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

IN RE:

PUERTO RICO TEST FOR DEMAND RESPONSE AND ENERGY EFFICIENCY

CASE NO.: NEPR-MI-2021-0009

SUBJECT: Comments on Attachments A and B to Resolution and Order of February 7, 2022, and on Avoided Cost Modeling Presentation.

MOTION SUBMITTING LUMA'S COMMENTS ON ATTACHMENTS A AND B OF ENERGY BUREAU RESOLUTION AND ORDER OF FEBRUARY 7, 2022, AND ON AVOIDED COST MODELING PRESENTATION

TO THE PUERTO RICO ENERGY BUREAU:

COME NOW LUMA Energy, LLC[1], and **LUMA Energy ServCo, LLC**[2] (jointly referred to as "LUMA") and respectfully state, submit and request the following:

1. On May 14, 2021, this Puerto Rico Energy Bureau ("Energy Bureau") issued a Resolution and Order (the "May 14th Resolution") initiating the referenced proceeding to develop the Puerto Rico Benefit-Cost Test ("PR Test") as required by the Energy Bureau's Regulation for Demand Response of December 21, 2020, Regulation 9246, and under the then Proposed Energy Efficiency ("EE") Regulation issued by the Energy Bureau on April 22, 2021[3] (*see* May 14th Resolution at pages 3-5) and indicated it sought to obtain stakeholder feedback regarding the specific benefits and costs to be included in the PR Test through a series of four Technical Workshops, which would "culminate in an Energy Bureau Order memorializing the process and the PR Test framework" (*see id.* at page 6). These four Technical Workshops were thereafter

[1] Register No. 439372.
[2] Register No. 439373.
[3] This Proposed EE Regulation was approved by the Energy Bureau on January 5, 2022.

scheduled by the Energy Bureau's Resolution and Order of June 16, 2021, and were held on June 30, 2021, July 21, 2021, August 25, 2021, and September 22, 2021.

2. After other procedural events, on August 13, 2021, the Energy Bureau issued a Resolution and Order informing, in pertinent part, that it was developing an avoided cost study to be used to develop values for the PR Test ("Avoided Cost Study").

3. Following two LUMA requests regarding the Avoided Cost Study[4] and a Technical Conference on the subject held on November 18, 2021, among other procedural events, on December 14, 2021, the Energy Bureau issued a Resolution and Order (the "December 14th Resolution and Order") determining to continue the development by the Energy Bureau of the Avoided Cost Study (*see* December 14th Resolution and Order at page 1). In addition, and in pertinent part, the Energy Bureau "reiterated its intention to share the methods and initial results of the Avoided Cost Study and schedule a Technical Conference for that purpose". *Id*. Accordingly, the Energy Bureau scheduled a virtual Technical Conference for February 8, 2022, at 10:00 a.m., "to discuss the initial results of the Avoided Cost Study", and ordered PREPA and LUMA to attend, as well as invited other stakeholders to attend and participate. *See id*. at page 2.

4. After other procedural events, on February 7, 2022, the Energy Bureau issued a Resolution and Order (the "February 7th Resolution and Order") proposing to adopt a PR Benefit-Cost Test framework, as defined in an Attachment A thereof (titled "Proposed Puerto Rico Benefit-Cost Test Framework"), and a list of prioritized impacts, included in an Attachment B thereof (titled "Prioritization of PR Test Impact Development"), to be included in the application of the

[4] *See LUMA's Motion Requesting Energy Bureau to Stay Resolution and Order of August 13, 2021 and Schedule Technical Workshop* of August 12, 2021 and LUMA's *Motion Submitting LUMA's Comments and Suggestions* of December 13, 2021.

PR Test for the Potential Study and the first Three-Year Plan required under Sections 3.02(B) and 4.02 of the Regulation for Energy Efficiency approved January 5, 2022 (the "EE Regulation"), respectively. *See id*. at pages 2-4 and Attachments A and B.[5] In the February 7th Resolution and Order, this Energy Bureau ordered LUMA to file comments on Attachments A and B on or before March 7, 2022. *See id*. at page 4.

