2608	2632	2590	2613	2707	2644	2625	2608	2608	2836	2608	2595	2593
PVRR	2405	4471	6355	8002	9534	11041	12438	13742	14961	16072	17110	18105	19006	19833	20594	21299	22009	22613	23170	23685
Total Production Cost, $/kWh*	0.16	0.13	0.13	0.11	0.12	0.12	0.12	0.13	0.13	0.13	0.14	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.17	0.17
Total System Cost, $/kWh*	0.16	0.16	0.16	0.15	0.15	0.17	0.17	0.18	0.19	0.19	0.19	0.21	0.21	0.22	0.22	0.23	0.26	0.25	0.26	0.26

*Total system costs are not equivalent to tariffs.

4.6 Preliminary Portfolio F Resulting from Scenario 6

4.6.1 Preliminary Portfolio F Resulting from Scenario 6 – System Capacity Balance, Capacity Additions, and Retirements

The resource additions and retirements for Preliminary Portfolio F are presented in this section. Also presented is a capacity balance, which compares the total installed resources and the total firm resources to the projected peak load for each year in the planning horizon.

Table 46 presents the Preliminary Portfolio F, year-by-year resource balances from 2025 to 2044. For each year shown, the value of the total resources reflects the total MW of installed resources regardless of type. These resources include conventional generation, renewable generation, BESS, distributed storage under utility control, distributed solar export to the grid, and the capacity impact of demand response programs. Also shown in this table are the firm resources available each year. Firm resources are less than the total installed resources due to reduced capacity values for intermittent renewable generation (wind, solar, and hydro) and energy storage resources.

Table 47 and Table 48 present the capacity of energy resource additions and retirements that occur under the Preliminary Portfolio F. Combined, the information of the tables shows significant activity with numerous additions and retirements over the planning period. The ramping primarily drives this activity of renewable energy resources to meet the RPS targets, reduction of EUE levels and systematic retirements of the legacy fossil-fueled generations.

Table 46: Portfolio F Resulting from Scenario 6 Capacity Balance

Measure MW	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Peak Demand	2914	2817	2748	2665	2621	2938	2497	2443	3195	2586	2299	2243	2205	2175	2140	2076	2071	2055	2061	2069
Total Res.*	5089	6843	6975	7055	7144	7306	7365	7845	8900	8008	7611	7565	7533	7569	7649	7523	7681	7641	7844	8011
Firm Res.	3459	3990	4036	3928	3961	3907	3918	4175	4933	3992	3543	3459	3410	3373	3471	3201	3280	3176	3294	3373
Firm Res. Above Peak Demand	546	1172	1288	1263	1340	969	1421	1732	1738	1406	1244	1216	1205	1198	1330	1125	1209	1121	1233	1304
Firm Capacity % Above Peak	18.7	41.6	46.9	47.4	51.1	33.0	56.9	70.9	54.1	54.4	54.1	54.2	54.6	55.1	62.2	54.2	58.4	54.5	59.8	63.0

*Resources.

Second Interim 2025 IRP Filing

Table 47: Capacity Addition Summary (MW) for Preliminary Portfolio F Resulting from Scenario 6

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
CHP	47	24	13	15	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
DPV	131	44	49	51	54	56	58	60	63	66	68	71	74	77	80	84	87	91	95	99	**1459**
DBESS- Controlled	19	9	10	12	13	15	17	18	21	23	25	20	22	25	27	30	21	23	25	26	**401**
DR	0	0	0	3	14	22	36	31	21	16	13	19	27	41	55	59	74	90	90	48	**658**
Hydro	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**67**
New Genera Units (LNG, BESS)	-	430	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**616**
New Solar	-	-	-	-	-	300	295	147	292	146	-	-	-	-	-	-	-	-	-	-	**1179**
Thermal Gen	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**
Tranche 1 & 2 BESS	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**410**
Tranche 1 & 2 Solar	35	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**620**
ASAP BESS, Phase 1	-	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**185**
Biodiesel Conversions	-	-	-	-	-	67	-	17	-	9	-	454	-	-	-	-	-	-	-	-	**547**
4 Hour BESS	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**20**
New Gas Gen*	-	-	-	-	-	-	-	226	679	-	-	-	-	-	-	-	-	-	-	-	**905**
Total	**232**	**1,754**	**279**	**534**	**88**	**460**	**406**	**500**	**1,075**	**259**	**107**	**564**	**124**	**142**	**162**	**172**	**183**	**204**	**209**	**173**	**7,627**

** Includes LNG SJ, CS and Trucked.

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Table 48: Preliminary Portfolio F Resulting from Scenario 6 Resource Capacity Retirements (MW)

Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
Coal	-	-	-	(454)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(454)**
Diesel	-	-	(147)	-	-	-	(48)	-	-	(293)	(100)	(100)	-	-	-	-	-	-	-	-	**(687)**
Fuel Oil	-	-	-	-	-	(230)	(300)	-	-	(600)	-	-	-	-	-	-	-	-	-	-	**(1130)**
Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2.4)	(2.4)	-	-	**(5)**
LNG Retirements*	-	-	-	-	-	(67)	-	(17)	-	(259)	(400)	(474)	(95)	(100)	(75)	(293)	(17)	(235)	-	-	**(2,032)**
UPV	-	-	-	-	-	-	-	(2)	(20)	-	(3)	(36)	(61)	(6)	(7)	(5)	(6)	(6)	(6)	(6)	**(164)**
Total	-	-	**(147)**	**(454)**	-	**(297)**	**(348)**	**(19)**	**(20)**	**(1152)**	**(503)**	**(610)**	**(156)**	**(106)**	**(82)**	**(298)**	**(25)**	**(244)**	**(6)**	**(6)**	**(4472)**

*Includes LNG SJ, EcoElec and Trucked. These retirements include conversions to biodiesel. Units converted to biodiesel are listed in the ***Addition Summary*** table under the **Biodiesel Conversions** category.

4.6.2 Preliminary Portfolio F Resulting from Scenario 6 – Energy Production and Resource by Fuel

Table 49 provides detail on the source of energy production by fuel type and resource for the Preliminary Portfolio F Resulting from Scenario 6.

Table 49: Preliminary Portfolio F Resulting from Scenario 6 Energy Production by Fuel or Resource (GWh)

Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Coal	2763	3266	2904	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel	1259	267	104	93	60	78	45	14	2	1	0	2	1	0	0	1	3	3	0	0
Fuel Oil	4123	2574	1592	911	844	523	508	44	0	0	0	0	0	0	0	0	0	0	0	0
LNG - EcoElec	4802	4633	4503	4488	4431	4589	4424	4363	4104	4010	3896	4028	4000	3898	3761	3592	3512	3302	2893	2391
LNG-SJ	3363	4243	4168	7425	7228	7003	6590	6909	5763	5400	4896	1686	1422	1094	733	499	573	564	598	621
LNG-CS	0	0	0	0	0	0	0	0	537	268	97	202	170	136	107	89	90	91	156	286
Hydro	67	116	243	244	243	300	300	301	301	300	300	301	301	300	300	301	300	300	297	301
UPV	658	677	677	679	676	1196	1713	1978	2443	2711	2701	2648	2520	2523	2489	2470	2430	2418	2402	2442
Land Based Wind	262	270	269	271	269	269	269	271	269	269	270	270	269	270	270	270	269	269	269	271
Landfill	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	11	0	0	0
LNG - Trucked	513	500	1804	1655	1611	967	824	193	244	144	67	101	91	43	29	3	2	3	2	2
Biodiesel	0	0	0	0	0	92	21	129	31	171	629	3082	3032	3056	3028	3076	3030	3042	3217	3369
Solar - Tranche 1	234	944	946	948	945	945	946	947	945	946	945	948	944	944	945	948	946	944	945	947
Solar - Tranche 2	0	111	111	111	111	111	111	111	111	111	110	111	111	111	111	111	111	111	111	111
CHP	347	426	510	667	751	729	698	742	803	788	757	728	701	677	661	654	655	654	639	651
DPV	303	406	453	505	567	628	695	758	829	898	964	1036	1121	1209	1304	1391	1492	1593	1701	1783
DR	0	0	0	0	0	3	3	4	3	6	6	6	8	10	12	14	19	22	23	27
BESS- 4 HR	0	190	272	243	250	296	338	360	371	380	388	378	365	377	383	395	382	384	394	436
BESS- Tranche 1	40	245	251	207	212	284	357	373	351	378	390	397	386	401	409	417	418	419	423	459
BESS- Tranche 2	0	54	52	44	46	55	65	67	70	71	73	69	67	70	70	72	70	70	73	76
ASAP BESS	0	101	92	80	83	108	136	141	131	141	146	146	144	149	156	158	154	158	164	178
DBESS	27	41	54	71	90	98	112	145	159	191	199	261	303	340	350	358	381	395	412	437

4.6.3 Preliminary Portfolio F Resulting from Scenario 6 – RPS Compliance and Emissions

LUMA applied the same targets to all Scenarios to incrementally attain 76% RPS by 2044, and the 100% RPS by 2050 as required by Act 17 of 2019 prior to the amendments of Act 1 of 2025[33]. The preliminary Portfolio F's aggressive shift toward meeting RPS targets and away from fossil fuel generation results in a significant reduction of CO_2 emissions over the planning period, as showcased in Table 50.

Table 50: Portfolio F Resulting from Scenario 6 RPS Compliance and Emissions

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
RPS Soft Target, %	7%	11%	14%	18%	21%	25%	28%	32%	35%	39%	42%	46%	49%	53%	56%	60%	64%	68%	72%	76%
RPS Results, %	13%	19%	19%	20%	20%	25%	29%	33%	37%	42%	47%	70%	72%	75%	79%	83%	83%	85%	89%	93%
Difference	6%	8%	5%	2%	-1%	0%	1%	1%	2%	3%	5%	24%	23%	22%	23%	23%	19%	17%	17%	17%
RPS Target, GWh	1088	1592	2084	2560	3017	3429	3829	4187	4518	4827	5103	5308	5490	5651	5731	5875	6215	6471	6744	7025
RPS Results, GWh	1970	2869	2880	2900	2904	3508	3995	4375	4787	5199	5595	7643	7554	7671	7712	7849	7860	7968	8248	8585
Difference, GWh	882	1277	796	340	-113	79	166	188	269	372	492	2335	2064	2020	1981	1974	1645	1497	1504	1560
CO_2 Emissions, Thousands of Tons	13273	10956	9492	6834	6539	6256	5786	5351	4995	4519	4134	2986	2803	2511	2211	1972	1982	1883	1759	1633

[33]As indicated by the Energy Bureau on March 19, 2025, Resolution and Order of Docket Number NEPR-MI-2025-0001 at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001. Act 1-2025 will modify the current legal framework and impact the RPS results.

