

**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 in Compliance with
Resolution and Order of June 18, 2024

NEPR

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**MOTION IN COMPLIANCE WITH RESOLUTION AND ORDER OF JUNE 18, 2024,
AND SUBMITTING SECOND REVISED IRP FILING SCHEDULE**

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. Since the year 2022, LUMA has been developing an Integrated Resource Plan (“IRP”) that “considers all reasonable resources to satisfy the demand for electric power services . . . , including those related to energy supply, . . . and those related to energy demand . . . ,” *see* Act 17 of April 11, 2019 (“Act 17-2019”), Section 1.2 (p), and describe[s] the combination of energy supply resources and conservation that satisfies, in the short-, medium-, and long-term, the current and future needs of Puerto Rico’s energy system and of its customers at the lowest reasonable cost,” *id.*, Section 1.9(1). Given the complexities and specific ongoing challenges unique to Puerto Rico and in furtherance of LUMA’s commitment to getting the 2024 IRP right for its customers, LUMA requires considerable additional time to produce an IRP that complies with Applicable Law, including Act 57 of May 27, 2014 (“Act 57-2014”), Act 17-2019 and Energy Bureau Regulation Number 9021, *Regulation on Integrated Resource Plan for the Electric Power Authority* (“Regulation 9021”).

2. As introduced in a Motion filed on June 7, 2024, *Motion Requesting the Continuance of the Deadline for the 2024 IRP Filing*, (“June 7th Motion”), LUMA and its technical consultant encountered unexpected and unforeseeable difficulties with the modeling software that have delayed the 2024 IRP Filing.

3. Having resolved the known modeling software issues, LUMA can now provide an estimate of the time required to complete an IRP that meets applicable legal and regulatory requirements under the timeframe of twenty (20) months that LUMA originally proposed to this

Energy Bureau in 2021,¹ that is consistent with IRP timelines in other United States jurisdictions, and considers that resource planning processes to develop integrated resources plans are complex and can take years to complete.

4. LUMA respectfully requests a modification of the timeline for the 2024 IRP Filing pursuant to which LUMA would file the 2024 IRP Report on May 16, 2025. This allows LUMA the necessary time to develop the IRP, complete the modeling and scheduled tasks, and conduct stakeholder engagement meetings, as explained in Exhibit 1 of this Motion and illustrated in the proposed 2024 IRP Revised Schedule thoughtfully and accurately. *See Exhibit 1*, Table 4. In *Exhibit 1*, LUMA also explains its selected approach to complete the Transmission Analysis of the base case and preferred resource plan in PSS®E.

II. Procedural Background

5. On July 12, 2023, the Energy Bureau issued a Resolution and Order whereby it initiated the instant administrative proceeding for the review of the proposed 2024 IRP to be filed by LUMA as the agent for the Puerto Rico Electric Power Authority (“PREPA”) (“July 12th Order”).

6. Moreover, in the July 12th Order, the Energy Bureau took notice of LUMA's *Motion Submitting Update on IRP Technical Consultant Contracting Process, Request for Modification of Procedural Timeline and Request for Confidential Treatment* filed on March 31, 2023, in Case No. NEPR-MI-2020-0012, *In re: Implementation of the Puerto Rico Electric Power Authority Integrated Resource Plan and Modified Action Plan* (the "March 31st Motion"), through which LUMA informed the Energy Bureau of certain delays impacting the contracting of the IRP Technical Consultant.

7. In addition, the Energy Bureau granted LUMA's request in the March 31st Motion to schedule the initial Prefiling Technical Conference regarding the review of the 2024 IRP to no earlier than May 2023 to provide sufficient time for LUMA to be able to complete the technical consultant contracting process before the technical conference. Accordingly, the Energy Bureau scheduled the 2024 IRP Prefiling Initial Technical Conference for August 8, 2023, pursuant to the

¹ *See Motion to Submit Report on Resource Planning Process for Next IRP Cycle and Draft RFQ-RFP Consultant and Request for Confidential Treatment*, Case NEPR-MI-2020-0012, slide 3 filed on December 17, 2021 (“December 17th Original IRP Timeline Proposal”), available at <https://energia.pr.gov/wp-content/uploads/sites/7/2021/12/Motion-to-Submit-Report-on-Resource-Planning-Process-for-Next-IRP-Cycle-and-Draft-RFQ-RFP-for-Consultant-and-Request-for-Confidential-Treatment-NEPR-MI-2020-0012.pdf>.

Regulation on Integrated Resource Plan for the Puerto Rico Electric Power Authority, Regulation No. 9021, dated April 20, 2018.

8. During the Technical Conference held on August 8, 2023, LUMA anticipated the possibility of modifying the 2024 IRP submission date to account for the delays in the contracting process of its technical consultant.

9. On August 30, 2023, LUMA filed a *Motion Submitting Revised Version of Exhibit I of Final Contract for Technical Consultant and Related Documents, Request for Approval of Final Contract, and Request for Confidential Treatment* whereby, in what is pertinent, it submitted a revised Exhibit I in the terms discussed during the Technical Conference and requested that the Energy Bureau approve the revised version of Exhibit I of the technical consultant contract.

10. On September 7, 2023, the Energy Bureau issued a Resolution and Order approving the revised technical contract between LUMA and the technical contractor and scheduled a second IRP pre-filing conference for October 31, 2023.