5. On February 8, 2022, the Energy Bureau held the Technical Conference ("February 8th Technical Conference") to discuss the initial results of the Avoided Cost Study, in which the Energy Bureau consultants (Synapse Energy Economics, Inc.) provided a presentation titled "Puerto Rico Avoided Cost Modeling Technical Conference" (the "Presentation"). As part of the Presentation, the Energy Bureau consultants put forward three discussion questions. *See* Presentation at page 46. At the end of the Presentation, the Energy Bureau Consultants informed that stakeholders and LUMA could provide written comments and questions on the Presentation by February 22, 2022. *See id*. at page 48.

6. In compliance with the February 7th Resolution and Order, LUMA hereby submits, as Exbibit 1, its comments to Attachment A (PR Test Framework) and Attachment B (Prioritization of PR Test Impact Development) of the February 7th Resolution and Order.

7. In addition, LUMA hereby submits, as Exhibit 2, its comments to the Presentation provided by Energy Bureau consultants during the February 8th Technical Conference.

WHEREFORE, LUMA respectfully requests the Energy Bureau to **take notice** of the aforementioned and **accept** LUMA's comments to Attachments A and B of the February 7th

[5] The February 7th Resolution and Order also included an Attachment C containing a report with the recommendations submitted by the Energy Bureau's consultants at the conclusion of the Technical Workshops that have been held in this proceeding. *See id*. at page 2 and Attachment C.

Resolution and Order, included herein as **Exbibit 1**, and LUMA's comments to the Presentation titled "Puerto Rico Avoided Cost Modeling Technical Conference" given by the Energy Bureau's consultants in the Technical Conference of February 8, 2022, included herein as **Exhibit 2**, and **deem** LUMA **in compliance** with the requirements of the February 7th Resolution and Order and the request for comments in the mentioned Presentation.

RESPECTFULLY SUBMITTED.

In San Juan, Puerto Rico, this 7th day of March 2022.

We certify that we filed this motion using the electronic filing system of the Puerto Rico Energy Bureau and that we will send an electronic copy of this motion to counsel of record for PREPA, Katiuska Bolaños-Lugo, kbolanos@diazvaz.law.

DLA Piper (Puerto Rico) LLC
500 Calle de la Tanca, Suite 401
San Juan, PR 00901-1969
Tel. 787-945-9107
Fax 939-697-6147

/s/ Margarita Mercado Echegaray
Margarita Mercado Echegaray
RUA NÚM. 16,266
margarita.mercado@us.dlapiper.com

/s/ Laura T. Rozas
Laura T. Rozas
RUA Núm. 10,398
laura.rozas@us.dlapiper.com

Exhibit 1

Comments on Attachments A and B of the February 7th Resolution and Order

LUMA Comments on Puerto Rico Cost Test Framework and Prioritization of Impacts

NEPR-MI-2021-0009

March 7, 2022

1.0 Introduction

LUMA is pleased to respond to the Energy Bureau's request for comments on the Puerto Rico Cost Test Framework and Prioritization of Impacts published by the Energy Bureau on February 7, 2022. LUMA submits this document and provides the below comments.

2.0 Comments on Appendix A, Proposed Puerto Rico Cost Test Framework

2.1 Definitions

LUMA does not propose a change to the definitions listed.

2.2 Proposed PR Benefit-Cost Test Impacts

- Regarding description of resilience under both Utility System Impacts and Host Customer Impacts, the "adapting to changing conditions" is very broad. The term should be more focused and tied to the grid conditions. LUMA recommends updating the description as follows – "The ability to anticipate, prepare for, and adapt to high impact, low frequency grid events and withstand, respond to, and recover rapidly from these events".

- Regarding Other Fuels and Water under Host Customer Energy Impacts, the description should be clear that it refers to customers. LUMA recommends updating the description as follows – "Change in the customer's consumption of oil gasoline, propane, natural gas and water due to the installation of a DER."