4.6.4 Preliminary Portfolio F Resulting from Scenario 6 – Expected Unserved Energy

An important objective of the expansion plan under consideration in the 2025 IRP is the ability of the plan to improve generation reliability. An important indicator of system reliability is the LOLE. LUMA has defined the LOLE target as an indicator to define a progressive improvement in reliability targeted to achieve an industry-standard level of LOLE performance of 0.1 days / year by 2038, which is equivalent to no more than 2.4 hours / year (2.4 hours equals 0.1 days) of EUE per year. Table 51 shows the EUE amounts and EUE events for the 2025 to 2044 planning period.

Table 51: Preliminary Portfolio F Resulting from Scenario 6 Expected Unserved Energy Target and Results

Target/ Results	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
LOLE Target Hours	-	-	-	-	-	60.6	40.4	26.9	18.0	12.0	8.0	5.3	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Results EUE Hours	341	127	35	51	32	34	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Results EUE GWh	53.9	28.1	12.1	10.7	12.0	15.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Results Max EUE, MW	933.1	724.2	825.5	551.2	744.1	1018.3	-	-	-	-	-	1.1	-	-	-	-	-	-	-	-
Results EUE Events	74	21	4	10	4	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0

4.6.5 Preliminary Portfolio F Resulting from Scenario 6 – System Costs and PVRR

In addition to achieving adopted targets for RPS and system reliability, minimizing costs is an important consideration for the recommended expansion planning scenario. Table 52 shows the cost components of Portfolio F each year during the planning period, and it indicates the total PVRR needed to recover the costs of Preliminary Portfolio F.

Table 52: Preliminary Portfolio F Resulting from Scenario 6 System Costs and PVRR

Cost ($M)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Variable Production Costs	2217	1644	1509	1398	1368	1290	1214	1156	1113	1084	1131	1344	1317	1284	1226	1211	1236	1240	1273	1305
Total Production Cost	2913	2486	2351	2095	2073	1992	1916	1874	1842	1734	1763	1967	1919	1885	1832	1823	1854	1861	1903	1945
Total System Costs	3129	2994	2965	2790	2774	2750	2725	2779	2886	2896	2944	3167	3104	3099	2987	3012	2925	3007	3147	3330
PVRR	2683	5060	7239	9138	10886	12491	13963	15353	16690	17931	19100	20265	21322	22299	23171	23985	24717	25413	26089	26750
Total Production Cost, $/kWh*	0.16	0.14	0.13	0.12	0.12	0.12	0.11	0.11	0.11	0.11	0.11	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.15	0.15
Total System Cost, $/kWh*	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.18	0.18	0.19	0.21	0.21	0.22	0.22	0.23	0.22	0.23	0.24	0.26

*Total system costs are not equivalent to tariffs.

4.7 Preliminary Portfolio G Resulting from Scenario 7

4.7.1 Preliminary Portfolio G Resulting from Scenario 7 – System Capacity Balance, Capacity Additions, and Retirements

The resource additions and retirements for Preliminary Portfolio G are presented in this section. Also presented is a capacity balance, which compares the total installed resources and the total firm resources to the projected peak load for each year in the planning horizon.

Table 53 presents the Preliminary Portfolio G, year-by-year resource balances from 2025 to 2044. For each year shown, the value of the total resources reflects the total MW of installed resources regardless of type. These resources include conventional generation, renewable generation, BESS, distributed storage under utility control, distributed solar export to the grid, and the capacity impact of demand response programs. Also shown in this table are the firm resources available each year. Firm resources are less than the total installed resources due to reduced capacity values for intermittent renewable generation (wind, solar, and hydro) and energy storage resources.

Table 54 and Table 55 present the capacity of energy resource additions and retirements that occur under the Preliminary Portfolio G. Combined, the information of the tables shows significant activity with numerous additions and retirements over the planning period. The ramping primarily drives this activity up of renewable energy resources to meet the RPS targets, reduction of EUE levels and systematic retirements of the legacy fossil-fueled generations.

Table 53: Portfolio G Resulting from Scenario 7 Capacity Balance

Measure MW	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Peak Demand	2875	2784	2741	2693	2684	2654	2632	2608	2599	2596	2593	2553	2532	2512	2491	2489	2472	2443	2430	2419
Total Res*	5089	6843	6975	7055	7144	7562	7672	8233	7736	7590	7697	7218	7028	7160	7763	7922	8098	8286	8491	8764
Firm Res.	3459	3990	4036	3928	3961	4570	4586	5121	4782	4515	4618	4140	3931	3988	4583	4556	4650	4857	4973	5154
Firm Res. Above Peak Demand	585	1205	1296	1235	1278	1916	1954	2513	2183	19191	20255	1587	1399	1476	2092	2067	2178	2414	2543	2736
Firm Capacity % Above Peak	20.3	43.3	47.3	45.8	47.6	72.2	74.2	96.3	84.0	73.9	78.1	62.1	55.3	58.8	84.0	83.1	88.1	98.8	104.6	113.1

*Resources.

Table 54: Capacity Addition Summary (MW) for Preliminary Portfolio G Resulting from Scenario 7

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
CHP	46	22	9	10	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**91**
DPV	131	44	49	51	54	56	58	60	63	66	68	71	74	77	80	84	87	91	95	99	**1459**
DBESS-Controlled	19	9	10	12	13	15	17	18	21	23	25	13	14	15	16	17	18	19	20	22	**334**
DR	-	-	-	-	14	22	36	31	21	16	13	19	27	41	55	59	74	90	90	48	**655**
Hydro	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**67**
New Genera Units (LNG, BESS)	-	430	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**616**
New Solar	-	-	-	-	-	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**75**
Thermal Gen	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**
Tranche 1 & 2 BESS	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**410**
Tranche 1 & 2 Solar	35	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**620**
ASAP BESS, Phase 1	-	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**185**
Biodiesel Conversions	-	-	-	-	-	93	454	-	-	-	-	-	-	-	-	-	210	-	-	551	**1,308**
4 Hour BESS	-		20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**20**
New Gas Gen*	-	-	-	-	-	551	-	453	-	-	-	-	-	-	453	-	-	-	-	105	**1561**
Total	**232**	**1,754**	**279**	**533**	**88**	**812**	**564**	**563**	**104**	**104**	**107**	**102**	**115**	**132**	**604**	**159**	**389**	**200**	**205**	**825**	**7,871**

*Includes LNG SJ, CS and Trucked.

Second Interim 2025 IRP Filing

Table 55: Preliminary Portfolio G Resulting from Scenario 7 Resource Capacity Retirements (MW)

Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
Coal	-	-	-	(454)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(454)**
Diesel	-	-	(147)	-	-	-	-	-	-	-	-	(200)	-	-	-	-	-	-	-	-	**(347)**
Fuel Oil	-	-	-	-	-	(300)	-	-	(580)	(250)	-	-	-	-	-	-	-	-	-	-	**(1130)**
Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2.4)	(2.4)	-	-	**(5)**
LNG Retirements*	-	-	-	-	-	(93)	(454)	-	-	-	-	(350)	(250)	-	-	-	(210)	(9)	-	-	**(1,917)**
UPV	-	-	-	-	-	-	-	(2)	(20)	-	-	(30)	(55)	-	-	-	-	-	-	(6)	**(107)**
Total	-	-	**(147)**	**(454)**	-	**(393)**	**(454)**	**(2)**	**(600)**	**(250)**	-	**(580)**	**(305)**	-	-	-	**(212)**	**(11)**	-	**(6)**	**(3959)**

*Includes LNG SJ, EcoElec and Trucked. These retirements include conversions to biodiesel. Units converted to biodiesel are listed in the ***Addition Summary*** table under the **Biodiesel Conversions** category.

4.7.2 Preliminary Portfolio G Resulting from Scenario 7- Energy Production by Resource and Fuel

Table 56 provides detail on the source of energy production by fuel type and resource for the Preliminary Portfolio G Resulting from Scenario 7.

Table 56: Preliminary Portfolio G Resulting from Scenario 7 Energy Production by Fuel or Resource (GWh)

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Coal	2,745	3,251	2,903	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diesel	1256	250	106	95	68	8	22	24	7	2	8	1	3	1	3	0	3	0	0	0
Fuel Oil	4075	2691	1589	949	1053	92	186	12	55	-	-	-	-	-	-	-	-	-	-	-
LNG - EcoElec	4780	4478	4500	4595	4413	4240	4440	4265	4253	4218	4208	4002	3792	3634	3518	3422	3357	3269	3112	4192
LNG-SJ	3317	4123	4112	7394	7255	8888	5880	4899	4817	4728	4657	4514	4366	4201	4034	3768	3375	3031	2826	755
LNG-CS	-	-	-	-	-	-	-	932	882	792	761	580	415	283	130	87	59	57	38	579
Hydro	67	116	243	244	243	301	300	301	300	300	300	301	300	300	300	301	300	300	300	301
UPV	657	677	677	679	676	808	806	806	763	764	762	707	589	590	589	591	588	589	588	591
Land Based Wind	262	270	269	271	269	269	269	271	269	269	270	270	269	270	270	270	269	269	269	271
Landfill	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	11	-	-	-
LNG - Trucked	509	464	1758	1578	1591	150	214	342	235	244	201	162	124	98	50	17	64	42	25	113
Biodiesel	-	-	-	-	-	632	3086	3005	2973	3045	3013	3339	3751	3985	4217	4438	4713	4887	5055	5217
Solar - Tranche 1	235	944	946	948	945	945	946	947	945	946	945	948	944	944	945	948	946	944	945	947
Solar - Tranche 2	-	111	111	111	111	111	111	111	111	111	110	111	111	111	111	111	111	111	111	111
CHP	347	426	510	667	751	730	698	742	803	788	757	727	699	677	661	653	654	654	653	653
DPV	304	406	453	505	567	628	695	758	829	898	964	1036	1121	1208	1304	1391	1492	1593	1702	1800
DR	-	-	-	0	0	2	3	4	-	7	2	8	8	10	4	14	17	21	25	27
BESS- 4 HR	-	173	263	234	242	215	244	219	213	216	206	204	186	186	157	176	147	149	138	193
BESS- Tranche 1	36	225	237	198	204	205	237	204	197	201	192	194	174	185	149	173	147	139	130	185
BESS- Tranche 2	-	50	51	44	45	35	41	36	35	36	33	32	31	30	25	26	20	24	23	32
ASAP BESS	-	97	87	77	82	88	94	90	86	89	88	86	77	79	68	76	62	61	57	76
DBESS	27	41	54	72	89	112	137	159	184	214	251	256	272	287	319	332	386	412	433	495

4.7.3 Preliminary Portfolio G Resulting from Scenario 7 – RPS Compliance and Emissions

LUMA applied the same targets to all Scenarios to incrementally attain 76% RPS by 2044, and the 100% RPS by 2050 as required by Act 17 of 2019 prior to the amendments of Act 1 of 2025[34]. The preliminary Portfolio G's aggressive shift toward meeting RPS targets and away from fossil fuel generation results in a significant reduction of CO_2 emissions over the planning period, as showcased in Table 57.