11. The second pre-filing Technical Conference was held on October 31, 2023. During the same, LUMA discussed the Presentation and answered the questions posed by the members of the Energy Bureau. LUMA also had the opportunity to introduce its technical consultant for the 2024 IRP filing (hereinafter, the “IRP Technical Consultant”).

12. During the second pre-filing Technical Conference, LUMA proposed the revised IRP filing date of June 28, 2024. LUMA explained that once the IRP Technical Consultant was onboarded, LUMA and the IRP Technical Consultant worked diligently to develop a revised schedule that takes into account the considerable work entailed by the 2024 IRP submission, the interrelation of the LUMA and the IRP Technical Consultant tasks for the 2024 IRP and the sequential nature of those tasks. At the closing of the technical conference, this Energy Bureau directed LUMA to submit its request in writing for its consideration.

13. On November 14, 2023, LUMA filed a *Request for Modification of Timeline for 2024 IRP Filing*. LUMA included the revised timeline with a summary of the explanations supporting LUMA's request. LUMA respectfully set forth that, per its discussion with the IRP Technical Consultant and based on the technical consultant's vast experience, the normal scope of a regular IRP will typically require approximately nine (9) to twelve (12) months to complete. Also, LUMA explained that complexities in the planned scope of work for the 2024 IRP, which includes eight separate planning areas as opposed to the more common single planning area,

integrated transmission modeling, and distributed energy resource modeling, as well as the transmission and distribution areas and additional sensitivities that will be considered, required extra time to develop and file the 2024 IRP.

14. On December 20, 2023, the Energy Bureau issued a Resolution and Order approving LUMA's request for an extension to file the 2024 IRP to June 28, 2024. Further, the Energy Bureau scheduled a third technical conference for January 30, 2024, for LUMA to present information on certain parts of the transmission sections of Regulation No. 9021.

15. On March 11, 2024, LUMA filed a *Motion Submitting Revised 2024 Integrated Resource Plan Scenarios and Characteristics*. Therein, LUMA submitted its *LUMA 2024 IRP, Revised Scenarios and Characteristics*, the six (6) scenarios ("Core Scenarios") that will form a key part of its 2024 IRP modeling analysis, which will be filed as part of LUMA's IRP submission. It also included four (4) scenarios ("Supplemental Scenarios") that would be filed in a Supplemental Filing. LUMA also explained that the exercise of revising the scenarios caused a temporary halt in the modeling of the base case scenario 1.

16. On March 13, 2024, the Puerto Rico Energy Bureau ("Energy Bureau") entered a Resolution and Order confirming that LUMA can continue modeling the six (6) Core Scenarios for its proposed Integrated Resource Plan ("2024 IRP") filing scheduled for June 28, 2024, as requested in LUMA's *Motion Submitting Revised 2024 Integrated Resource Plan Scenarios and Characteristics* ("March 13th Order"). The Energy Bureau also ordered LUMA to submit the applicable evaluation and analysis concerning the four (4) Supplemental Scenarios included in said Motion on or before August 1, 2024.

17. Due to modeling delays associated with its base case scenario, on June 7, 2024, LUMA requested the Energy Bureau until June 28, 2024, to provide an updated schedule of the 2024 IRP Filing, provided the base case scenario resource plan has been completed. *See* June 7th Motion.

18. On June 18, 2024, the Energy Bureau granted LUMA's request to suspend the filing date of June 28, 2024 ("June 18th Order"). It authorized LUMA to file the Supplemental scenarios no later than five weeks after the filing of the Core Scenarios. Furthermore, the Energy Bureau ordered LUMA to file by no later than June 28, 2024, an expected date on which the 2024 IRP will be filed with all completed sections and work papers.

III. Modified Timeline for 2024 IRP Filing

19. The 2024 IRP filing schedule approved by the Energy Bureau in the December 20, 2023 Order was very aggressive compared to other IRP filing schedules in different jurisdictions. It was intended to finalize the 2024 IRP in the shortest possible time but did not consider extraordinary contingencies to allow for the unique resource model software issues and delays outside LUMA's control. In order to avoid delaying the 2024 IRP filing, LUMA attempted to rescope and compress the remaining tasks to complete the 2024 IRP Filing, LUMA reduced the two remaining stakeholder meetings to a single round of meetings. *See Exhibit 1, Section 4.0.* LUMA also worked to severely compress the time allowed for modeling the remaining scenarios and for the detailed transmission system modeling. *Id.* However, the complexity and challenges of Puerto Rico's electric system and regulatory requirements, coupled with the unforeseen delays in connection with modeling the proposed scenarios, render the original timeframe for a filing in 2024, wholly insufficient. *Id.*

20. While LUMA and the IRP Technical Consultant have resolved the issues, the impact on the schedule has been significant. Thus, the schedule to file the 2024 IRP extends significantly beyond June 2024.

21. LUMA and the IRP Technical Consultant are validating the final modeling results of the scenario 1 base case resource portfolio. The current understanding is that the modeling for the scenario 1 base case resource portfolio will conclude in July. *See Exhibit 1, Table 4.*

22. Once the scenario 1 base case is completed and fully validated, LUMA can resume all subsequent tasks inherently dependent on completing and validating the scenario 1 base case resource portfolio. This includes developing additional resource portfolios, namely, scenarios 2 through 6, which tasks require at least five months to complete, and involve time-consuming analyses to select the preferred portfolio for the required 20-year plan, accounting for existing, added, and retired generation resources. To streamline this process, LUMA and the IRP Technical Consultant will implement dual pathways to work on scenarios 2 through 6 simultaneously.

