GOVERNMENT OF PUERTO RICO 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: Revised Filing Schedule.

RESOLUTION AND ORDER

On August 20, 2024, the Energy Bureau of the Puerto Rico Public Service Regulatory Board issued a Resolution and Order instructing LUMA to file the Preferred Resource Plan and salient components of Regulation 9021 requirements by no later than Friday, November 29, 2024 ("August 20th Order"). Further, the Energy Bureau ordered LUMA to file certain transmission and distribution-related requirements of Regulation 9021 by no later than February 28, 2025.

On September 11, 2024, LUMA filed a Motion Requesting a Confidential Technical Conference. Therein, LUMA requested the Energy Bureau to schedule an in-person 7 Technical Conference to offer the Energy Bureau detailed insight into the status of the IRP and the complexities and challenges encountered while modeling the proposed scenarios.

On September 16, 2024, the Energy Bureau issued a Resolution and Order scheduling the requested Confidential Technical Conference for September 18, 2024, at 10 a.m.



On September 18, 2024, the Energy Bureau held the Confidential Technical Conference. During the Technical Conference, LUMA explained the constraints faced when modeling the base case and that not all issues arose simultaneously; thus, LUMA and the Technical Consultant could not fix the issues simultaneously. LUMA explained that measures were implemented to resolve the issues and that having resolved the issues, it achieved a preliminary base case and had developed a work plan and path forward to place LUMA in a position to complete a robust IRP by May 16, 2025. LUMA also identified certain factors that could affect its timeline while expressing confidence and commitment to work transparently to file a proposed IRP in May 2025.

At the Technical Conference, LUMA proposed to the Energy Bureau a revised schedule with a series of interim milestones with various deliverables to be achieved before the IRP Filing submission on May 16, 2025. LUMA proposes two interim milestone dates: (i) November 27, 2024 and February 28, 2025, to share preliminary findings and demonstrate the progress of the IRP Filing. LUMA will provide the information and results that have been completed and estimates that preliminary deliverables will be completed and filed with the Energy Bureau on the dates specified.

On September 27, 2024, LUMA¹ filed a document titled *Motion Requesting Reconsideration of the Resolution and Order Dated August 20, 2024, and Modification of the IRP Filing Schedule* ("September 27 Motion"). In the September 27 Motion, LUMA requested the Energy Bureau to reconsider the August 20th Order, and adopt the revised schedule stated herein, including the proposal to file the IRP Report on May 16, 2025.



¹ LUMA Energy, LLC y LUMA Energy ServCo, LLC (collectively "LUMA")

In summary, LUMA proposes the following revised IRP filing schedule:

Date	Deliverable
November 27, 2024	Filing of the following:
	 (i) input assumptions and results describing the least cost resource portfolios for scenarios number 1 through 4; (ii) 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; and (iii) a summary qualitative description of how LUMA expects planned transmission facilities will support its Preferred Resource Plan.
February 28, 2025	Filing of the following:
	 (i) input assumptions and results describing the least cost resource portfolios for scenarios number 5 through 10 and resource portfolio number 11; (ii) uncertainty analysis results for the least cost resource portfolios for scenarios number 1 through 6 and resource portfolio number 11; (iii) sensitivities of the resource portfolios; (iv) results from the stakeholder meetings held to share preliminary results and seek feedback prior to the selection of the Preferred Portfolio; (v) LUMA's recommended Preferred Portfolio; and (vi) summary description of the Preferred Portfolio.
May 16, 2025	Filing of full IRP Proposal in compliance with Regulation 9021, as modified by any exception expressly approved by the Energy Bureau.

According to LUMA, the proposed filing date accounts for continued difficulties based on current experience.

Finally, the Energy Bureau **CLARIFIES** that the Base Case Scenario modeling shall include a new CCGT with the characteristics contemplated in the Resolution and Order issued by the Energy Bureau on August 3, 2022.² Any variation to said characteristics shall be included in a sensitivity analysis.

The Energy Bureau **TAKES NOTICE** of the September 27 Motion and **APPROVES** the foregoing IRP filing. Notwithstanding the foregoing, the Energy Bureau **REITERATES** that it may need further evaluation and analysis after LUMA files its Core Scenarios and/or the Supplemental Scenarios along with the modeling analysis and the revealed results. At that time, the Energy Bureau may direct LUMA to model, evaluate and analyze additional scenarios, in alignment with its authority under Regulation 9021.