Table 57: Portfolio G Resulting from Scenario 7 RPS Compliance and Emissions

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
RPS Soft Target, %	7%	11%	14%	18%	21%	25%	28%	32%	35%	39%	42%	46%	49%	53%	56%	60%	64%	68%	72%	76%
RPS Results, %	13%	19%	20%	20%	20%	26%	44%	44%	45%	46%	47%	50%	53%	56%	60%	63%	66%	70%	73%	76%
Difference	6%	8%	6%	2%	-1%	1%	16%	12%	10%	7%	5%	4%	4%	3%	4%	3%	2%	2%	1%	0%
RPS Target, GWh	1079	1572	2071	2566	3055	3508	3957	4375	4786	5199	5594	5934	6265	6589	6902	7223	7613	7920	8244	8573
RPS Results, GWh	1970	2869	2880	2900	2904	3508	5357	5388	5402	5552	5610	5919	6241	6554	6881	7222	7601	7909	8237	8581
Difference, GWh	891	1297	809	334	-151	0	1400	1013	616	353	16	-15	-24	-35	-21	-1	-12	-11	-7	8
CO_2 Emissions, Thousands of Tons	13123	10798	9442	6977	6729	5987	5964	5721	5565	5382	5289	5065	4913	4752	4594	4431	4268	4101	3937	4109

[34]As indicated by the Energy Bureau on March 19, 2025, Resolution and Order of Docket Number NEPR-MI-2025-0001 at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001. Act 1-2025 will modify the current legal framework and impact the RPS results.

4.7.4 Preliminary Portfolio G Resulting from Scenario 7 – Expected Unserved Energy

An important objective of the expansion plan under consideration in the 2025 IRP is the ability of the plan to improve generation reliability. An important indicator of system reliability is the LOLE. LUMA has defined the LOLE target as an indicator to define a progressive improvement in reliability targeted to achieve an industry-standard level of LOLE performance of 0.1 days / year by 2038, which is equivalent to no more than 2.4 hours / year (2.4 hours equals 0.1 days) of EUE per year. Table 58 shows the EUE amounts and EUE events for the 2025 to 2044 planning period.

Table 58: Preliminary Portfolio G Resulting from Scenario 7 Expected Unserved Energy Target and Results

Target/ Results	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
LOLE Target Hours	-	-	-	-	-	60.6	40.4	26.9	18	12	8	5.3	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Results EUE Hours	303	111	40	39	34	-	-	4	-	-	2	-	3	-	-	-	-	-	-	-
Results EUE, GWh	47.6	21.8	11.3	8.4	12.6	-	-	0.6	-	-	0.1	-	0.2	-	-	-	-	-	-	-
Results Max EUE, MW	890.1	809.3	872.9	530.2	818.8	-	-	203	-	-	40.3	-	135	-	-	-	-	-	-	-
Results EUE Events	62	21	6	7	5	0	0	1	0	0	1	0	3	0	0	0	0	0	0	0

4.7.5 Preliminary Portfolio G Resulting from Scenario 7 – System Costs and PVRR

In addition to achieving adopted targets for RPS and system reliability, minimizing costs is an important consideration for the recommended expansion planning scenario. Table 59 shows the cost components of Portfolio G each year during the planning period, and it indicates the total PVRR needed to recover the costs of Preliminary Portfolio G.

Table 59: Preliminary Portfolio G Resulting from Scenario 7 System Costs and PVRR

Cost ($M)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Variable Production Costs	2191	1620	1497	1411	1408	1274	1529	1535	1556	1579	1603	1622	1705	1772	1813	1877	1931	1967	2009	2083
Total Production Cost	2898	2472	2354	2122	2126	1999	2263	2287	2276	2280	2315	2305	2357	2426	2487	2563	2624	2666	2718	2811
Total System Costs	3113	2980	2968	2818	2827	2856	3132	3282	3285	3391	3444	3450	3484	3580	3669	3775	3721	3836	3984	4256
PVRR	2669	5035	7217	9134	10916	12582	14274	15916	17438	18892	20260	21528	22715	23843	24914	25934	26866	27754	28609	29455
Total Production Cost, $/kWh*	0.16	0.14	0.13	0.12	0.12	0.11	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.16	0.17	0.17	0.17	0.18
Total System Cost, $/kWh*	0.17	0.16	0.16	0.16	0.16	0.16	0.18	0.19	0.19	0.2	0.2	0.21	0.21	0.22	0.23	0.24	0.23	0.24	0.26	0.27

*Total system costs are not equivalent to tariffs.

4.8 Preliminary Portfolio H Resulting from Scenario 8

4.8.1 Preliminary Portfolio H Resulting from Scenario 8 – System Capacity Balance, Capacity Additions, and Retirements

The resource additions and retirements for Preliminary Portfolio H are presented in this section. Also presented is a capacity balance, which compares the total installed resources and the total firm resources to the projected peak load for each year in the planning horizon.

Table 60 presents the Preliminary Portfolio H, year-by-year resource balances from 2025 to 2044. For each year shown, the value of the total resources reflects the total MW of installed resources regardless of type. These resources include conventional generation, renewable generation, BESS, distributed storage under utility control, distributed solar export to the grid, and the capacity impact of demand response programs. Also shown in this table are the firm resources available each year. Firm resources are less than the total installed resources due to reduced capacity values for intermittent renewable generation (wind, solar, and hydro) and energy storage resources.

Table 61 and Table 62 present the capacity of energy resource additions and retirements that occur under the Preliminary Portfolio H. Combined, the information of the tables shows significant activity with numerous additions and retirements over the planning period. The ramping primarily drives this activity up of renewable energy resources to meet the RPS targets, reduction of EUE levels and systematic retirements of the legacy fossil-fueled generations.

Table 60: Portfolio H Resulting from Scenario 8 Capacity Balance

Measure MW	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Peak Demand	2534	2424	2361	2316	2250	2213	2161	2110	2066	2021	1983	1942	1869	1813	1757	1702	1662	1615	1559	1522
Total Res.*	5080	6823	6892	6930	6976	7023	6494	6560	6602	6307	5397	5420	5107	5096	5199	5190	5336	5507	5689	5837
Firm Res.	3454	3980	4010	3897	3924	4089	3882	3920	3947	3703	2913	2937	2676	2596	2681	2588	2672	2773	2878	2943
Firm Res. Above Peak Demand	920	1556	1649	1580	1674	1876	1721	1810	1881	1683	929	995	807	782	924	885	1009	1158	1319	1421
Firm Capacity % Above Peak	36.3	64.2	69.9	68.2	74.4	84.7	79.6	85.8	91.1	83.3	46.9	51.2	43.2	43.2	52.6	52.0	60.7	71.7	84.6	93.3

*Resources.

Table 61: Capacity Addition Summary (MW) for Preliminary Portfolio H Resulting from Scenario 8

Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
CHP	47	24	13	15	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
DPV	131	39	14	17	21	25	30	36	39	38	32	32	38	46	54	63	72	81	89	97	**997**
DBESS- Controlled	10	2	3	3	3	4	1	2	2	2	2	2	2	3	3	3	3	3	3	3	**57**
DR	0	0	0	3	14	22	36	31	21	16	13	19	27	41	55	59	74	90	90	48	**658**
Hydro	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**67**
New Genera Units (LNG, BESS)	-	430	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**616**
Thermal Gen	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**
Tranche 1 & 2 BESS	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**410**
Tranche 1 & 2 Solar	35	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**620**
ASAP BESS, Phase 1	-	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**185**
Biodiesel Conversions	-	-	-	-	-	93	226	210	-	-	454	-	-	-	-	-	-	-	-	-	**983**
New Gas Gen*	-	-	-	-	-	226	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**226**
Total	**223**	**1,743**	**217**	**492**	**46**	**370**	**294**	**279**	**62**	**55**	**501**	**53**	**67**	**89**	**112**	**125**	**148**	**173**	**182**	**148**	**5,379**

**Includes LNG SJ, CS and Trucked.

Table 62: Preliminary Portfolio H Resulting from Scenario 8 Resource Capacity Retirements (MW)

Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
Coal	-	-	-	(454)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(454)**
Diesel	-	-	(147)	-	-	-	(48)	-	-	-	(493)	-	-	-	-	-	-	-	-	-	**(687)**
Fuel Oil	-	-	-	-	-	(230)	(550)	-	-	(350)	-	-	-	-	-	-	-	-	-	-	**(1130)**
Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2.4)	(2.4)	-	-	**(5)**
LNG Retirements*	-	-	-	-	-	(93)	(226)	(210)	-	-	(919)	-	(325)	(100)	(9)	(134)	-	-	-	-	**(2,016)**
UPV	-	-	-	-	-	-	-	(2)	(20)	-	-	(30)	(55)	-	-	-	-	-	-	-	**(107)**
Total	-	-	**(147)**	**(454)**	-	**(323)**	**(824)**	**(212)**	**(20)**	**(350)**	**(1411)**	**(30)**	**(380)**	**(100)**	**(9)**	**(134)**	**(2)**	**(2)**	-	-	**(4399)**

*Includes LNG SJ, EcoElec and Trucked. These retirements include conversions to biodiesel. Units converted to biodiesel are listed in the ***Addition Summary*** table under the **Biodiesel Conversions** category.

4.8.2 Preliminary Portfolio H Resulting from Scenario 8 – Energy Production by Resource and Fuel

Table 63 provides detail on the source of energy production by fuel type and resource for the Preliminary Portfolio H Resulting from Scenario 8.