23. In the coming months, once the modeling of Scenarios 1 to 6 is completed, LUMA and the IRP Technical Consultant will engage in uncertainty and sensitivities analyses to select the preferred portfolio and be in a position to begin the transmission analysis of the preferred plan.

25. Once the preferred resource plan is selected, LUMA will work in the Transmission Analysis described in Section 6.0 of *Exhibit 1*, which process is expected to take around 4 months,

until February 2025. Thereafter, LUMA will finalize the IRP Report to be submitted by May 16, 2025.

26. As described in Section 6.0 of *Exhibit 1*, planned work to develop the 2024 IRP includes PSS@E analysis of the system's ability to support the base case resource portfolio. LUMA will perform base case PSS@E violation analysis to assist in the development of the other alternative portfolios and the selection of the preferred portfolio. For the preferred portfolio, LUMA will perform a detailed transmission planning study that will define recommended solutions to address material violations. The recommended solutions will also be modeled in PSS@E to confirm their ability to resolve the violations.

27. At this time, absent additional issues with modeling, LUMA proposes to file the 2024 IRP Report on May 16, 2025, with the six (6) Core Scenarios, as indicated in the proposed 2024 IRP Revised Schedule. *See Exhibit 1*, Table 4 (illustrating the estimated time allocated for each stage necessary to complete the 2024 IRP Filing). LUMA proposes to submit supporting pre-filed testimonies by May 23, 2025, allowing 7 days to finalize the testimonies. As per the June 18th Order, the analysis of the four Supplemental Scenarios will be submitted on June 19, 2025, five weeks after the IRP Report is submitted to this Energy Bureau.

29. The proposed 2024 IRP Second Revised Schedule would place LUMA in a position to file the 2024 IRP Report within twenty (20) months after the IRP Technical Consultant began work on this project. This aligns with LUMA's initial assessment in 2021, which stated that the time required to prepare and file an IRP was twenty (20) months. *See December 17th Original IRP Timeline Proposal*, slide 3.

30. Furthermore, the 2024 IRP Second Revised Schedule is consistent with experiences in other jurisdictions that, as LUMA has identified, have similar planning horizons and spend between eighteen (18) to twenty-four (24) months to develop IRPs. LUMA includes in Section 5.0 of *Exhibit 1* to this Motion a comparison between different state jurisdictions on the amount of time it takes to develop an IRP, and the planning horizon envisioned by those plans. *See Exhibit 1*, Section 5.0.

31. The 2024 IRP Second Revised Schedule will allow LUMA and the IRP Technical Consultant to efficiently: (i) develop and analyze the Core Scenarios effectively performing the uncertainty analysis and sensitivities to select the preferred plan for Puerto Rico; (ii) perform a complete transmission analysis of the preferred resource plan; (iii) develop additional information

to submit with the filing regarding the Transmission and Distribution Plan; and (iv) conduct all Solutions for the Energy Transformation of Puerto Rico (“SETPR”) meetings as originally planned to present modeling results and preferred plans to stakeholders before the filing. *See Exhibit 1, Section 5.0.*

32. LUMA respectfully submits that the 2024 IRP Second Revised Schedule will allow LUMA to submit a 2024 IRP Report that complies with applicable law and is built upon accurate and comprehensive data and analyses and reflects the needs and priorities of customers, while reliably and cost-effectively progressing towards a more reliable, resilient, and cleaner energy system.

WHEREFORE, LUMA respectfully requests the Energy Bureau to **take notice** of the foregoing; **deem** that LUMA complied with the Resolution and Order of June 18, 2024; and **adopt** the 2024 IRP Second Revised Schedule filed in *Exhibit 1*, including the proposal to file the 2024 IRP Report on May 16, 2025.

RESPECTFULLY SUBMITTED.

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 June 28, 2024.



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Exhibit 1



Exhibit 1- 2024 IRP Filing
Revised Schedule

NEPR-AP-2023-0004

JUNE 28, 2024

Exhibit 1

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Exhibit 1

1.0 Introduction

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. Since assuming operation and maintenance responsibilities over Puerto Rico’s Transmission and Distribution System (“T&D System”), LUMA has focused on critical priorities consistent with the System Remediation Plan (“SRP”) and approved budgets to make real and sustainable progress toward achieving a better electric service for our customers.

One of LUMA’s core system planning responsibilities as Operator of the T&D System is developing and proposing the 2024 Integrated Resource Plan (“2024 IRP”). LUMA’s goal is to carry out a more accurate and detailed analysis and planning effort than ever before for the island’s electric system. Since the beginning of 2022, LUMA has diligently planned and developed a realistic and pragmatic 2024 IRP for Puerto Rico. In developing the 2024 IRP, LUMA has prioritized stakeholder engagement through the *Soluciones Energéticas para Transformar a Puerto Rico* (“SETPR”) initiative, a collaborative process designed to engage with customers and stakeholders and gain their input regarding Puerto Rico’s energy future and help ensure that LUMA receives a diverse set of viewpoints from customers across the Island.

