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:** Resolution and Order issuing Second (2nd) Request for Information.

RESOLUTION AND ORDER

On August 24, 2020, the Energy Bureau of the Puerto Rico Public Service Regulatory Board ("Energy Bureau") issued the IRP Order[1], regarding the Puerto Rico Electric Power Authority's ("PREPA") Integrated Resource Plan ("IRP"). The IRP Order included a Section titled "Preparing for the Next IRP Cycle", containing action items and internal process improvements to be implemented by the PREPA for the next IRP.[2] The action items included specific technical elements about how the IRP considered energy efficiency, distributed generation and storage, load forecasting, wind resources, resource need assessment, transmission and distribution and a Modified Action Plan.[3]

In addition, Section 3.01 [*IRP Pre-filing Process (Phase 1)*] of Regulation 9021[4] establishes a process to conduct technical conferences and gather information regarding the methodology and contents contemplated by PREPA for its new IRP proposal. The purpose of the technical conferences and requests for information during the IRP prefiling period is for the Energy Bureau to make sure LUMA reasonably complies with Regulation 9021, to ensure that LUMA's analysis will be sufficiently robust to comply with Puerto Rico public policy goals and to meet Energy Bureau expectations as to the quality of the analysis and the information provided. The prefiling period technical conferences also provides an opportunity for LUMA to seek clarifications from the Energy Bureau about compliance with Regulation 9021.

In fulfilling its obligations, the Energy Bureau has held various Technical Conferences for the next IRP. It also issued a Request for Information[5] to which LUMA responded.[6] In order to continue ascertaining the adequacy of LUMA's next IRP proposal, the Energy Bureau **ORDERS** LUMA to respond, **on or before April 1, 2024, by 5:00 p.m.**, to the Second Set of IRP Prefiling Period Requests of Information set forth in **Attachment A** to this Resolution and Order.

Be it notified and published.

NEGOCIADO DE ENERGÍA DE PUERTO RICO
NEPR
JUNTA REGLAMENTADORA DE SERVICIO PÚBLICO

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[1] Final Resolution and Order on the Puerto Rico Electric Power Authority's Integrated Resource Plan, *In re: Review of the Integrated Resource Plan of the Puerto Rico Electric Power Authority*, Case No. CEPR-AP-2018-0001, August 24, 2020 ("IRP Order").

[2] IRP Order, pp. 285-289, ¶ 912-922.

[3] IRP Order, pp. 285-287, ¶ 913-919.

[4] *Regulation on the Integrated Resource Plan for the Puerto Rico Electric Power Authority*, April 24, 2018 ("Regulation 9021").

[5] *See* Attachment B of the Resolution and Order dated September 27, 2023, *First Set of pre-IRP filing period ROIs – Load Forecast, Resource Adequacy, and New Resource Cost Parameters* ("ROI #1").

[6] *See Motion Submitting Responses to Requests for Information issued through Resolution and Order dated September 27, 2023* filed by LUMA on October 24, 2023 ("LUMA's Response to ROI #1").

Edison Avilés Deliz
Chairman

Lillian Mateo Santos
Associate Commissioner

Ferdinand A. Ramos Soegaard
Associate Commissioner

Sylvia B. Ugarte Araujo
Associate Commissioner

CERTIFICATION

I certify that the majority of the members of the Puerto Rico Energy Bureau agreed on March 11, 2024. Associate Commissioner Antonio Torres Miranda did not intervene. Also certify that on March 11, 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; brannen@genera-services.com; kbolanos@genera-pr.com; regulatory@genera-pr.com.

For the record, I sign in San Juan, Puerto Rico, today, March 11, 2024.

Sonia Seda Gaztambide
Clerk

NEGOCIADO DE ENERGÍA DE PUERTO RICO
NEPR
JUNTA REGLAMENTADORA DE SERVICIO PÚBLICO

ATTACHMENT A
(Second Set of IRP Prefiling Period Requests of Information)

1. Explain fully how resource adequacy constraints are to be used in the PLEXOS model. Address the following, including provision of any further information required to understand how the PLEXOS model "...will then add utility resources to provide the remaining energy not served by the distributed scale resources" (LUMA's presentation for Second Technical Conference held on October 31, 2023, Slide 14):

    a. Is a deterministic (as opposed to stochastic-driven) planning reserve margin requirement to be used in PLEXOS as a resource adequacy constraint?

    b. If so, provide parameters, such as percentage above peak load, or maximum levels of loss-of-load acceptable to the model.

    c. If not, provide a description of the resource adequacy constraint to be used in PLEXOS resource optimization step.