Table 63: Preliminary Portfolio H Resulting from Scenario 8 Energy Production by Fuel or Resource (GWh)

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Coal	2657	3265	2900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel	996	153	64	34	19	6	5	2	10	5	2	2	0	2	0	0	1	3	1	1
Fuel Oil	3828	1716	732	395	267	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LNG - EcoElec	4465	4391	4442	4342	4378	4506	4663	4451	4290	3762	4272	4044	3762	3334	2496	1727	1408	855	448	185
LNG-SJ	2913	3853	3559	6667	6419	6593	5410	4627	3876	3543	726	423	246	126	76	67	40	116	157	57
LNG-CS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydro	65	116	243	243	243	300	301	301	300	300	300	301	300	300	300	301	299	297	290	287
UPV	660	677	677	679	676	677	676	675	633	633	632	576	459	459	458	459	459	458	458	460
Land Based Wind	263	270	269	271	269	269	269	271	269	269	270	270	269	270	270	270	269	269	269	271
Landfill	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	11	0	0	0
LNG - Trucked	389	381	1475	1186	928	157	263	258	119	73	81	52	50	37	37	0	0	0	0	0
Biodiesel	0	0	0	0	0	140	563	893	1227	1457	3140	3038	2874	2723	2779	2914	2932	2988	2888	2801
Solar - Tranche 1	236	944	946	948	945	945	946	947	945	946	945	948	944	944	945	948	946	944	944	946
Solar - Tranche 2	0	111	111	111	111	111	111	111	111	111	110	111	111	111	111	111	111	111	111	111
CHP	334	426	510	667	751	729	699	742	803	788	757	727	699	677	661	654	652	654	653	653
DPV	402	545	579	602	628	661	704	753	805	862	915	961	1009	1070	1146	1232	1327	1438	1565	1699
DR	0	0	0	0	0	2	3	4	5	6	3	9	8	11	12	14	17	21	19	27
BESS- 4 HR	-	194	281	285	266	239	234	250	238	211	266	237	206	235	268	303	317	331	363	396
BESS- Tranche 1	50	271	263	250	240	247	249	261	252	226	286	250	199	230	277	312	335	355	392	425
BESS- Tranche 2	-	57	61	57	52	43	41	43	37	32	38	34	34	43	48	56	56	63	67	70
ASAP BESS	-	109	96	91	89	103	100	106	101	97	118	107	95	100	115	127	132	140	153	166
DBESS	15	18	21	23	28	35	38	38	32	35	49	51	54	58	58	54	57	59	62	75

4.8.3 Preliminary Portfolio H Resulting from Scenario 8 – RPS Compliance and Emissions

LUMA applied the same targets to all Scenarios to incrementally attain 76% RPS by 2044, and the 100% RPS by 2050 as required by Act 17 of 2019 prior to the amendments of Act 1 of 2025[35]. The preliminary Portfolio H's aggressive shift toward meeting RPS targets and away from fossil fuel generation results in a significant reduction of CO_2 emissions over the planning period, as showcased in Table 64.

Table 64: Preliminary Portfolio H Resulting from Scenario 8 RPS Compliance and Emissions

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
RPS Soft Target, %	7%	11%	14%	18%	21%	25%	28%	32%	35%	39%	42%	46%	49%	53%	56%	60%	64%	68%	72%	76%
RPS Results, %	14%	21%	22%	23%	23%	26%	31%	35%	40%	46%	67%	70%	73%	78%	88%	99%	105%	115%	123%	134%
Difference	7%	10%	8%	5%	2%	1%	3%	3%	5%	7%	25%	24%	24%	25%	32%	39%	41%	47%	51%	58%
RPS Target, GWh	992	1436	1857	2267	2629	2944	3228	3463	3641	3778	3883	3921	3900	3847	3694	3574	3625	3604	3522	3431
RPS Results, GWh	1976	2869	2880	2900	2904	3022	3359	3652	3910	4150	5585	5534	5356	5314	5457	5689	5797	5955	5982	6033
Difference, GWh	984	1433	1023	633	275	78	131	189	269	372	1702	1613	1456	1467	1763	2115	2172	2351	2460	2602
CO_2 Emissions, Thousands of Tons	11983	9558	8165	5535	5273	5303	5016	4474	4102	3716	3408	3092	2765	2442	2033	1673	1497	1282	1068	866

[35]As indicated by the Energy Bureau on March 19, 2025, Resolution and Order of Docket Number NEPR-MI-2025-0001 at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001. Act 1-2025 will modify the current legal framework and impact the RPS results.

4.8.4 Preliminary Portfolio H Resulting from Scenario 8 – Expected Unserved Energy

An important objective of the expansion plan under consideration in the 2025 IRP is the ability of the plan to improve generation reliability. An important indicator of system reliability is the LOLE. LUMA has defined the LOLE target as an indicator to define a progressive improvement in reliability targeted to achieve an industry-standard level of LOLE performance of 0.1 days / year by 2038, which is equivalent to no more than 2.4 hours / year (2.4 hours equals 0.1 days) of EUE per year. Table 65 shows the EUE amounts and EUE events for the 2025 to 2044 planning period.

Table 65: Preliminary Portfolio H Resulting from Scenario 8 Expected Unserved Energy Target and Results

Target/ Results	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
LOLE Target Hours	-	-	-	-	-	60.6	40.4	26.9	18	12	8	5.3	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Results EUE Hours	119	3	31	15	30	-	-	-	5	2	1	-	-	-	-	-	-	-	-	-
Results EUE, GWh	21.5	0.4	12	2.5	9.7	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-
Results Max EUE, MW	755.3	293.2	868.5	341.8	591.3	-	-	-	112.4	2.4	0.4	-	-	-	-	-	-	-	-	-
Results EUE Events	17	2	4	1	2	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0

4.8.5 Preliminary Portfolio H Resulting from Scenario 8 – System Costs and PVRR

In addition to achieving adopted targets for RPS and system reliability, minimizing costs is an important consideration for the recommended expansion planning scenario. Table 66 shows the cost components of Portfolio H each year during the planning period, and it indicates the total PVRR needed to recover the costs of Preliminary Portfolio H.

Table 66: Preliminary Portfolio H Resulting from Scenario 8 System Costs and PVRR

Cost ($M)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Variable Production Costs	1978	1375	1229	1130	1073	1062	1103	1080	1088	1078	1170	1115	1060	1001	941	906	898	882	842	807
Total Production Cost	2685	2227	2086	1841	1790	1773	1787	1773	1780	1759	1792	1733	1642	1578	1526	1493	1490	1478	1446	1420
Total System Costs	2899	2732	2686	2521	2473	2519	2541	2574	2589	2661	2705	2659	2544	2501	2381	2370	2240	2293	2349	2453
PVRR	2485	4654	6628	8344	9903	11372	12745	14033	15232	16373	17447	18425	19291	20080	20775	21415	21976	22507	23011	23498
Total Production Cost, $/kWh*	0.16	0.13	0.13	0.11	0.12	0.12	0.12	0.13	0.13	0.14	0.15	0.15	0.15	0.16	0.17	0.17	0.18	0.18	0.19	0.19
Total System Cost, $/kWh*	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.18	0.19	0.21	0.22	0.23	0.24	0.25	0.26	0.28	0.27	0.29	0.30	0.33

*Total system costs are not equivalent to tariffs.

4.9 Preliminary Portfolio I Resulting from Scenario 9

4.9.1 Preliminary Portfolio I Resulting from Scenario 9 – System Capacity Balance, Capacity Additions, and Retirements

The resource additions and retirements for Preliminary Portfolio I are presented in this section. Also presented is a capacity balance, which compares the total installed resources and the total firm resources to the projected peak load for each year in the planning horizon.

Table 67 presents the Preliminary Portfolio I, year-by-year resource balances from 2025 to 2044. For each year shown, the value of the total resources reflects the total MW of installed resources regardless of type. These resources include conventional generation, renewable generation, BESS, distributed storage under utility control, distributed solar export to the grid, and the capacity impact of demand response programs. Also shown in this table are the firm resources available each year. Firm resources are less than the total installed resources due to reduced capacity values for intermittent renewable generation (wind, solar, and hydro) and energy storage resources.

Table 68 and Table 69 present the capacity of energy resource additions and retirements that occur under the Preliminary Portfolio I. Combined, the information of the tables shows significant activity with numerous additions and retirements over the planning period. The changes in the resource portfolio are primarily driven by the addition of renewable energy resources and the systematic retirements of the legacy fossil-fueled resources to meet the RPS targets and improve the EUE performance.

Table 67: Portfolio I Resulting from Scenario 9 Capacity Balance

Measure MW	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Peak Demand	2875	2784	2741	2693	2684	2654	2632	2608	2599	2596	2593	2553	2532	2512	2491	2489	2472	2443	2430	2419
Total Res.*	5075	6823	6949	7022	7101	8115	7983	8531	8090	7287	7376	7443	7497	7661	7842	7381	7547	7733	7926	8082
Firm Res.	3451	3978	4020	3907	3935	5217	5149	5641	5235	4386	4530	4436	4597	4563	4791	4238	4436	4540	4537	4717
Firm Res. Above Peak Demand	576	1193	1280	1214	1252	2563	2516	3033	2636	1789	1937	1882	2065	2052	2300	1749	1964	2097	2107	2298
Firm Capacity % Above Peak	20.0	42.9	46.7	45.1	46.6	96.6	95.6	116.3	101.4	68.9	74.7	73.7	81.6	81.7	92.3	70.3	79.5	85.8	86.7	95.0

*Resources.

Table 68: Capacity Addition Summary (MW) for Preliminary Portfolio I Resulting from Scenario 9

-Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
CHP	47	24	13	15	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
DPV	131	44	49	51	54	56	58	60	63	66	68	71	74	77	80	84	87	91	95	99	**1459**
DBESS- Controlled	5	3	4	4	5	5	5	5	6	6	7	8	9	9	10	11	7	8	8	9	**134**
DR	0	0	0	3	14	22	36	31	21	16	13	19	27	41	55	59	74	90	90	48	**658**
Hydro	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**67**
New Genera Units (LNG, BESS)	-	430	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**616**
Thermal Gen	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**
Tranche 1 & 2 BESS	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**410**
Tranche 1 & 2 Solar	35	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**620**
ASAP BESS, Phase 1	-	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**185**
Biodiesel Conversions	-	-	-	-	-	319	454	-	-	-	-	-	-	36	-	-	-	551	-	-	**1,360**
4 Hour BESS	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**20**
New Gas Gen *	-	-	-	-	-	1003	-	453	-	-	-	-	-	-	36	-	-	-	-	-	1492
Total	**218**	**1749**	**273**	**527**	**80**	**1406**	**553**	**549**	**89**	**88**	**88**	**97**	**110**	**163**	**182**	**154**	**168**	**739**	**193**	**156**	**7580**

*Includes LNG SJ, CS and Trucked.