- Regarding Health and Safety Impacts under Host Customer Energy Impacts, there could be negative impacts such as increased risk of fire and fire-related property damage due to Li-ion batteries, among other possible negative impacts. As a result, LUMA recommends the following change - "Reduced risk of fire and fire-related property damage" to "Change in risk of fire and fire-related property damage".

- Regarding Economic and Job Impacts under Societal Impacts, we identify two alternatives. One option is to consider it as a quantitative metric with quantification of job-years and associated financial value. The alternative is to treat this as a qualitative metric, in which case, job-years don't need to be calculated. Calculating job-years is a significant undertaking. Therefore, LUMA recommends that this metric be treated as a purely qualitative metric in the initial years.

- Regarding Energy Security under Societal Impacts, there could be a double counting of energy imports if energy imports is already included under Energy Generation under Utility System Impacts, which includes procurement of energy from generation sources. Energy independence should be kept as a qualitative metric.

3.0 Comments on Appendix B, Prioritization of PR Test Impact Development

3.1 Impact Prioritization for the Potential Study and the First Three-Year EE Plan

- Regarding Property Asset Value under Host Customer Impacts, LUMA recommends not including an adder at this time and treating it qualitatively. For property asset value adder, limited benchmarking data for property asset value adder exists for the mainland US. DER impacts on property asset value can vary widely by jurisdiction and within a jurisdiction. Therefore, the benchmarking data for the mainland US is unlikely to be applicable to Puerto Rico.

- Regarding Empowerment, Satisfaction, and Pride under Host Customer Impacts, LUMA recommends not including an adder at this time and treating it qualitatively. LUMA was not able to identify any benchmarking data based on a review of "Database of State Efficiency Screening Practices (DESP)"[1].

3.2 PR Test Components for the Potential Study and First Three-Year EE Plan

- Regarding using specific adders by sector and DER type, we propose that this be based on available information that captures this differentiation. Initially, we propose starting with benchmarking information and then refining the initial adders based on Puerto Rico specific research. This would allow for the customization of these adders to Puerto Rico based on actual market conditions. The adders should be reviewed and updated, as needed, on a regular basis.

- The industry benchmarks quoted to support the recommended rate are based on benchmarking of developed and mature EE/DR markets. Puerto Rico does not have a developed EE/DR market. Therefore, mainland benchmarking should not be used as a basis for Puerto Rico's discount rate as they do not reflect the risks present in Puerto Rico's nascent EE/DR market. As stated by the Energy Bureau, discount rates are intended to estimate capital, project and portfolio risks. With respect to these risk categories, LUMA recommends the Energy Bureau consider the following:
    - **Capital Risks**: Given the current and forecasted financial status and credit rating of PREPA, lenders will likely require a higher risk premium for financing programs and these risks should be reflected in the discount rate.
    - **Project Risks**: Until the workforce becomes highly trained at estimating and delivering on project savings, there will be higher project risks and these should be captured in the discount rate.
    - **Portfolio Risks**: With a newly established portfolio, studies and programs to reduce portfolio risk will not yet be implemented and therefore there will be elevated uncertainty

[1] https://www.nationalenergyscreeningproject.org/state-database-dsp/

around net to gross ratios and ex-post realization rates. These present higher portfolio risks and should be captured in the discount rate.

Exhibit 2

Comments on Presentation Regarding Avoided Cost Study Results

LUMA Comments on Puerto Rico Cost Test Avoided Cost Study Results

NEPR-MI-2021-0009

March 7, 2022

1.0 Introduction

LUMA is pleased to respond to the Energy Bureau's request for comments on the Avoided Cost Modeling Technical Conference materials presented by Synapse Energy Economics, Inc. on February 8, 2022. LUMA submits this document and provides below: 1) comments and questions related to specific slides in the presentation; 2) responses to the discussion questions posed on slide 46 of the presentation.