The Energy Bureau **ORDERS** LUMA to submit its responses to the Sixth Request for Information included as Attachment A of this Resolution and Order within twenty (20) days from the notification of this of this Resolution and Order.

² See IN RE: Preliminary Studies for New Combined Cycle Power Plant in Palo Seco, Case No. NEPR-MI-2021, 0003, Resolution and Order, August 3, 2022.

The Energy Bureau **WARNS** LUMA that:

- (i) noncompliance with this Resolution and Order, regulations and/or applicable laws may carry the imposition of fines and administrative sanctions of up to \$25,000 per day;
- (ii) any person who intentionally violates Act 57-2014, as amended, by omitting, disregarding, or refusing to obey, observe, and comply with any rule or decision of the Energy Bureau shall be punished by a fine of not less than five hundred dollars (\$500) nor over five thousand dollars (\$5,000) at the discretion of the Energy Bureau; and
- (iii) for any recurrence of non-compliance or violation, the established penalty shall increase to a fine of not less than ten thousand dollars (\$10,000) nor greater than twenty thousand dollars (\$20,000) at the discretion of the Energy Bureau.

Be it notified and published.

Edison Avilés Deliz

Chairman

Lillian Mateo Santos Associate Commissioner

Sylvia B. Ugarte Araujo Associate Commissioner

Associate Commissioner

Ferdinand A. Ramos Soegaard

Antonio Torres Miranda Associate Commissioner

CERTIFICATION

I certify that the majority of the members of the Puerto Rico Energy Bureau agreed on October 29, 2024. Also certify that on October 29, 2024, I have proceeded with the filing of this Resolution and Order and was notified by email to mvalle@gmlex.net; arivera@gmlex.net; margarita.mercado@us.dlapiper.com; Yahaira.delarosa@us.dlapiper.com; Irn@roman-negron.com; regulatory@genera-pr.com.

I sign this in San Juan, Puerto Rico, today, October <u>29</u>, 2024.

Sonia Seda Gaztambide EN Clerk C ER

Attachment A - 6Th Set of Requests of Information Reference: Base Case results filing, September 11, 2024

- **1. Re: Input Assumptions file, tab** "**Batteries**". The tab references "CSV files\ExpansionInputs\BuildCost.csv" in the field for the build cost for new batteries. In the "Build Cost" tab of the file, the build cost of 4-hour battery resources (for example, the BESS-CLNA 4 HR, though all locational resources have the same cost trajectory) appears to be materially higher (*e.g.*, for 2027, \$4,217/kW (model) vs. \$3,149/kW (ROI2)) than the build cost included in the response to the 2nd set of ROIs, question 10, Attachment 4.
 - a. Confirm, or explain otherwise, that the information in the tab "build cost" of the input assumptions file are the build cost parameters for the battery resources in the "Batteries" tab labeled "BuildCost.csv".
 - b. Confirm, that the build costs in the PLEXOS input file for any base case and other scenario runs should be adjusted to reflect the noted ROI-2 response or explain otherwise.
 - c. The batteries tab contains parameters reflecting the "firm capacity" of the batteries, and the max capacity. Provide the ratio for firm capacity to max capacity for each of the categories of battery resource contained in the tab and explain how the firm capacity was derived or estimated for each category of battery. For example, the 4-hour batteries (such as BESS-CLNA 4 HR) appear to exhibit a firm-to-max capacity ratio of 60%, the Genera BESS batteries have a lower ratio, and the Tranche 1 BESS have the highest ratios.
 - d. Explain if or how the battery capacity max and/or firm capacity value is used as part of the capacity expansion algorithm when determining the optimal expansion plan.

2. Re: Fuel and build cost for biodiesel and biodiesel conversion and selection of biodiesel resources in the capacity expansion plan.