Table 69: Preliminary Portfolio I Resulting from Scenario 9 Resource Generation Capacity Retirements (MW)

Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
Coal	-	-	-	(454)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(454)**
Diesel	-	-	(147)	-	-	-	-	-	-	(200)	-	-	-	-	-	(340)	-	-	-	-	**(687)**
Fuel Oil	-	-	-	-	-	(300)	(230)	-	(160)	(440)	-	-	-	-	-	-	-	-	-	-	**(1130)**
Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2.4)	(2.4)	-	-	**(5)**
LNG Retirements*	-	-	-	-	-	(93)	(454)	-	(350)	(250)	-	-	-	-	-	(275)	-	(551)	-	-	**(1,973)**
UPV	-	-	-	-	-	-	-	(2)	(20)	-	-	(30)	(55)	-	-	-	-	-	-	-	**(107)**
Total	**-**	**-**	**(147)**	**(454)**	**-**	**(393)**	**(684)**	**(2)**	**(530)**	**(890)**	**-**	**(30)**	**(55)**	**-**	**-**	**(615)**	**(2)**	**(553)**	**-**	**-**	**(4355)**

*Includes LNG SJ, EcoElec and Trucked. These retirements include conversions to biodiesel. Units converted to biodiesel are listed in the ***Addition Summary*** table under the **Biodiesel Conversions** category.

4.9.2 Preliminary Portfolio I Resulting from Scenario 9 – Energy Production by Resource and Fuel

Table 70 provides detail on the source of energy production by fuel type and resource for the Preliminary Portfolio I Resulting from Scenario 9.

Table 70: Preliminary Portfolio I Resulting from Scenario 9 Energy Production by Fuel or Resource (GWh)

Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Coal	2735	3258	2903	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel	1289	243	110	107	81	5	8	6	1	1	1	1	1	1	0	2	1	1	0	1
Fuel Oil	4063	2659	1648	942	1059	43	44	0	0	0	0	0	0	0	0	0	0	0	0	0
LNG - EcoElec	4786	4518	4481	4564	4416	4184	4358	4224	4238	4227	4175	3952	3866	3726	3524	3454	3270	4192	4179	4104
LNG-SJ	3308	4120	4078	7402	7237	8204	5214	5374	5340	5128	5046	4783	4460	4265	4061	3771	3477	1357	1080	932
LNG-CS	0	0	0	0	0	710	953	907	765	700	537	435	313	162	108	49	88	767	704	563
Hydro	67	116	243	243	243	300	300	301	301	300	300	301	300	300	300	301	300	300	301	301
UPV	657	677	677	679	676	677	676	675	633	633	632	576	459	459	458	459	459	458	459	460
Land Based Wind	261	270	269	271	269	269	269	271	269	269	270	270	269	270	270	270	269	269	269	271
Landfill	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	11	0	0	0
LNG - Trucked	505	462	1748	1600	1592	184	353	130	78	67	70	67	27	20	16	11	6	89	48	65
Biodiesel	0	0	0	0	0	815	3025	2968	2925	3035	3154	3495	3928	4167	4386	4582	4868	5034	5200	5343
Solar - Tranche 1	235	944	946	948	945	945	946	947	945	946	945	948	944	944	945	948	946	944	945	947
Solar - Tranche 2	0	111	111	111	111	111	111	111	111	111	110	111	111	111	111	111	111	111	111	111
CHP	347	426	510	667	751	729	698	742	803	788	757	727	699	677	661	653	654	654	654	653
DPV	303	406	453	505	567	628	695	758	829	898	964	1036	1121	1209	1304	1391	1492	1593	1702	1800
DR	0	0	0	0	0	0	3	4	0	5	0	7	8	10	5	14	16	21	25	27
BESS- 4 HR	-	180	265	249	257	216	234	206	201	210	218	208	231	221	211	196	178	237	247	261
BESS- Tranche 1	40	234	238	215	222	206	212	185	180	183	209	201	221	215	211	186	174	223	238	254
BESS- Tranche 2	-	52	53	46	48	36	39	36	35	38	38	36	37	38	35	29	27	40	41	43
ASAP BESS	-	99	90	81	86	92	92	84	84	85	90	90	96	95	91	85	77	89	96	104
DBESS	7	12	17	23	29	37	44	49	58	67	72	82	89	106	123	135	143	170	180	193

4.9.3 Preliminary Portfolio I Resulting from Scenario 9 – RPS Compliance and Emissions

LUMA applied the same targets to all Scenarios to incrementally attain 76% RPS by 2044, and the 100% RPS by 2050 as required by Act 17 of 2019 prior to the amendments of Act 1 of 2025[36]. The preliminary Portfolio I's aggressive shift toward meeting RPS targets and away from fossil fuel generation results in a significant reduction of CO_2 emissions over the planning period, as showcased in Table 71.

Table 71: Preliminary Portfolio I Resulting from Scenario 9 RPS Compliance and Emissions

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
RPS Soft Target, %	7%	11%	14%	18%	21%	25%	28%	32%	35%	39%	42%	46%	49%	53%	56%	60%	64%	68%	72%	76%
RPS Results, %	13%	19%	20%	20%	20%	26%	43%	43%	43%	45%	47%	50%	54%	57%	60%	63%	66%	70%	73%	76%
Difference	6%	8%	6%	2%	-1%	1%	15%	11%	8%	6%	5%	4%	5%	4%	4%	3%	2%	2%	1%	0%
RPS Target, GWh	1079	1572	2071	2566	3055	3508	3957	4375	4786	5199	5594	5934	6265	6589	6902	7223	7613	7920	8244	8573
RPS Results, GWh	1970	2869	2880	2900	2904	3508	5181	5228	5234	5413	5596	5918	6262	6584	6904	7223	7618	7920	8249	8577
Difference, GWh	891	1297	809	334	-151	0	1224	853	448	214	2	-16	-3	-5	2	0	5	0	5	4
CO_2 Emissions, Thousands of Tons	13186	10808	9449	6948	6746	6159	6039	5839	5654	5496	5354	5148	5012	4847	4701	4557	4484	4589	4369	4167

[36] As indicated by the Energy Bureau on March 19, 2025, Resolution and Order of Docket Number NEPR-MI-2025-0001 at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001. Act 1-2025 will modify the current legal framework and impact the RPS results.

4.9.4 Preliminary Portfolio I Resulting from Scenario 9 – Expected Unserved Energy

An important objective of the expansion plan under consideration in the 2025 IRP is the ability of the plan to improve generation reliability. An important indicator of system reliability is the LOLE. LUMA has defined the LOLE target as an indicator to define a progressive improvement in reliability targeted to achieve an industry-standard level of LOLE performance of 0.1 days / year by 2038, which is equivalent to no more than 2.4 hours / year (2.4 hours equals 0.1 days) of EUE per year. Table 72 shows the EUE amounts and EUE events for the 2025 to 2044 planning period.

Table 72: Preliminary Portfolio I Resulting from Scenario 9 Expected Unserved Energy Target and Results

Target/ Results	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
LOLE Target Hours	-	-	-	-	-	60.6	40.4	26.9	18	12	8	5.3	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Results EUE Hours	318	120	45	40	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Results EUE, GWh	49.1	22.1	11.8	8.7	12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Results Max EUE, MW	887.1	744.8	851.1	586.9	902.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Results EUE Events	67	21	8	6	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

4.9.5 Preliminary Portfolio I Resulting from Scenario 9 – System Costs and PVRR

In addition to achieving adopted targets for RPS and system reliability, minimizing costs is an important consideration for the recommended expansion planning scenario. Table 73 shows the cost components of Portfolio I each year during the planning period, and it indicates the total PVRR needed to recover the costs of Preliminary Portfolio I.

Table 73: Preliminary Portfolio I Resulting from Scenario 9 System Costs and PVRR

Cost ($M)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Variable Production Costs	2204	1621	1501	1412	1411	1371	1542	1560	1573	1603	1634	1668	1775	1853	1908	1983	2112	2078	2092	2111
Total Production Cost	2911	2472	2358	2122	2129	2107	2268	2302	2283	2273	2314	2346	2437	2520	2587	2612	2749	2718	2742	2771
Total System Costs	3049	2879	2857	2705	2748	2995	3165	3287	3276	3246	3296	3302	3407	3519	3620	3668	4052	3861	3909	3955
PVRR	2614	4899	6999	8840	10571	12319	14029	15673	17191	18583	19892	21106	22266	23375	24432	25423	26437	27332	28170	28956
Total Production Cost, $/kWh*	0.16	0.14	0.13	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.14	0.14	0.15	0.16	0.16	0.16	0.17	0.17	0.18	0.18
Total System Cost, $/kWh*	0.16	0.16	0.16	0.15	0.15	0.17	0.18	0.19	0.19	0.19	0.20	0.20	0.21	0.22	0.23	0.23	0.26	0.25	0.25	0.26

*Total system costs are not equivalent to tariffs.

4.10 Preliminary Portfolio J Resulting from Scenario 10

4.10.1 Preliminary Portfolio J Resulting from Scenario 10 – System Capacity Balance, Capacity Additions, and Retirements

The resource additions and retirements for Preliminary Portfolio J are presented in this section. Also presented is a capacity balance, which compares the total installed resources and the total firm resources to the projected peak load for each year in the planning horizon.

Table 74 presents the Preliminary Portfolio J, year-by-year resource balances from 2025 to 2044. For each year shown, the value of the total resources reflects the total MW of installed resources regardless of type. These resources include conventional generation, renewable generation, BESS, distributed storage under utility control, distributed solar export to the grid, and the capacity impact of demand response programs. Also shown in this table are the firm resources available each year. Firm resources are less than the total installed resources due to reduced capacity values for intermittent renewable generation (wind, solar, and hydro) and energy storage resources.

Table 75 and Table 76 present the capacity of energy resource additions and retirements that occur under the Preliminary Portfolio J. Combined, the information of the tables shows significant activity with numerous additions and retirements over the planning period. The changes in the resource portfolio are primarily driven by the addition of renewable energy resources and the systematic retirements of the legacy fossil-fueled resources to meet the RPS targets and improve the EUE performance.

Table 74: Portfolio J Resulting from Scenario 10 Capacity Balance

Measure MW	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Peak Demand	2875	2784	2741	2693	2684	2654	2632	2608	2599	2596	2593	2553	2532	2512	2491	2489	2472	2443	2430	2419
Total Res.*	5075	6816	6905	6941	6985	7360	7428	7790	8452	8156	8202	8224	8236	7991	7888	7916	7911	8024	8204	8351
Firm Res.	3451	3977	4018	3903	3929	4530	4537	4905	4454	4129	4147	4171	4263	3989	3839	3858	3813	3871	3976	4097
Firm Res. Above Peak Demand	576	1192	1277	1210	1246	1876	1905	2297	1855	1533	1554	1618	1731	1477	1348	1369	1341	1428	1546	1679
Firm Capacity % Above Peak	20.04	42.82	46.60	44.92	46.41	70.69	72.35	88.07	71.37	59.03	59.93	63.36	68.37	58.81	54.10	55.01	54.26	58.44	63.60	69.40

*Resources.