2.0 Comments and Questions on Presentation

2.1 Slide 7 – Project Overview

While focus of the Synapse presentation and LUMA's comments is on avoided energy costs, it is critical to understand the potential interactions between the three types of avoided costs, particularly between avoided energy and avoided capacity costs. LUMA believes that avoided energy costs cannot be considered appropriately in isolation of the other components of avoided costs and may provide additional comments on avoided energy costs when information on the other types of avoided costs are available.

2.2 Slide 11 – Method: Avoided Energy

LUMA requests that the Energy Bureau provide the values and source for the technical loss assumption.

LUMA requests that the Energy Bureau confirm that the energy costs are marginal costs for each hour and that any weighting across hours based on hourly generation.

2.3 Slide 15 and 16 – Pre and Post 2021 Retirements

The units listed as retired on slide 15 have not yet been retired and the model should be adjusted to reflect the best currently available information. LUMA recommends remodeling to show that plants are not retired in current planning horizon even though they may be utilized less. The Renewable Procurement Tranche 1 will not replace these units as they are peakers. LUMA's Resource Adequacy study will propose preliminary schedule for these retirements and the retirements will be further investigated through the next IRP process.

2.4 Slide 17 – Illustrative Generation Fleet Dispatch Stack

LUMA recommends that the Energy Bureau present the fleet dispatch stack for 2025, 2030 and 2038, along with corresponding peak day demand and hourly price heatmaps (as shown in slides 40 through 43).

2.5 Slide 18 – PREPA System Peak Demand – No EE vs. Full EE

The forecast presented in the slides is from the 2018 IRP and has not been updated for actual values and changing macroeconomic factors. PREPA and LUMA have updated the forecast since the 2018 IRP for the PREPA fiscal plan. The update forecast can be found in Energy Bureau Case No. NEPR-MI-2020-0001 and the fiscal plans.

2.6 Slide 19 – PREPA System Load – No EE vs. Full EE

The data on Slide 19 assumes that EE started in 2017 and it did not. LUMA recommends adjusting the model to reflect this. EE Scenarios should be based on the latest regulatory timelines, which vary dramatically from the 2018 IRP scenarios.

2.7 Slides 21 and 24– Fuel Prices: Natural Gas and Oil

LUMA recommends that the fuel forecast align with the fuel forecasts used in Energy Bureau Case No. NEPR-AP-2018-0004, the Unbundling of the Assets of the Puerto Rico Electric Power Authority.

2.8 Slide 29 – Fuel Prices: Calibration

LUMA suggests updating this calibration to cover all of 2021 or, at minimum more than 5 months.

2.9 Slide 30 – Technology Capital Costs

LUMA would like to confirm to what extent have these costs been adjusted to reflect higher costs for delivery, installation and commissioning in Puerto Rico as opposed to mainland US. Best available information would be based on recent construction and contract experience in Puerto Rico. Furthermore, LUMA would like to confirm that costs have also been adjusted for the inflationary period. Please provide the inflation assumptions used.

Of the four Combined Cycle Gas Turbine (CCGT) technologies listed, which technology was assumed for the new CCGT additions? What was the basis for this selection as compared to the other three CCGT technologies shown?

2.10 Slide 31 – Renewable Portfolio Standard

This extrapolation of RPS for the No EE schedule assumes a linear increase according to the law in Act 17-2019 and is not reflective of the likely actual schedule. The extrapolation should use a stepwise schedule in first few years that reflects a realistic schedule.

2.11 Slide 32 – Ancillary Services

Does avoided cost reflect cost impact of providing ancillary services?

Puerto Rico experienced significant levels of unserved energy in 2021, suggesting that the operational reliability and availability of the existing fleet is lower than used in the analysis. Additionally, the older generation units generally have lower levels of thermal responsiveness than newer units. What generation outage rates and ramp rates were used in the analysis? Please share the generation dataset and LUMA can review compared to actual on-island operational experience in order to improve the accuracy of the assumptions and the forecast.