- a. What is the source of the fuel costs for the biodiesel fuel used in the model?
- b. Confirm, or explain otherwise, that the purpose of the biodiesel fuel option in the model is to allow the model to select biodiesel to meet RPS requirements for energy generation.
- c. Explain if there is any other reason for the biodiesel option to be included in the model, and describe any additional information LUMA or B&V may have concerning the overall development or existence of a market for biodiesel fuel in Puerto Rico.
- d. Explain why the biodiesel build costs for new resources are zero cost, while the biodiesel build costs for two existing resources (San Juan 6 CC, FEMA PS Gen 8 #1) are non-zero.
- e. Explain LUMA's or B&V's understanding of why the model selected biodiesel fuel options given the very high per mmBTU cost of the fuel, compared to the per unit costs of solar PV utility scale alternatives as modeled.

3. PVRR computation

a. Confirm, or explain otherwise, that the <u>build</u> cost of the new San Juan unit and all other hard-coded BESS and solar PV resource build costs are <u>not</u> included



in the computation of the net present value revenue requirements on tab "PVRR tbl".

- b. Confirm, or explain otherwise, that the fuel, variable O&M, and fixed O&M costs of the <u>operation</u> of all hard-coded units <u>is</u> included in the computation of the net present value revenue requirements on tab "PVRR tbl".
- c. Confirm, or explain otherwise, that LUMA will include the estimated build costs when computing the overall PVRR in any future base case model runs.
- 4. **New Genera Peaking Units.** On July 23, 2024 the Energy Bureau approved Genera's request for new fossil peaking resources, totaling 244 MW, less than the total of 336 MW of resources noted in LUMA's June 18, 2024 response to question 2b of the 4th set of ROIs. Case NEPR-MI-2022-0005. The Energy Bureau did not approve the 3x50 MW of resources requested for the San Juan site.
 - a. Confirm, or explain otherwise, that LUMA can update the input assumptions for Genera peaking resources for any new base case model runs to reflect the Energy Bureau's approval of a lesser amount of resources than contained in Genera's initial request.

5. Build cost, outage rates and heat rates for the New San Juan CC unit

- a. Confirm, or explain otherwise, that the new San Juan CC unit was hard-coded into the model, for operation beginning January 1, 2028.
- b. What is the source for the outage rates and heat rates used for operation of the new San Juan CC unit?
- c. Does LUMA have a source for the build cost for the new San Juan CC unit, and can LUMA use that information to model the build costs for the unit?

6. In 2032, the model retires a series of legacy units and adds a new natural gas CC unit.

- a. What is LUMA / B&V's understanding of what drove the model to retire the units it retired, and added the unit it added, given the underlying level of capacity and peak load existing in 2031?
- b. What specific parameters and what specific values for those parameters in the model were associated with the underlying capacity expansion /retirement decisions made by the model for the year 2032?

7. Core Load and related T&D system loss accounting

- a. Confirm, or explain otherwise, that the core load values (GWh and MW) in the workpaper files to ROI 5 ("RFI-LUMA-_IRP_Forecasts.xlsx" at Tab "Base Core and Modifier Summary") reflect load impact at the system generator and include the effect of T&D losses. As necessary explain if the loss effects are treated differently in PLEXOS for any component of load or load modification.
- b. T&D loss effects are shown in the same file at Tab "Losses and TPA and Class Allocation". The maximum loss value seen in 10.3% for residential and agricultural. What is the source for these factors?
- c. The "GenerationChart" tab in the file in response to ROI 5 question 1 (base case results file) contains a "Load Losses" column with values ranging roughly from 84.5% to 84.7%. Confirm or explain otherwise that this value represents a total loss percentage of roughly 15.3 to 15.5%.

Reconcile the system loss percentage values as seemingly modeled with load (or otherwise) in PLEXOS with the information provided in the "RFI-LUMA-



IRP Forecasts" file that seems to be significantly lower than the values in the "Losses and TPA and Class Allocation" tab.

8. Annual Peak Capacity

- a. For each of the load types (Base, EE, DBESS, CHP, Flex Demand, EV) peak capacity values on the "Base Core & Modifier Summary" tab of ROI 5 ("RFI-LUMA_IRP_Forecasts.xlsx") please explain the source of these values.
- b. Please confirm that the MW values for each of the load types reflect their contribution to net system peak.