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Table 75: Capacity Addition Summary (MW) for Preliminary Portfolio J Resulting from Scenario 10

-Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
CHP	47	24	13	15	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**107**
DPV	131	39	14	17	21	25	30	36	39	38	32	32	38	46	54	63	72	81	89	97	**997**
DBESS- Controlled	5	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	**29**
DR	0	0	0	3	14	22	36	31	21	16	13	19	27	41	55	59	74	90	90	48	**658**
Hydro	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**67**
New Genera Units (LNG, BESS)	-	430	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**616**
Thermal Gen	-	-	-	454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**
Tranche 1 & 2 BESS	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**410**
Tranche 1 & 2 Solar	35	585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**620**
ASAP BESS, Phase 1	-	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**185**
Biodiesel Conversions	-	-	-	-	-	93	454	-	-	-	-	-	-	-	-	-	-	-	-	-	**547**
4 Hour BESS	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**20**
New Gas Gen *	-	-	-	-	-	551		297	-	-	-	-	-	18	36	-	-	-	-	-	**902**
Total	**218**	**1742**	**235**	**490**	**44**	**768**	**521**	**365**	**1362**	**54**	**46**	**52**	**66**	**106**	**147**	**123**	**147**	**172**	**216**	**147**	**7021**

*Includes LNG SJ, CS and Trucked.

Table 76: Preliminary Portfolio J Resulting from Scenario 10 Resource Capacity Retirements (MW)

-Resources	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	Total
Coal	-	-	-	(454)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(454)**
Diesel	-	-	(147)	-	-	-	-	-	(100)	(100)	-	-	-	-	-	(95)	(150)	(48)	-	-	**(640)**
Conv Thermal: Dual Fuel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(18)	-	**(18)**
Fuel Oil	-	-	-	-	-	(300)		-	(580)	(250)	-	-	-	-	-	-	-	-	-	-	**(1,130)**
Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(2.4)	(2.4)	-	-	**(5)**
LNG Retirements*	-	-	-	-	-	(93)	(454)	-	-	-	-	-	-	(350)	(250)	-	-	(9)	(18)	-	**(1,174)**
UPV	-	-	-	-	-	-	-	(2)	(20)	-	-	(30)	(55)	-	-	-	-	-	-	-	**(107)**
Total	**-**	**-**	**(147)**	**(454)**	**-**	**(393)**	**(454)**	**(2)**	**(700)**	**(350)**	**-**	**(30)**	**(55)**	**(350)**	**(250)**	**(95)**	**(152)**	**(59)**	**(36)**	**-**	**(4,355)**

*Includes LNG SJ, EcoElec and Trucked. These retirements include conversions to biodiesel. Units converted to biodiesel are listed in the ***Addition Summary*** table under the **Biodiesel Conversions** category.

4.10.2 Preliminary Portfolio J Resulting from Scenario 10 – Energy Production by Resource and Fuel

Table 77 provides detail on the source of energy production by fuel type and resource for the Preliminary Portfolio J Resulting from Scenario 10.

Table 77: Preliminary Portfolio J Resulting from Scenario 10 Energy Production by Fuel or Resource (GWh)

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Coal	2726	3258	2903	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel	1285	240	111	100	82	10	27	30	4	2	2	2	2	3	4	1	1	1	1	1
Fuel Oil	4048	2529	1573	977	1014	35	177	12	56	0	0	0	0	0	0	0	0	0	0	0
LNG - EcoElec	4764	4583	4460	4562	4416	4259	4475	4221	3914	3951	3915	3931	3810	3765	3641	3516	3195	3131	2871	2627
LNG-SJ	3265	4073	4063	7315	7230	8898	5862	5236	4615	4492	4365	4241	4305	4178	3992	3718	3590	3221	3087	2903
LNG-CS	0	0	0	0	0	0	0	871	530	474	461	413	367	319	251	241	188	159	132	179
Hydro	66	116	243	243	243	301	300	301	300	300	300	301	300	300	300	301	300	300	300	301
UPV	657	677	677	679	676	808	807	806	1929	1929	1928	1875	1754	1755	1754	1758	1754	1751	1750	1755
Land Based Wind	263	270	269	271	269	269	269	271	269	269	270	270	269	270	270	270	269	269	269	271
Landfill	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	11	0	0	0
LNG - Trucked	494	444	1745	1567	1586	158	215	89	69	58	67	57	66	71	66	43	65	47	45	46
Biodiesel	0	0	0	0	0	623	3070	3019	2919	2951	2955	2893	2885	2873	3035	3259	3586	3776	3962	4109
Solar - Tranche 1	235	944	946	948	945	945	946	947	945	946	945	948	944	944	945	948	946	944	945	947
Solar - Tranche 2	0	111	111	111	111	111	111	111	111	111	110	111	111	111	111	111	111	111	111	111
CHP	347	426	510	667	751	730	698	742	803	788	757	727	699	677	661	653	652	654	651	648
DPV	406	545	579	602	628	661	704	753	805	862	915	961	1009	1070	1146	1232	1327	1438	1564	1699
DR	0	0	0	0	0	2	3	4	0	5	0	8	8	10	7	14	16	20	22	20
Conv Thermal: Dual Fuel	0	0	0	0	0	0	0	17	14	16	14	13	13	14	9	7	9	7	0	0
BESS 4HR	0	192	280	262	269	231	267	256	348	354	349	349	345	352	350	373	354	352	362	375
BESS Tranche 1	44	247	256	223	237	233	262	250	364	374	369	363	356	380	385	401	395	389	388	401
BESS Tranche 2	0	54	55	49	51	37	47	44	63	62	64	61	61	65	67	65	65	64	64	66
ASAP BESS	0	99	93	87	89	95	109	108	143	149	146	143	143	150	147	152	148	147	154	158
DBESS	7	9	11	13	15	18	19	19	20	21	22	22	23	24	26	29	29	31	33	35

As noted earlier in this report, the Dominican Republic generation is forced in for the modeling and then dispatched to Puerto Rico based on economic dispatch of the generation available in Puerto Rico versus the generation added in the Dominican Republic. Based on economic dispatch, the solar generation in the Dominican Republic contributes an annual average of 1165 GWh, while the 551 MW biodiesel fueled Combined Cycle unit in Dominican Republic only contributes an annual average of 5 GWh with an average annual capacity factor of 0.1%.

4.10.3 Preliminary Portfolio J Resulting from Scenario 10 – RPS Compliance and Emissions

LUMA applied the same targets to all Scenarios to incrementally attain 76% RPS by 2044, and the 100% RPS by 2050 as required by Act 17 of 2019 prior to the amendments of Act 1 of 2025.[37] The preliminary Portfolio J's aggressive shift toward meeting RPS targets and away from fossil fuel generation results in a significant reduction of CO_2 emissions over the planning period, as showcased in Table 78.

Table 78: Preliminary Portfolio J Resulting from Scenario 10 RPS Compliance and Emissions

Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
RPS Soft Target, %	7%	11%	14%	18%	21%	25%	28%	32%	35%	39%	42%	46%	49%	53%	56%	60%	64%	68%	72%	76%
RPS Results, %	13%	19%	20%	20%	20%	26%	44%	44%	53%	54%	55%	55%	55%	56%	59%	62%	66%	69%	73%	76%
Difference	6%	8%	6%	2%	-1%	1%	16%	12%	17%	15%	13%	9%	6%	3%	3%	2%	2%	1%	1%	0%
RPS Target, GWh	1073	1560	2056	2551	3044	3501	3955	4376	4793	5211	5612	5963	6312	6651	6977	7304	7702	8009	8328	8638
RPS Results, GWh	1971	2869	2880	2900	2904	3501	5346	5399	6526	6642	6728	6711	6661	6741	6983	7304	7707	8005	8328	8637
Difference, GWh	13098	10731	9356	6909	6699	5979	5989	5700	5003	4865	4768	4690	4568	4426	4285	4109	3980	3822	3675	3535
CO_2 Emissions, Thousands of Tons	11983	9558	8165	5535	5273	5232	5014	4155	3668	3198	2395	2132	1869	1605	1193	835	680	494	315	146

[37] As indicated by the Energy Bureau on March 19, 2025, Resolution and Order of Docket Number NEPR-MI-2025-0001 at: https://energia.pr.gov/expedientes/?docket=nepr-mi-2025-0001. Act 1- 2025 will modify the current legal framework and impact the RPS results.

4.10.4 Preliminary Portfolio J Resulting from Scenario 10 – Expected Unserved Energy

An important objective of the expansion plan under consideration in the 2025 IRP is the ability of the plan to improve generation reliability. An important indicator of system reliability is the LOLE. LUMA has defined the LOLE target as an indicator to define a progressive improvement in reliability targeted to achieve an industry-standard level of LOLE performance of 0.1 days / year by 2038, which is equivalent to no more than 2.4 hours / year (2.4 hours equals 0.1 days) of EUE per year. Table 79 shows the EUE amounts and EUE events for the 2025 to 2044 planning period.

Table 79: Preliminary Portfolio J Resulting from Scenario 10 Expected Unserved Energy Target and Results

Target/ Results	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
LOLE Target Hours	-	-	-	-	-	60.6	40.4	26.9	18.0	12.0	8.0	5.3	3.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Results EUE Hours	312	107	20	37	33	-	-	24	3	-	1	-	-	-	-	-	3	-	-	-
Results EUE, GWh	47.58	20.03	3.5	8.25	12.55	-	-	3	0.11	-	0.05	-	-	-	-	-	0.18	-	-	-
Results Max EUE, MW	887.6	815.51	570.35	588.01	912	-	-	376.89	73.52	-	49.89	-	-	-	-	-	90.72	-	-	-
Results EUE Events	67	17	5	4	4	-	-	5	1	-	1	-	-	-	-	-	1	-	-	-

4.10.5 Preliminary Portfolio J Resulting from Scenario 10 – System Costs and PVRR

In addition to achieving adopted targets for RPS and system reliability, minimizing costs is an important consideration for the recommended expansion planning scenario. Table 80 shows the cost components of Portfolio J each year during the planning period, and it indicates the total PVRR needed to recover the costs of Preliminary Portfolio J.