2.12 Slide 35 – Modeling Results: No EE Capacity Comparison

LUMA requests the following:

- Information about the assumed capacity factors (annual energy output) and effective capacity (contribution to meeting peak demand) from the solar and wind generation.
- The expected round trip efficiency and assumed cycle life of the batteries and how these factors were reflected in the avoided energy costs.

- As noted on slide 30, please state which technology (of the four CCGT technologies shown) was assumed for the new CCGT additions? What was the basis for this selection as compared to the other three CCGT technologies shown?

The bulk of the energy demand in the long-term is expected to be met by a combination of utility solar and batteries. It is unclear whether it would be economic to build these plants based on the information provided. While further comments will require detailed information on the interaction between energy and capacity costs, please share any details about how the likely Power Purchase and Operating Agreement (PPOA) contracts and payment structure was reflected in the avoided energy cost calculation. The contract structure for renewable PPOAs is evolving in Puerto Rico but based on recent experience, it is likely that there will continue to be a relatively high variable rate ($/MWh) in future contracts. Also, please share calculations regarding the financial viability of new suppliers entering into such contracts based on local construction costs, typical financing structure and required return on investment.

As noted on slides 15 and 16, any additions should reflect the latest expectations for procurement schedule. It is also unclear whether the Energy Bureau will allow new fossil generation. In the event that the Energy Bureau does not allow new fossil, is there a need for an alternative plan with no new fossil generation?

2.13 Slide 36 – Modeling Results: Capacity Calibration

LUMA notes that the results do not seem to reflect the schedule presented on slide 31 for solar.

2.14 Slide 37 – Modeling Results: Gas/Oil Capacity

LUMA would like to reiterate the earlier point about the retirement / addition schedule reflecting actual experience and most current procurement activity and plans.

As noted on comments for slide 32, Puerto Rico experienced significant levels of unserved energy in 2021, suggesting that the operational reliability and availability of the existing fleet is lower than used in the analysis. Please share the generation dataset and LUMA can review compared to actual on-island operational experience in order to improve the accuracy of the assumptions and the forecast.

LUMA recommends also considering other alternatives like fixed tilt solar and reciprocating engines with biodiesel.

2.15 Slide 40 – Modeling Results: Avoided Energy Costs

As noted on slide 17, it would be helpful to present the fleet dispatch stack for 2025, 2030 and 2038, along with corresponding peak day demand and hourly price heatmaps.

2.16 Slide 42 – Modeling Results: Peak Day in 2030

Does this reflect local construction costs, the current inflationary period and current and expected PPOA contract price structures for renewable and fossil generation?

2.17 Slide 44 – Modeling Results: Marginal Hours

Recent experience suggested that Puerto Rico's existing hydro generation may have approximately 15% capacity factor, and there does not appear to be any new hydro generation planned.

What capacity factor and what level of dispatchability for the hydro plant has been assumed for the existing hydro generation?

Similarly, what proportion of hydro output is infra-marginal and not impacting marginal energy costs?

3.0 Discussion Questions

QUESTION 1

Are the fuel cost projections reasonable? Are there better data available to inform the projections?

RESPONSE

LUMA recommends that the fuel forecast align with the fuel forecasts used in Energy Bureau Case No. NEPR-AP-2018-0004, the Unbundling of the Assets of the Puerto Rico Electric Power Authority.

QUESTION 2

How should the study reflect uncertainty regarding the (counterfactual) resource mix and procurement schedule?

RESPONSE

The resource mix should be updated to reflect the most current retirement / addition plans based on current procurement plans and contracts.

QUESTION 3

What is the best approach for calculating avoided costs beyond 2038 (e.g., extrapolating model results)?

RESPONSE

Given the relative stability of the supply mix in the last five years of the analysis period, it would not be unreasonable to extrapolate beyond 2038 based on the forecast avoided energy cost escalation in the last five years of the analysis period (i.e., 2034 - 2038) assuming the forecast is updated to reflect comments from us and others.