Exhibit 1

2.0 Summary

LUMA's main objectives in this Exhibit are to maintain transparency in the development of the 2024 IRP, explain the reasons for requesting a significant extension to the 2024 IRP filing date and present the selected approach to complete the Transmission Analysis of the base case and preferred resource plan in PSS@E¹. To that end, LUMA and the IRP Technical Consultant present herein a comprehensive and reliable Second Revised 2024 IRP Schedule to build an accurate and comprehensive 2024 IRP that reflects the needs and priorities of our customers while reliably and cost-effectively progressing towards a more reliable, resilient, and cleaner energy system for Puerto Rico.

The Second Revised 2024 IRP Schedule will require a considerable extension of time to address the complexities and ongoing challenges unique to Puerto Rico. Typically, an IRP process can take several years to complete, and the proposed Second Revised 2024 IRP Schedule will allow LUMA to complete the 2024 IRP efficiently and within the typical timeframe for this type of project. This additional time will enable LUMA to complete the necessary analytical activities, as well as the associated stakeholder engagement meetings, and the filing development activities needed for ensuring a comprehensive and complete filing compliant with Regulation 9021 and the expectations of the Energy Bureau.

¹ PSS@E is a software developed by Siemens that is widely used in the industry to complete load flow and transmission analysis. More information available at: <https://www.siemens.com/global/en/products/energy/grid-software/planning/pss-software/pss-e.html>

Exhibit 1

3.0 Background of the 2024 IRP

When LUMA began working on the 2024 IRP it was expecting to have approximately 20 months to complete the 2024 IRP as indicated in the January 25, 2022, *Technical Conference and in the Submittal of the Report on Resources Planning Process for the Next IRP Cycle and Draft RFQ/RFP for IRP Consultant and Request for Confidential Treatment* filed on December 17, 2021², See Table 1, *2024 IRP Key Milestones*, which shows the initial schedule and time expected for each task.

Table 1: 2024 IRP Key Milestones Filed on December 17, 2021

Key Milestones		
	Date	Status
File Draft RFQ/RFP and contract with Energy Bureau	December 2021	C
Issue RFQ/RFP	January 2022	G
File List of Qualified Consultants with Energy Bureau	January 2022	G
File Final Contract with Energy Bureau for approval	March 2022	G
Develop IRP	March 2022 - August 2023	G
File IRP	August 2023	G

In the April 22, 2022 Resolution and Order (April 22 R&O), the Energy Bureau indicated that “*the December 17 Motion presumed an IRP filing date of August 2023, with a start date of January 2022 that coincided with issuance of an RFQ/RFP for technical consultants. This constitutes a roughly 20-month period for contracting, development, and eventual submittal of an IRP to the Energy Bureau. The “Key Milestone” chart indicated a March 2022 to August 2023 “Develop IRP” interval, or roughly 17 months for work after LUMA’s contractor selection has been approved by the Energy Bureau.*” In the same April 22 R&O, the Energy Bureau ordered LUMA to “*file an IRP by no later than March 1, 2024.*”³

As planned, the 2024 IRP project officially commenced on December 17, 2021, when LUMA submitted the IRP Technical Consultant Request for Proposal (RFP) to the Energy Bureau for approval.

² See December 17, 2021 <https://energja.pr.gov/wp-content/uploads/sites/7/2021/12/Motion-to-Submit-Report-on-Resource-Planning-Process-for-Next-IRP-Cycle-and-Draft-RFQ-RFP-for-Consultant-and-Request-for-Confidential-Treatment-NEPR-MI-2020-0012.pdf>

²¹ Motion at: <https://energja.pr.gov/wp-content/uploads/sites/7/2021/12/Motion-to-Submit-Report-on-Resource-Planning-Process-for-Next-IRP-Cycle-and-Draft-RFQ-RFP-for-Consultant-and-Request-for-Confidential-Treatment-NEPR-MI-2020-0012.pdf>

³ The initial date to file the 2024 IRP was March 1, 2024, as scheduled by the Energy Bureau in the Resolution and Order of April 22, 2022 of Docket NEPR-MI-2020-0012 and the Resolution and Order of September 7, 2023 of Docket No. NEPR-AP-2023-0004.

Exhibit 1

Unfortunately, the procurement process was extended until September 12, 2023, when LUMA and Black & Veatch (B&V) signed the Professional Service Agreement for IRP Technical Consultant (“Service Agreement for IRP Technical Consultant”), delaying the overall project for more than 18- months. The procurement process delays prompted a reassessment and update of the timeline initially presented in the Second IRP Status Report of October 3rd, 2022. See LUMA’s Motion Submitting Update on IRP Technical Consultant Contracting Process, *Motion Submitting Update on IRP Technical Consultant Contracting Process, Request for Modification of Procedural Timeline and Request for Confidential Treatment*, filed on March 31, 2023, Case No. NEPR-MI-2020-0012 (March 31, Motion) ⁴, explaining the delays.