2. Confirm, or explain otherwise:

    a. Distributed energy resources (DER), solar PV and battery energy storage systems (BESS) and the effects of energy efficiency are to be used as load modifiers (for both energy and peak load) in the forecast used in PLEXOS, all assumed as behind-the-meter (BTM).

    b. DER resources modeled as BTM will reduce T&D losses (PV, BESS discharging) or increase T&D losses (BESS charging) through their impact on the overall load. Explain if this is not the case, i.e., if distributed resources are to be considered on the supply side, with a form of adjustment for T&D loss savings.

3. With respect to battery energy storage resources:

    a. Explain how utility scale BESS capacity will contribute toward resource adequacy needs and how the BESS parameters will be quantitatively represented in PLEXOS for this attribute.

    b. Explain how distributed scale BESS resources will contribute toward resource adequacy needs and how the BESS parameters will be quantitatively represented in PLEXOS for this attribute.

4. Provide the expected MW (and MWh, for BESS) trajectories for DER resources (solar PV and BESS) and explain how they are similar or are different from the PR100 Study input assumptions for these resources. Provide trajectory of values for use in PLEXOS or confirm that the response to Question No. 10 in this ROI provides that information.

5. Confirm/provide or explain otherwise concerning distributed BESS resources:

    a. The distributed BESS ("DBESS") control percentage defined as a variable in the listed set of scenarios is the percentage of total BESS MW assumed available for its full 4-hour duration, for the purpose of providing resource adequacy value.

    b. Provide the limitations – in comparison with utility scale BESS - associated with the dispatch or scheduling of BTM BESS in the PLEXOS production cost framework.

6. Confirm/provide: How will "less Agricultural land for solar PV", as indicated in certain scenarios, impact input variables? Provide any quantitative data that explains the impact.

7. Provide an update to LUMA's Response to the ROI #1, Question No. 7: State the constraints to be used in the PLEXOS modeling for potential year-over-year provision of utility-scale solar PV and battery energy storage resources, if any, for each of the scenarios modeled.

8. Generation Legacy Units retirements.

   a. Confirm, or explain otherwise, that the PLEXOS model will prioritize, first allow, or mandate the retirement of heavy fuel oil legacy steam units at San Juan, Palo Seco, and Aguirre in accordance with any current emission guidelines, including EPA State Implementation Plans (SIP), or other guidance.

   b. Confirm, or explain otherwise, that all other non-peaking legacy fossil fuel unit retirements (i.e., Aguirre diesel units, Costa Sur steam units, and the San Juan combined cycle units) are allowed as endogenous to the model, if economic.

9. Provide all Marine Cable resource cost parameters (initial, and ongoing costs including fuel, maintenance, and/or purchased power agreement costs) if used as resource option offered to the model, and/or if used to represent a "fixed decision" resource in a scenario.

10. Provide an update to LUMA's Response to ROI #1, Question No. 6, and as necessary confirm or modify the information provided on LUMA's presentation for Second Technical Conference held on October 31, 2023, slides numbers 12-20. Provide the information in Excel file format.

    For easy reference, Question No. 6 from the ROI #1 is reproduced below.

    Provide current planned capital costs and fixed O&M cost trajectories for all years across the planning horizon of 2025-2044 for supply resources to be used as options in the IRP modeling. These cost trajectories should capture any changes in capital and O&M costs across the planning horizon. Provide estimated cost trajectories for resources including (but not limited to) the following:

    a. Wind – onshore.
    b. Wind – offshore.
    c. Solar PV utility scale.
    d. Solar PV distributed scale.
    e. Battery energy storage utility scale – 4 hour duration
    f. Battery energy storage utility scale – 2 hour duration
    g. Battery energy storage utility scale – 6 hour duration
    h. Battery energy storage – distributed scale.
    i. Small combustion turbines or gas turbines.
    j. Small reciprocating engines (RICE units).
    k. Other size CT, GT, or RICE units.
    l. Combined cycle units.

    For all cost estimates including sources and the vintage of the estimate.

11. For all resource types, provide the input assumptions across all planning years to be directly used in the PLEXOS modeling, or to be considered in any form of post-processing of PLEXOS results.

    a. For all distributed energy resources ("DER", solar PV and battery resources) used as load modifiers, provide the trajectory of MW (PV), and of MW and MWh (BESS) quantities to be used across scenarios, and differentiate between solar PV and battery resources.

    b. Explain how the costs associated with load-modifying DER resources are to be used in the PLEXOS modeling, or to be used in post-processing of the PLEXOS modeling results.

c. Explain how the functionality of the distributed BESS resources will be represented in PLEXOS.