Table 80: Preliminary Portfolio J Resulting from Scenario 10 System Costs and PVRR

Cost ($M)	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Variable Production Costs	2189	1601	1484	1403	1402	1266	1529	1532	1437	1456	1482	1483	1496	1510	1518	1550	1625	1666	1714	1756
Total Production Cost	2896	2453	2340	2114	2120	1990	2261	2281	2157	2154	2191	2190	2188	2185	2190	2221	2284	2322	2379	2432
Total System Costs	3034	2859	2841	2697	2739	2767	3046	3135	3310	3285	3328	3300	3308	3326	3361	3411	3719	3594	3672	3738
PVRR	2601	4871	6959	8795	10521	12135	13781	15349	16882	18291	19613	20826	21953	23001	23982	24904	25835	26667	27455	28198
Total Production Cost, $/kWh*	0.16	0.13	0.13	0.12	0.12	0.11	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.16
Total System Cost, $/kWh*	0.16	0.16	0.16	0.15	0.15	0.16	0.17	0.18	0.19	0.19	0.20	0.20	0.20	0.20	0.21	0.21	0.23	0.23	0.24	0.24

*Total system costs are not equivalent to tariffs.

5.0 Flexibility Analysis

A "Flexibility Analysis" was developed to enhance the robustness of the 2025 IRP. This process takes the portfolios created through the scenario analyses identified above and tests the performance of each of the six Core Portfolios ("Portfolios A through F") under each of the six Core scenarios ("Scenarios 1 through 6"). For example, Portfolio A is tested under the conditions described in Scenarios 2, 3, 4, 5, and 6: Portfolio B is tested against the conditions in Scenarios 1, 3, 4, 5, and 6. The primary indicator used to assess and compare the portfolios is PVRR. PVRR is the total cost of electricity production over the 20-year term of the IRP, which is discounted to reflect the time value of money. The matrix of PVRR that results from the Flexibility Analysis (i.e., PVRR of each of the 6 portfolios modeled against the conditions in each of the 6 scenarios) enables a comparison of how flexible a Portfolio is to adapt to a range of future conditions, including the different load forecasts in the different scenarios.

The premise behind the Flexibility Analysis is that any resource portfolio plan implemented may be required to operate under future conditions that are different from what was originally forecasted. Therefore, the ability of a selected portfolio plan to change and efficiently adapt to a different future is an important and valuable attribute in choosing a resource plan. For the Flexibility Analysis, it was assumed that:

1. All the portfolios would have their resource addition plans locked in (i.e., with no reduction or elimination of resource additions allowed) for the years 2025 to 2031. This period was chosen given that:

    a. It will take time to have sufficient data to confirm that a change in the resource plan is needed to adapt to conditions that vary from the original forecast.

    b. The currently planned additions of new resources will continue to progress through the procurement and development process resulting in contractual commitments that would be problematic and/or costly to modify.

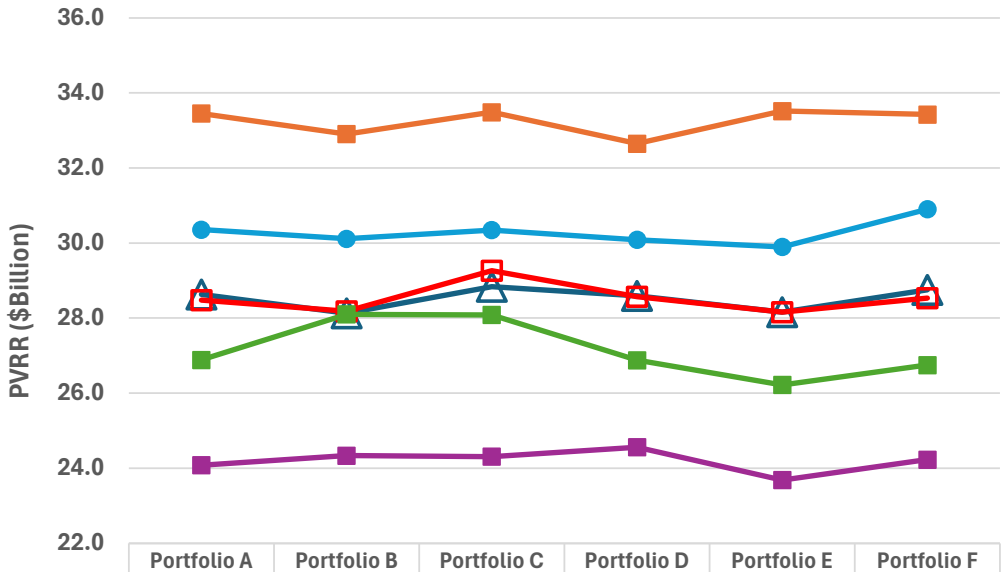
    c. In addition to the Fixed Additions and Retirements, the model was constraint from installing batteries before 2027, and all other generation technologies and transmission lines cannot be installed before 2030.

2. Incremental resource additions to the portfolios or changes to the retirement plans are allowed in the Flexibility Analysis to represent some pre-2032 adaptation to changing conditions (e.g., a higher load than forecast), but the same considerations would hold for any incremental additions or changes to the planned retirements. However, any incremental addition or resources or changes in the retirement plans must include the same lead-time limitations used in the definition of the original portfolios plan, i.e., no new BESS before 2027 and no new generating units or transmission before 2030, no changes to retirement before 2030.

The Flexibility Analysis was completed for the full 20 years (2025-2044) as required by Regulation 9021. The graph of the Flexibility Analysis is shown in Figure 7.

A chart of Flexibility Analysis PVRR results with an accompanying data table is provided below in Figure 5. In this chart, the lowest PVRR value for each scenario is highlighted in green, while the selected PPRP is highlighted in blue.

Figure 7: Flexibility Analysis PVRR Results

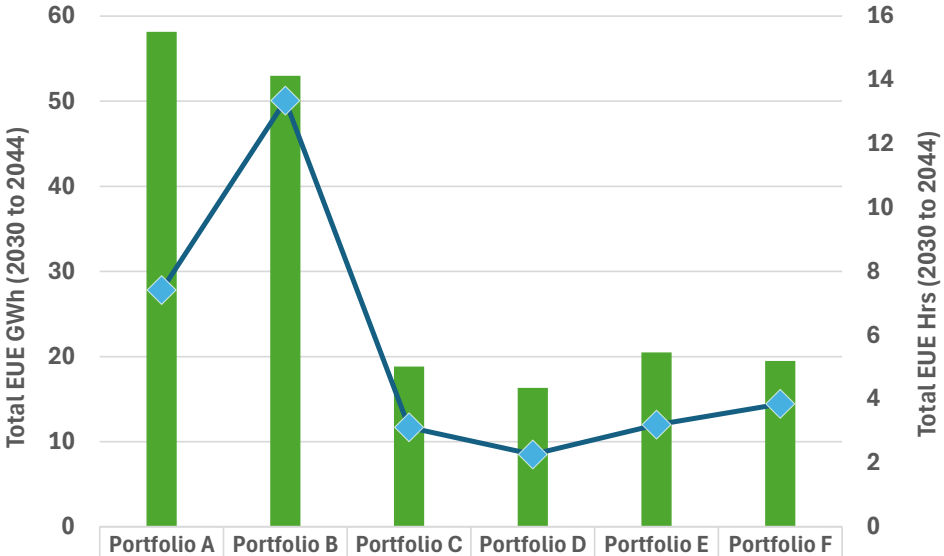


	Portfolio A	Portfolio B	Portfolio C	Portfolio D	Portfolio E	Portfolio F
Scenario 1 - Most Likely	28.6	28.1	28.8	28.6	28.2	28.7
Scenario 2 - Stress	33.5	32.9	33.5	32.6	33.5	33.4
Scenario 3 - More Ag Land	28.5	28.2	29.3	28.6	28.2	28.5
Scenario 4 - Optimistic	30.4	30.1	30.3	30.1	29.9	30.9
Scenario 5 - Load Loss	24.1	24.3	24.3	24.6	23.7	24.2
Scenario 6 - High DBESS & EE	26.9	28.1	28.1	26.9	26.2	26.8

The Flexibility Analysis indicated that Portfolio E performed very well across the different scenarios and provided the lowest PVRR in all but Scenario 2.

In assessing the portfolios that resulted from the Flexibility Analysis, it was noticed that both the EUE hours and the EUE GWh were generally lower for Portfolio E than the other portfolios. The results of the EUE hours and the EUE GWh from the Flexibility Analysis are shown in Figure 8.

Figure 8: Flexibility Analysis Results for EUE hours and the EUE GWh



	Portfolio A	Portfolio B	Portfolio C	Portfolio D	Portfolio E	Portfolio F
Total EUE Hrs (2030 to 2044)	58	53	19	16	21	20
Total EUE GWh (2030 to 2044)	7	13	3	2	3	4

6.0 Description of Preliminary Portfolio Results and Scorecard

To assess the relative performance of multiple alternative resource portfolios and to document the basis of the assessment in the 2025 IRP filing, LUMA proposed in the November 14, 2023 Motion of Request For Flexibilization Of Requirement To Use A Quantitative Weighted Scorecard Methodology to Select Preferred Portfolio as included in the 2020 IRP Order,[38] using a color coded matrix, or what is referred to as a "heat map," to display the results in a simple color-coding that reflects the relative performance of each portfolio for an individual objective.

On December 20, 2023 the Energy Bureau issued a Resolution and Order ("December 23 R&O") taking "notice of LUMA's plans to use "heat map" approaches to present visual information about the net present value of revenue requirement metrics to be used in scenario analysis in the IRP."[39] The Energy Bureau also indicated that it "**EXPECTS** LUMA to follow Regulation 9021 and include detailed discussion of other factors that may not have quantitative information comparable to that of the NPVRR metric. The Energy Bureau also **EXPECTS** that LUMA would include discernable costs, as relevant and appropriate, that may be treated outside the immediate PLEXOS® modeling structure when developing scenario NPVRR values, under Regulation 9021."[40] The color-coding visually serves to illustrate the relative results of the quantitative indicators of results of individual objectives, facilitates the focus on the portfolios that achieve favorable results at the least cost, and shows how each portfolio compares to the objectives of the 2025 IRP. Figure 9 and Figure 10 show the results of Portfolios A to F based on the objectives assigned to the scenarios. The color-coding matrix shows green as Low or as the most favorable, yellow as Medium, and red as High or least favorable.

[38] See at: https://energia.pr.gov/wp-content/uploads/sites/7/2023/11/20231114-Request-Flexibilization-of-Requirement-to-Use-a-Quantitative-Weighted-Scorecards-Methodology-to-Select-Preferred-Portfolio-as-Included-in-the-2020-IRP-Order.pdf

[39] See at https://energia.pr.gov/wp-content/uploads/sites/7/2023/12/20231220-AP20230004-Resolution-and-Order.pdf

[40] Id.