9. Energy Efficiency

- a. Explain why the base energy efficiency forecast (annual GWh) increased in ROI 5 ("RFI-LUMA-_IRP_Forecasts.xlsx") relative to ROI 2 ("CONFIDENTIAL_RFI-LUMA Attachment_1.xlsx"). In particular, include explanation for how energy efficiency which avoids T&D losses is accounted for in the energy and peak demand input assumptions.
- b. Explain why the base energy efficiency peak forecast (annual MW) is unchanged between ROI 5 ("RFI-LUMA-_IRP_Forecasts.xlsx") and ROI 2 ("CONFIDENTIAL_RFI-LUMA Attachment_1.xlsx") while the energy (annual GWh) forecast is changed.
- c. State how the energy and peak values were included in the PLEXOS model (i.e. as a load modifier on an annual basis or an hourly basis).
- d. Confirm whether the annual base EE peak and energy values on the "Base Core & Modifier Summary" tab were directly entered in PLEXOS. If not confirmed, provide the base EE peak and energy values that were used in PLEXOS.

10. Distributed PV

- a. While the responses to "RFI-LUMA-AP-2023.0004-20240311-PREB-002" indicated that EE and DER resources would be modeled on the demand side and "grossed up" with T&D losses, confirm whether LUMA modeled distributed PV as a load modifier on the demand-side or as generation on the supply-side, as "DPV" is listed as a generation resource in the Gen ST tabulations in the base results file.
- b. If modeled on the supply-side, explain the reason for this approach, given LUMA's response to "RFI-LUMA-AP-2023.0004-20240311-PREB-002a".
- c. Explain why neither the total DPV (GWh) forecast or the Incremental DPV Less Residential Rebound forecast on the "Base Core & Modifier Summary" tab of ROI 5 ("RFI-LUMA-_IRP_Forecasts.xlsx") is the same as the total generation from generators in the DPV category from the "Gen ST" tab of ROI 5 ("RFI-LUMA-AP-2023.0004-20240820-PREB-001A_BaseCaseResults.xlsm"
- d. Confirm, or explain otherwise, that the DPV values (GWh and MW) on the "Base Core & Modifier Summary" tab of ROI 5 ("RFI-LUMA-_IRP_Forecasts.xlsx") reflect impact at the system generator and include the GWh loss reducing effects.
- e. Do the DPV values (GWh and MW) on the "Base Core & Modifier Summary" tab of ROI 5 ("RFI-LUMA-_IRP_Forecasts.xlsx") as used in PLEXOS modeling include the 28.5% rebound effect discussed in ROI 3 Question 9b and ROI 4 Question 3b "RFI-LUMA-AP-2023.0004.20240618-PREB-003b"?

11.Distributed BESS

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- a. Confirm whether LUMA modeled distributed BESS as a load modifier on the demand-side or as generators on the supply-side.
- b. If modeled on the supply-side, explain the reason for this approach, as LUMA's response "RFI-LUMA-AP-2023.0004-20240311-PREB-002a" stated DBESS would be included as load modifiers

- c. Explain what the "New Distributed Storage" category of resources from the "Battery LT" tab of ROI 5 ("RFI-LUMA-AP-2023.0004-20240820-PREB-001A_BaseCaseResults.xlsm" represents.
- d. Confirm whether these New Distributed Storage resources are proxies for the DBESS in lieu of the load modifier approach.
- e. If confirmed, explain why the New Distributed Storage resources have zero VO&M costs and only have FO&M costs.
- f. Do the DBESS MW values on the "Base Core & Modifier Summary" tab of ROI 5 ("RFI-LUMA_IRP_Forecasts.xlsx") represent total installed DBESS capacity, or dispatchable capacity? If the former, please provide the dispatchable DBESS capacity for each year based on LUMA's projections for the percentage of DBESS capacity enrolled in the customer battery sharing program and the percent of enrollee's capacity available for dispatch.

12.Flex Demand Load

- a. Please explain how LUMA used the Flex Demand MW values on the "Base Core & Modifier Summary" tab of ROI 5 ("RFI-LUMA_IRP_Forecasts.xlsx").
- b. Please provide and explain the assumptions used to produce these values.

13.Resource Capital Cost

a. Provide the resource capital cost trajectories that LUMA expects to use for scenario 6.