At that time, LUMA was aware and concerned that the procurement process was compressing the timeframe of the 2024 IRP but expected that “... ultimately [it] would not impact the date for filing the 2024 IRP which as per the April 22nd Order is set for March 1, 2023.”⁵ As soon as the procurement delays were evident, LUMA decided to advance and complete all possible work before contracting the IRP Technical Consultant. Expecting that once the IRP Technical Consultant was onboard, both entities could get back on schedule and reach the March 1, 2024, filing date. For example, LUMA started working on the Transmission and Distribution analysis and completed a series of studies and analyses that are described in Table 2: Ongoing and completed activities, required for the 2024 IRP development. Some of these activities commenced in early 2022 and were completed around the time the IRP Technical Consultant came on board. LUMA also developed and launched the initiative Solutions for the Energy Transformation of Puerto Rico (SETPR). This collaborative initiative was fundamental in the development of the scenarios and objectives of the 2024 IRP. LUMA completed a total of 22 stakeholder workshops with over 170 participants across eight different municipalities in Puerto Rico⁶ and all the items described in Table 2 below.

⁴ See March 31, 2023 Motion at: <https://energia.pr.gov/wp-content/uploads/sites/7/2023/04/Motion-Submitting-Update-on-IRP-Technical-Consultant-Contracting-Process-Request-for-Modification-of-Procedural-Timeline-and-Request-for-Confidential-Treatment-NEPR-MI-2020-0012.pdf>

⁵ This is indicated in LUMA’s March 31, 2023 Motion.

⁶ More information about the SETPR stakeholder engagements was provide in the January 30, 2024 Technical Conference pages 43-56: <https://energia.pr.gov/wp-content/uploads/sites/7/2024/02/20240201-Motion-Submitting-Amended-Presentation-for-Third-In-Person-Pre-Filing-Technical-Conference.pdf> and www.SETPR.com

Exhibit 1

Table 2: Ongoing and completed activities.

ITEM	DESCRIPTION	DATE
1	Implemented the SETPR initiative to obtain direct input and feedback from stakeholders throughout the development of the 2024 IRP.	Ongoing effort since October 2023
	Conducted a total of 22 SETPR workshops across Puerto Rico with 174 participants. Participants shared their concerns and expectations on the future of Puerto Rico's energy system. LUMA incorporated the input received from stakeholders into the selected scenarios and objectives of the 2024 IRP and then reviewed the scenarios and objectives with the stakeholders.	
2	During March 2024, LUMA revised the original scenarios to incorporate the Energy Bureau's expectations.	
3	Completed input assumptions and forecasts required for the 2024 IRP study.	
	Completed LUMA's review and validation of historical energy and demand data as input to forecast.	December 2022
	Completed LUMA's IRP energy and demand study.	March 2022-February 2024
	Completed LUMA's first demand response forecast study.	March 2022-April 2024
	Completed update to the distributed solar forecast.	October 2023-June 2024
	Completed an update to the contributions from customer owned combined heat and power generation (CHP).	January 2024-March 2024
	Completed baseline transmission transfer capability analysis.	July 2022 - October 2022
	Completed estimates of generic transmission upgrade costs for use in the IRP modeling.	June 2023-December 2023
	Completed adjustments to the PR100 Light Duty Vehicle (LDV) Electric Vehicle (EV) charging forecast.	March 2022-Revised in June 2024
	Completed a distribution hosting capacity analysis.	January 2022-June 2024
	Completed critical load analysis	March 2024-May 2024
4	Worked with the Department of Energy (DOE) to review the results of the PR100 study and incorporate lessons learned and adopted select elements of the PR100 results as assumptions and input for the 2024 IRP.	October 2022 to March 2024
5	Continued progress toward the transmission and distribution plans for the 2024 IRP.	Ongoing effort

Exhibit 1

4.0 Revised 2024 IRP Schedule

LUMA and the IRP Technical Consultant signed the Service Agreement for the IRP Technical Consultant around mid-September 2023, with less than six (6) months remaining to complete and file the 2024 IRP by March 1, 2024. In the October 31, 2023, Technical Conference and later in the *Request for Modification of Timeline to File 2024 IRP*, submitted to this Energy Bureau on November 14, 2023⁷, LUMA requested that the Energy Bureau extend the 2024 IRP Schedule to June 28, 2024. The Energy Bureau approved the Revised 2024 IRP Schedule on December 20, 2023⁸, See Table 3: *Revised 2024 IRP Schedule Approved by the Energy Bureau on December 20, 2023*. As explained by LUMA on June 7, 2024, Motion Requesting Continuance of the 2024 IRP Filing: “The planned June 28, 2024, filing date was aggressive, but it anticipated normal issues associated with validating results, identifying inaccuracies, identifying solutions, and running the model again as part of the ordinary modeling process required in the modeling for an IRP. However, the revised schedule did not anticipate the unexpected model issues.”

Table 3: Revised 2024 IRP Schedule Approved by the Energy Bureau on December 20, 2023

Task	2023			2024						
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Stakeholder Consultations and Input										
Define IRP Objectives and Scenarios										
PLEXOS Model Data Load										
Modeling of First Scenario										
Modeling of Remaining Scenarios										
Sensitivity Modeling of Preferred Portfolio										
B&V Draft Report										
B&V Final Report										
LUMA Eng. Benchmark PLEXOS Load Flow with PSSE										
LUMA Eng Review PLEXOS results										
LUMA Eng. Transmission Modeling & Report										
LUMA Forecasts and Assumptions										
LUMA Distribution Analysis and Report										
LUMA IRP Filing Prep										
LUMA IRP File - June 28, 2024										★

■ LUMATask ■ IRP Technical Consultant Task

The Revised 2024 IRP filing schedule approved by the Energy Bureau in the December 20, 2023 Order was very aggressive compared to other IRP filing schedules in different jurisdictions. It was intended to finalize the 2024 IRP in the shortest possible time but did not consider extraordinary circumstances to allow for resource model software issues and delays that were outside LUMA’s control.