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Figure 9: Portfolio Indicators Results- Scorecard 1

	Environment				Affordability (Costs)				Compliance		Diversity of generation			
	Avg CO2e - 2025 to 2044 (tons/GWh)	Avg CO2e - 2044 (tons/GWh)	Acres of Ag. Land Used	Year last heavy fuel unit operates	PVRR for source scenario ($B)	LCOE ($/kWh)			Year when 40% RPS target attained	Year when 60% RPS target attained	Fossil energy in 2044 (%)	Solar energy in 2044 (including DPV) (%)	Biodiesel energy in 2044 (%)	Wind energy in 2044 (%)
						5-year 2025 to 2029	10-year 2025 to 2034	20-year 2025 to 2044						
Portfolio A	312.77	232.39	2,200	2030	28.63	0.156	0.165	0.183	2030	2039	35	20	33	2
Portfolio B	322.02	166.41	2,200	2033	32.90	0.160	0.168	0.189	2031	2039	36	17	37	1
Portfolio C	326.24	235.46	6,725	2030	29.26	0.156	0.170	0.187	2030	2039	35	20	33	2
Portfolio D	306.25	156.61	6,725	2032	30.09	0.158	0.160	0.172	2031	2039	34	27	27	1
Portfolio E	313.48	122.59	2,200	2030	23.69	0.157	0.164	0.184	2034	2036	24	30	26	2
Portfolio F	312.19	124.85	6,725	2032	26.75	0.161	0.164	0.181	2033	2035	22	36	23	2

* Color code reflects preliminary results and may change with updated information and additional scenarios

Low
Medium
High

High
Medium
Low

Figure 10: Portfolio Indicator Results- Scorecard 2

	System Reliability and Resiliency												
	Year 0.1/year LOLE achieved & sustained	Total LOLP Hours (2025 to 2044)	% Annual Energy from DER (2044)	% DBESS vs BESS+DBESS	% TPA Peak Load served internally (includes DPV&CHP) San Juan	% TPA Peak Load served internally (includes DPV&CHP) Bayamon	% TPA Peak Load served internally (includes DPV&CHP) Arecibo	% TPA Peak Load served internally (includes DPV&CHP) Mayaguez	% TPA Peak Load served internally (includes DPV&CHP) Ponce	% TPA Peak Load served internally (includes DPV&CHP) Guayama	% TPA Peak Load served internally (includes DPV&CHP) Humacao	% TPA Peak Load served internally (includes DPV&CHP) Carolina	DBESS control (%)
Portfolio A	2036	568	5.52	3.86	100	8.2	38.2	4.5	100	100	25.7	10.6	10
Portfolio B	2033	1,899	6.55	0	100	21.5	30.2	2.4	100	53.3	27.7	6.6	0
Portfolio C	2030	517	10.7	4.15	100	17.4	16.5	4.5	100	100	19.3	10.6	10
Portfolio D	2032	1,825	9.78	7.49	100	9.8	14.2	2.4	100	100	33.1	6.6	20
Portfolio E	2030	185	16.4	6.26	100	24.6	87.5	9.2	100	47.4	45.8	43.3	20
Portfolio F	2031	621	15	20.9	100	24.6	65	44.6	100	100	50.3	100	60

	Low
	Medium
	High

	>70%
	20-70%
	<20%

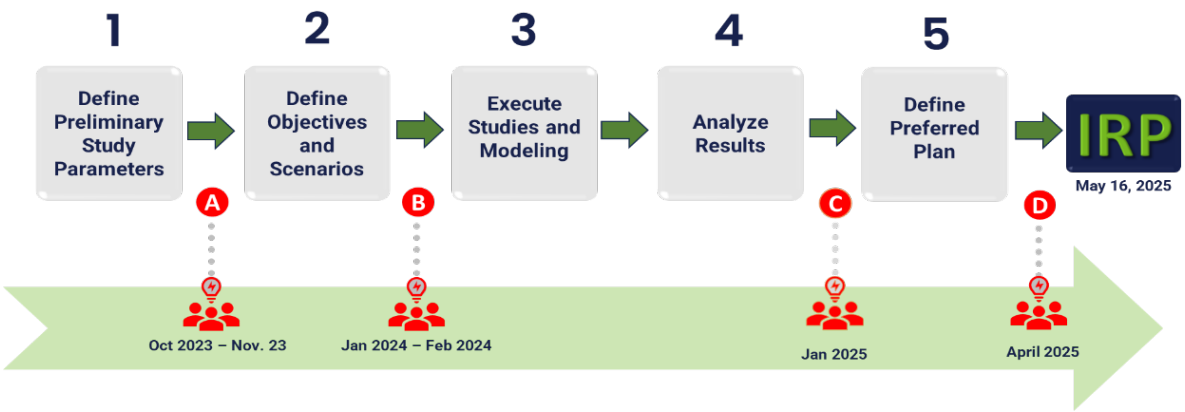
	20%
	10%
	0%

7.0 Third Round of Stakeholder Meetings, Solutions for the Energy Transformation of Puerto Rico (SETPR)

The Puerto Rico Act 17 of 2019 requires that "[e]very [integrated resource] plan shall be devised with broad participation from citizens and all interested groups." To comply with this requirement, LUMA launched in 2023 a collaborative stakeholder engagement initiative: Solutions for the Energy Transformation of Puerto Rico (SETPR) to collect inputs and recommendations from stakeholders of different sectors and industries. SETPR has provided LUMA with valuable information to define the objectives, scenarios, and resource portfolios of the 2025 IRP Scenarios.

LUMA organized SETPR into four rounds (A to D) of meetings to share information with Stakeholders in all phases of the development of the 2025 IRP.

Figure 11: IRP Development Stages



Up to this point, LUMA has conducted a total of 32 SETPR workshops and meetings across Puerto Rico with a total of 281 participants.

7.1 Third Round of 2025 IRP Stakeholder Meetings

Starting on January 14, 2025, LUMA hosted a total of 5 meetings to present the Preliminary Portfolios A through D resulting from Scenarios 1 to 4, consisting of three in-person sessions at the Colegio de Ingenieros y Agrimensores de Puerto Rico ("CIAPR") in San Juan and Ponce, and two virtual sessions. See Table 81 with the SETPR meeting schedules.

Table 81: Schedule of Third Round of Stakeholder Meetings

MODALITY	DATE	LOCATION	TIME
In-Person	Tuesday, January 14, 2025	CIAPR San Juan	9:00 AM – 12:00 PM
In-Person	Tuesday, January 14, 2025	CIAPR San Juan	1:30 PM – 4:30 PM
In-Person	Wednesday, January 15, 2025	CIAPR Ponce	9:30 AM – 12:00 PM
Virtual	Thursday, January 16, 2025	Zoom	9:00 AM – 12:30 PM
Virtual	Friday, January 17, 2025	Zoom	9:00 AM – 12:30 PM

As with previous stakeholder meetings, the Third Round of Stakeholder meetings was successful, with strong participation from a diverse range of industries and community sectors. These meetings fostered meaningful discussion and valuable insight for both the participants and LUMA. See Figure 13 with lists of stakeholders that participated in the Third Round of Stakeholder Meetings.

Figure 12: Participants from Third Round of Stakeholder Meetings

During the Third Round of SETPR meetings, LUMA provided an overview of the 2025 IRP development and legal requirements and included a technical section explaining the preliminary Portfolios A to D resulting from the assumptions of scenarios 1 to 4 and answered questions and concerns from participants. LUMA informed participants that a Fourth and Final Round of Meetings will be held before the 2025 IRP Report is filed with the Energy Bureau on May 16th, 2025. This final round will be held during the week of April 21, 2025.

LUMA also encouraged stakeholders to participate as intervenors in the 2025 IRP adjudicative process once the 2025 IRP is filed and provided information on the time constraint to submit the request to intervene before the Energy Bureau. LUMA considers active stakeholder participation fundamental during

the 2025 IRP development process to ensure transparency, regulatory compliance, and alignment with energy public policy objectives.

The main concerns presented by stakeholders during the meetings are listed in Table 82 and categorized by topic.

Table 82: Stakeholder Feedback by Topic

Topic	Comments
IRP Modeling Assumptions	• Stakeholders raised concerns regarding the assumptions in the IRP modeling, including
Technologies Selection	• Exclusion of Municipal waste energy, nuclear power, and Offshore wind generation. • Role of Biodiesel as a primary fuel source • Consideration of Landfill Energy Recovery and Virtual power plants. • Net Metering and its role in the IRP • Impact of the PR100 assumptions • Energy efficiency projections
Scenario Development	• The stakeholders questioned the rationale behind different scenarios and portfolios, including: • Justification of Scenario 1 • Why was the Preliminary Base Case scenario (Scenario 1) chosen as the most likely outcome.? • Inclusion of a High-load stress scenario • Methodology and Resource Selection • Main driver of the resource selection in Portfolios • Leverage Cost of Energy increases over time
Biofuel conversion timing	• Project Implementation and Timeline Concerns • Stakeholders raised concerns about the inclusion of these projects in the IRP
Major Energy Projects	• Tranche 1 and Tranche 2 • 450 MW San Juan plant (P3A) • How Fixed Decisions1 are factored into the scenarios • Funding of Department of Housing programs and subsidized customer projects • Government policies and funding delays • Could impact energy project timelines, delaying project execution
Transmission and Distribution (T&D) Infrastructure	• Stakeholders inquired about the transmission planning, grid congestion, upgrading of the T&D system, energy quality considerations, and the integration of Distributed Energy Resources (DER).
T&D Planning Considerations	• Why are Transmission Planning Areas (TPAs) aligned with senatorial districts? • Concerns regarding the transmission and distribution congestion • Unclear Timeline of the transmission system upgrades • Whether energy quality requirements are considered for industrial vs residential customers • Support on distributed energy resources
Energy Security and Fuel Dependency	• Stakeholders addressed Puerto Rico's reliance on imported fuels such as biodiesel and LNG. • Concerns about the stability of biodiesel and LNG imports
Distributed Solar Self-consumption	• Is behind-the-meter solar included in long-term planning?
Comparison with other jurisdictions	• How Puerto Rico's energy landscape compares to Hawaii

Topic	Comments
Financial and Cost Considerations	• Key costs and concerns of financial stakeholders are listed below. • Cost differences between standard diesel and Biofuel • Differences in Solar Energy cost in PR vs. mainland US • Higher solar installation costs in PR compared to other locations • Impact of PREPA's Bankruptcy • Discount Rates in financial models • Implementation of prior IRP recommendations • Concerns about whether previous IRP initiatives were successfully implemented.

Exhibit 2

(to be submitted via email)