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: Seventh (7th) Requests of Information to LUMA

RESOLUTION AND ORDER

On November 18, 2024, LUMA¹ submitted its responses to the 6th set of Requests of Information from the Energy Bureau.

On November 22, 2024 LUMA submitted its First Interim 2025 IRP Filing ("Interim Filing"). Included in the Interim Filing were workpapers with PLEXOS input assumptions and PLEXOS results for four Portfolios, associated with Scenarios 1, 2, 3 and 4.² On January 10, 2025, LUMA submitted its Revised First Interim 2025 IRP Filing ("Revised Interim Filing").

Attachment A of this Resolution and Order contains the 7th set of Requests of Information to LUMA, pertaining to material submitted in response to the 6th Requests of Information and in the Interim Filing and the Revised Interim Filing. The Energy Bureau **ORDERS** LUMA to respond to all but the final question in Attachment A within fifteen (15) business days after the notice of this Resolution and Order. The Energy Bureau **ORDERS** LUMA to respond to the final question number 8 in Attachment A of this Resolution and Order by April 1, 2025.

Be it notified and published.

Edison Avilés Deliz

Chairman /

Sylvia B. Ugarte Araujo Associate Commissioner

Lillian Mateo Santos Associate Commissioner

Antonio Torres Miranda Associate Commissioner



¹ LUMA Energy LLC and LUMA Energy ServCo, LLC (jointly referred as "LUMA").

² LUMA is modeling 10 scenarios in the 2025 IRP. Energy Bureau Resolution and Order, March 13, 2024.

CERTIFICATION

I hereby certify that the majority of the members of the Puerto Rico Energy Bureau has so agreed on January 24, 2025. Associate Commissioner Ferdinand A. Ramos Soegaard did not intervene. I also certify that on January 24, 2025, a copy of this Resolution and Order was notified by electronic mail to RegulatoryPREBOrders@lumapr.com; mvalle@gmlex.net; arivera@gmlex.net; margarita.mercado@us.dlapiper.com; Yahaira.delarosa@us.dlapiper.com; lrn@roman-negron.com; regulatory@genera-pr.com; and I have proceeded with the filing of the Resolution and Order issued by the Puerto Rico Energy Bureau.

For the record, I sign this in San Juan, Puerto Rico, on January $\underline{24}$, 2025.

Sonia Seda Gaztambide Clerk



Attachment A

2024-2025 Integrated Resource Plan - 7th Set of Requests of Information to LUMA

- 1. Battery energy storage system cost assumptions
 - a. Provide the current assumptions used by LUMA in the PLEXOS modeling runs for utility-scale battery energy storage build costs under base, low, and high resource cost categories associated with different scenarios as seen (for example) in Table 1 at page 11 of the Revised Interim Filing. Provide in Excel file format with formulas intact.
 - b. Provide all source material and all workpapers used to develop any of the battery energy storage capital costs used in the PLEXOS model.
 - c. Explain why current "base" (Scenario 1) and "low" (Scenario 4) battery energy storage costs used in the PLEXOS model are both higher than the costs of battery energy storage resources procured through Tranche 1, 2 and 4 solicitations.
- 2. Biodiesel fuel price projection in PLEXOS model.
 - a. Re: response to ROI-6, question 2a. Provide the specific set of data sources used by the Technical Consultant to prepare biodiesel fuel costs for use in the PLEXOS model.
 - b. Provide all workpapers used in the development of the biodiesel fuel cost trajectory used in the PLEXOS model, in Excel file format with formulas intact.
- 3. Build Costs, Outage Rates, and Heat Rate for new 460 MW (as indicated in PLEXOS) San Juan NGCC plant for operation in mid-2028 and build costs for other fossil plants in PLEXOS model.
 - a. Re. Build Costs: confirm, or explain otherwise, that LUMA will use the San Juan NGCC plant contract as the basis for the capital costs for this plant.
 - b. Re. Build Costs source information in workpapers in Revised Interim Filing: provide the specific source for the capital costs used for all nine (9) fossil plants listed in the "PVRR" tab (in columns to the right of the main tabulation, and in "sheet 2" tab) of the confidential workpapers included in the Revised Interim Filing.
 - c. Outage Rates: provide specific source(s) for the planned (and if applicable, forced) outage rates used to represent the San Juan NGCC plant in PLEXOS.
 - d. Heat Rate: provide specific source(s) for the heat rate parameters used to represent the San Juan NGCC plant in PLEXOS.
- 4. PVRR Tables in PLEXOS results workpaper for Scenarios 1-4, and at (e.g.) Table 10, Table 37 (pages 48, and 97) of Revised Interim Filing
 - a. How does LUMA interpret a comparison between the PVRR values for scenarios with different load, such as Scenario 1 and Scenario 4? Include discussion of the use and interpretation of both the PVRR and the Total System Cost (\$/kWh) metrics provided in the results for these two scenarios.
- 5. Load forecast.
 - a. Provide the final load forecast workpaper (in Excel file format, with all components of the load forecast) that LUMA plans to use in the scenarios to be filed in February, and for the scenarios whose results have already been filed in the Revised Interim Filing.
- 6. Solar rebound effect. In response to ROI-6 question 10e, LUMA said that they have revised the approach to the rebound effect for solar, and the magnitude may not be as high as 28.5%.
 - a. Provide an update on LUMA and the IRP Technical Consultant's assessment of this topic and state what assumption LUMA is currently using in its IRP load forecast for this input assumption.

- Capacity reserve margin modeling. Reference Table 3 and Table 9, Revised Interim Filing (pages 34 and 46). Re: PLEXOS loss of load results show dramatic declines in expected unserved energy and the number of expected unserved energy events (Table 9), starting in 2027. Table 3 shows reserve margin values after 2031 in exceedance of 50%, presumably due to input assumption requirements.
 - a. LUMA and the technical consultant initially had trouble utilizing the loss-ofload stochastic features of the PLEXOS model and reverted to using planning reserve margins as an input. Comment, with rationale, on whether use of a roughly 50% reserve margin for all years after the early 2030s is a reasonable assumption, given that the retirement of the bulk of the older steam units, with poor availability attributes, occurs by 2032.
 - b. What reserve margin trajectory (as input assumption) does LUMA or the technical consultant believe is reasonable for the period after retirement of the worst performing units in Puerto Rico, to avoid "overbuilds" in the PLEXOS model in the outer years of the planning horizon?
- 8. Provide the results of two contingency scenarios to test the impact on the PLEXOS model optimization results under the following two situations:
 - a. The San Juan NGCC plant coming online is delayed, from June 2028 to January 1, 2030.
 - b. The San Juan NGCC plant is delayed indefinitely, and the model excludes the unit as a fixed decision.