⁷ See November 14, 2023 Motion at: <https://energia.pr.gov/wp-content/uploads/sites/7/2023/11/20231114-Request-for-Modification-of-Timeline-to-File-2024-IRP-Filing.pdf>

⁸ See December 20, 2023 Resolution and Order at: <https://energia.pr.gov/wp-content/uploads/sites/7/2023/12/20231220-AP20230004-Resolution-and-Order.pdf>

Exhibit 1

LUMA and the IRP Technical Consultant were confident that the Revised 2024 IRP Schedule was reasonable considering the work that LUMA had completed prior to contracting the IRP Technical Consultant to collect and analyze data, as described in Table 2 above. Once the IRP Technical Consultant was onboard, LUMA shared the data collected and studies completed for the 2024 IRP. The IRP Technical Consultant analyzed the data provided by LUMA and conducted further studies required for the 2024 IRP analysis, such as the Fuel Cost Study, Battery Cost Study and Thermal Units Cost Study, completed in March 2024. On December 2023, the IRP Technical Consultant, while simultaneously working on the studies required for the 2024 IRP, started building the IRP planning model. On January 30, 2024, the Energy Bureau held the Third Prefiling Technical Conference, during which LUMA presented the initial selected scenarios and characteristics to be modeled in connection with its 2024 IRP proposal.⁹ The Energy Bureau requested LUMA revise the Selected 2024 IRP Scenarios and Characteristics. This request caused additional delays, halting the modeling work until March 2024. Based on the feedback from the Energy Bureau, and its consultants, LUMA made modifications to the Initial Selected Scenarios and Characteristics, while continuing to take into account feedback and recommendations provided by stakeholders. The Energy Bureau ultimately approved the 2024 IRP Revised Scenarios and Characteristics in the Resolution and Order of March 13, 2024, confirming that LUMA could model the six (6) Core Scenarios for its 2024 IRP filing scheduled on June 28, 2024, and file the results of the Supplemental Scenarios on August 1, 2024.¹⁰ Even before the Energy Bureau approved it, the IRP Technical Consultant resumed working on the base case modeling to avoid further delays.

In March 2024, LUMA and the IRP Technical Consultant still expected, in good faith, to complete the modeling required of the 2024 IRP in time to file by June 28, 2024.¹¹ LUMA and the IRP Technical Consultant intended to finalize the 2024 IRP in the shortest possible time but did not consider extraordinary contingencies and unexpected issues with the resource model software outside LUMA's control. As explained in the *Motion Requesting the Continuance of the Deadline for the 2024 IRP Filing* ("June 7th Filing"), it was not anticipated, nor does LUMA believe it is reasonable to expect LUMA to have anticipated the challenges with the model that LUMA faced, entailing considerable time to resolve, and causing significant delays to the overall project.

The modeling results of the Scenario 1 base case for the 2024 IRP were delayed due to unforeseen issues in connection with the modeling software. While LUMA and the IRP Technical Consultant have resolved the issues, the impact on the schedule has been significant, and thus, the schedule to file the 2024 IRP will extend beyond June 2024, forcing LUMA to reassess the 2024 IRP timeline. To avoid delaying the 2024 IRP filing, LUMA attempted to rescope and compress the remaining tasks to complete the 2024 IRP Filing by reducing the remaining stakeholder meetings to a single round of meetings with a reduced number of meetings. LUMA also planned to compress the time allowed to model the remaining scenarios and the detailed transmission system modeling. In the end, it was evident that the complexity and challenges of Puerto Rico's electric system, coupled with the unforeseen delays, render the original timeframe for a filing in 2024 wholly insufficient.

⁹ See March 11, 2024, Motion at: <https://energja.pr.gov/wp-content/uploads/sites/7/2024/03/20240311-AP20230004-Motion-Submitting-Revised-2024-Integrated-Resource-Plan-Scenarios-and-Characteristics.pdf>

¹⁰ See March 13, 2024 Resolution and Order at: <https://energja.pr.gov/wp-content/uploads/sites/7/2024/03/20240313-AP20230004-Resolution-and-Order.pdf>

¹¹. See June 7, 2024, Motion at: [Microsoft Word - 2024.06.07 Exhibit 1 Request for continuance of IRP Filing date cleanversion \(pr.gov\)](#)

Exhibit 1

5.0 Second Revised 2024 IRP Schedule

In the June 7th Filing, LUMA requested the continuance of the 2024 IRP filing¹² (June 7th Motion) to resolve unexpected technical issues with the modeling software, specifically with the Scenario 1 base case, that were causing the modeling software to deliver illogical results. LUMA and the IRP Technical Consultant believe that the unexpected issues were caused by the complexity of Puerto Rico’s model described in the June 7th Motion: 1) the multiple objectives that the model must meet including RPS goals, 2) system reliability of 0.1 day per year, and 3) least cost solution, together with issues related to the Loss of Load Probability (LOLP) calibration and inaccuracies in estimating burn rates. These modeling issues were ultimately diagnosed and resolved after months of working with the IRP Technical Consultant and the software developer. Unfortunately, insufficient time remained to regain the time lost meet the June 28th filing deadline. These challenges unavoidably delayed the overall 2024 IRP schedule, shown in Table 2: *Revised Schedule Approved by the Energy Bureau on December 20, 2023 above.*

Since the June 7th Motion, LUMA has continued working with the IRP Technical Consultant, new internal experts, and the software developer, validating the resource plan results of the base case scenario to make sure it is correct, and no technical issues or illogical results are present. Once the Scenario 1 base case is completed and fully validated, LUMA will continue with all subsequent tasks that are dependent on the completion and validation of the base case resource plan.

LUMA can now estimate the time required to complete a robust and comprehensive 2024 IRP that meets applicable legal and regulatory requirements. Accordingly, LUMA proposes the following revised IRP development schedule (the “Second Revised 2024 IRP Schedule”) which considers a target filing date of May 16, 2025. See Table 5: *Second Revised 2024 IRP Schedule* and Attachment A of this Exhibit.

Table 4: Second Revised 2024 IRP Schedule

Task	2023			2024												2025					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Stakeholder Consultations and Input																					
LUMA Forecasts and Assumptions																					
Define IRP Objectives and Scenarios																					
PLEXOS Model Data Load																					
Modeling of Scenario 1 - Base Case																					
Modeling of Remaining Core Scenarios (2 - 6)																					
Sensitivity Modeling of Preferred Portfolio																					
IRP Technical Consultant Draft Report																					
IRP Technical Consultant Final Report																					
LUMA Distribution Analysis and Report																					
LUMA Eng. Transmission Modeling & Report																					
LUMA IRP Filing Prep																					
LUMA IRP File -May 16, 2025																					
Filing of Written Direct Witness Testimonies May 23, 2025																					
Filing of 4 Supplemental Scenarios (7-10) June 19, 2025																					

■ LUMA Task ■ IRP Technical Consultant Task

¹² See June 7, 2024 Motion at: <https://energia.pr.gov/wp-content/uploads/sites/7/2024/06/20240607-AP20230004-Continuance-of-the-Deadline.pdf>

Exhibit 1

The Second Revised 2024 IRP Schedule allows for the completion of all subsequent tasks efficiently, focusing on the six (6) core scenarios that LUMA and the IRP Technical Consultant, based on its expertise, understand have the highest viability and potential to be selected as the preferred resource plan for Puerto Rico. To streamline this process, LUMA and the IRP Technical Consultant will implement dual pathways, to simultaneously work on scenarios 2 through 6 and the sensitivity modeling of the preferred resource plan expecting to finish by November 2024. Once the preferred resource plan is selected LUMA will work in the Transmission Analysis described in Section 6 below and required by Regulation 9021, that is expected to take around 4 months to complete. To speed up this process, LUMA has started testing the PSS@E modeling with the latest Scenario 1 base case results which will prepare the foundation required to complete the transmission analysis once the preferred resource case is completed.

LUMA plans to file the 2024 IRP Report on May 16, 2025. The written direct witness testimonies, which are part of the supplemental documentation of the 2024 IRP, will be filed on May 23, 2025, seven (7) days after the May 16, 2025, filing of the 2024 IRP Report. This proposed filing approach will enable the delivery of the 2024 IRP Report earlier than if it was held to complete the witness testimony. Filing the report earlier, and before the witness testimony, will support an earlier start to the Energy Bureau's and stakeholder review of the document and its analysis, conclusions, and recommendations.

LUMA and the IRP Technical Consultant are committed to producing a quality plan for robust discussion with stakeholders and subsequent submittal to the Energy Bureau for review that will comply with the Energy Bureau's expectations and Puerto Rico's public policy. The 2024 IRP filing extension will allow LUMA and the IRP Technical Consultant time to:

- 1) develop and analyze the Core Scenarios effectively performing the uncertainty analysis and sensitivities to select the preferred resource plan for Puerto Rico,
- 2) perform a complete transmission analysis of the preferred resource plan in PSS@E,
- 3) develop additional information to submit with the filing regarding the Transmission and Distribution Plan and,
- 4) conduct all Solutions for the Energy Transformation of Puerto Rico ("SETPR") meetings as originally planned to present modeling results and preferred plans to stakeholders before the filing.

The proposed Second Revised 2024 IRP Schedule would place LUMA in a position to file the 2024 IRP Report within twenty (20) months from the time the IRP Technical Consultant began working on this project. This aligns with LUMA's initial schedule assessment of 2021 (shown in Table 1 above) when it estimated twenty-two (22) months to prepare and file the 2024 IRP.¹³

The timeline proposed herein is also consistent with the development timelines seen in other jurisdictions. Utilities with prior experience developing IRPs in their jurisdictions and with similar planning horizons and less complex systems spend a minimum of 18 to 24 months in the developing phase. Table 4: *Integrated Resource Planning Timeline in Other Jurisdictions*. The table below shows the amount of time other jurisdictions take in the development phase of an IRP.

¹³ See Original IRP Timeline Proposal, slide 3 of the December 17, 2021 Motion at: <https://energia.pr.gov/wp-content/uploads/sites/7/2021/12/Motion-to-Submit-Report-on-Resource-Planning-Process-for-Next-IRP-Cycle-and-Draft-RFQ-RFP-for-Consultant-and-Request-for-Confidential-Treatment-NEPR-MI-2020-0012.pdf>

Exhibit 1

Table 5: Integrated Resource Planning Timeline in Other Jurisdictions

STATE	LINKS	UPDATED	PLANNING HORIZON	IRP DEVELOPMENT
Arizona	Presentation	Every 2 years	15 years	14 months
Arkansas	Presentation	Every 3 years	10 years	13 months
Colorado	Excel Energy	Every 4 years	Determined by Utility	27 months
Hawaii	Hawaii Electric	Every 3 years	20 years	24 months
Idaho	Idaho Power	Every 2 years	20 years	21 months
Indiana	AES Indiana	Every 3 years	20 years	17 months
Montana	PSC	Every 2 years	20 years	16-18 months
North & South Carolina	Duke Energy	Every 2 years	15 years	24 months
Vermont	Green Mountain Power	Every 3 years	20 years	18-24 months
	Vermont Electric Coop	Every 3 years	20 years	18-24 months

As outlined in Table 6: *Second Revised 2024 IRP Schedule compared to other jurisdictions* below, the revised schedule extends the development process to 20 months. This timeframe is aligned with the IRP development durations in other U.S. jurisdictions. LUMA has identified that these jurisdictions have similar planning horizons and spend between eighteen (18) to twenty-four (24) months to develop IRPs. Adhering to this timeline will enable LUMA to produce a more thorough and effective 2024 IRP.

Table 6: Second Revised 2024 IRP Schedule compared with other jurisdictions.

Task	Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Data collection	Puerto Rico																									
	Indiana																									
	Hawaii																									
	Idaho																									
IRP modeling and analysis	Puerto Rico																									
	Indiana																									
	Hawaii																									
	Idaho																									
Portfolio evaluation and report	Puerto Rico																									
	Indiana																									
	Hawaii																									
	Idaho																									

Exhibit 1

6.0 Transmission Analysis

LUMA has chosen to model Puerto Rico as eight different geographic areas (referred to as Transmission Planning Areas or “TPAs”) for the 2024 IRP. The eight TPAs are represented in the resource planning software as eight regions, each with its own customer and load characteristics, available land for energy resource development, existing generation, and wind and solar energy characteristics. In addition to these TPA characteristics, LUMA has used PSS®E modeling of the existing transmission infrastructure to develop a high-level estimate of the transmission transfer capability limitations between regions, i.e., the ability of the transmission system to support power exchange between TPAs. LUMA has also estimated generic upgrades to increase the inter-TPA transfer capabilities of the transmission infrastructure. The inter-TPA transfer capacity limits and their estimated upgrade costs were inputted into the resource modeling software to assist in defining the choice of energy resource technology and their locations that would provide the best alternative to meet Puerto Rico’s energy requirements. With the use of the eight TPAs and the transfer limits, the resource modeling software is able to compare options to serve TPA load with resources within the TPA, those in other TPAs or a combination. The use of the eight TPAs and transfer limits assists in an analytical process to guide greater geographic diversity for future Puerto Rico’s energy resource additions. LUMA plans to use the resource planning software’s simple representation of the transmission system to assess alternative portfolios.

In addition to the PSS®E modeling performed to develop the inputs to the resource modeling software, LUMA intends to conduct further PSS®E analysis of the system’s ability to support the base case resource portfolio resulting from modeling Scenario 1 and for the preferred portfolio selected by LUMA after developing and assessing the resource portfolios resulting from the other Scenarios. LUMA will perform analysis of both the base case portfolio and the preferred portfolio, with LUMA’s planned transmission projects, and assess the transmission’s ability to support the resource portfolios. The PSS®E modeling will define the location and magnitude of any potential transmission violations (a violation is a condition that exceeds a transmission infrastructure element’s capability, e.g., current level above its capability). LUMA may be able to use the results of the base case portfolio PSS®E violation analysis to assist in the development of the other alternative portfolios and the selection of the preferred portfolio.

For the preferred portfolio, LUMA will perform a detailed transmission planning study that will define recommended solutions to address each of the material violations. The recommended solutions will also be modeled in PSS®E to confirm their ability to resolve the violations.

Exhibit 1

7.0 Conclusion

LUMA remains steadfast in producing a quality plan for robust discussion with stakeholders and subsequent submittal to the Energy Bureau for review that will comply with the Energy Bureau's expectations and present a pragmatic and reliable roadmap towards the transformation of Puerto Rico's energy system in line with energy public policy objectives. LUMA understands the Second Revised 2024 IRP schedule is within the timeframe of a typical IRP when compared to other jurisdictions.

The proposed Second Revised 2024 IRP Schedule would place LUMA in a position to complete the 2024 IRP Report within twenty (20) months from hiring the IRP Technical Consultant, allowing the necessary time to complete efficiently: 1) the modeling and analysis of the scenarios required for the 2024 IRP; 2) the transmission analysis of the preferred resource plan in PSS@E, and 3) continue with all planned stakeholder engagements to present the results of the modeled scenarios and the preferred resource plan to stakeholders. The Second Revised 2024 IRP Schedule will allow for the completion and development of a compliant 2024 IRP that is built upon accurate and comprehensive data and analyses and reflects the needs and priorities of our customers, while reliably and cost-effectively progressing towards a more reliable, resilient, and cleaner energy system.

Exhibit 1

Attachment A

Second Revised 2024 IRP Schedule



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