GOVERNMENT OF PUERTO RICO
PUERTO RICO ENERGY COMMISSION

IN RE: REVIEW OF THE PUERTO RICO ELECTRIC POWER AUTHORITY INTEGRATED RESOURCE PLAN	**CASE NO.:** CEPR-AP-2018-0001 **SUBJECT:** IRP 2018 Prefiling Process, Determination of Completeness of August 1, 2018 Compliance Filing with Commission's July 2, 2018 Order.

RESOLUTION AND ORDER

On August 1, 2018, the Puerto Rico Electric Power Authority ("PREPA") filed before the Commission its Compliance Filing, pursuant to the Puerto Rico Energy Commission's ("Commission") July 2, 2018 Order in the instant proceeding. Based on the responses provided by PREPA, the Commission determines that in order to comply with the July 2, 2018 Order, additional information is required.

After a review of PREPA's filing, the Commission is concerned about the input assumptions and key methodologies to be used for the development of the Integrated Resource Plan ("IRP"). Regulation 9021[1] establishes in detail the Commission's requirements for the development and subsequent evaluation of the IRP. Furthermore, as the Commission has explained, the purpose of the Prefiling Process, as well as the August 14, 2018 Technical Conference, is to be able to make corrections to the direction the IRP is taking. Moreover, PREPA must comply with the laws of the Government of Puerto Rico and the Commission's orders and regulations, in order for its IRP to be approved.

For the Commission to determine that the information provided by PREPA is adequate, and therefore for the Commission to gain clarity about basic information and fundamental data in the IRP development, PREPA must provide answers to the questions included in Appendix A to this Resolution and Order. Based on the information PREPA has provided, the Commission is concerned, among other things, that: (i) PREPA may not provide required load forecast ranges in its scenarios; (ii) it is not sufficiently clear that PREPA will use a capacity expansion model to develop a least cost plan that can be the basis of a preferred plan, and not just use it as a resource screening tool; (iii) the proposed IRP may not include reasonable assumptions on, or clear methodologies for, the development of energy efficiency and demand response programs; and (iv) PREPA may not have adequately addressed planned deployment of distributed generation. These are required elements in the IRP regulation.

PREPA requested, as part of its Compliance Filing, for the Commission to hold an informal meeting the week of August 6th, where comments and concerns could be discussed, in order for the Commission to provide additional scenarios by August 8, 2018. Based on

[1] Regulation on the Integrated Resource Plan for the Puerto Rico Electric Power Authority.

scheduling conflicts, the Commission is not able to hold an additional hearing on the week of August 6th, accordingly, PREPA's request for rescheduling the technical conference is **DENIED.** Notwithstanding, Section 3.01 of Regulation 9021 establishes that the Commission may schedule one or more technical conferences, such as the August 14, 2018 Technical Conference, to gather information regarding the methodoly and contents contemplated by PREPA for its new IRP proposal. All concerns regarding PREPA's filing should be addressed during the August 14, 2018 Technical Conference. However, if PREPA considers that additional technical conferences are needed to engage in further discussions regarding the Prefiling Process, PREPA shall make a request to the Commission for said technical conferences to be scheduled.

PREPA is **ORDERED** to file with the Commission the information requested in Appendix A of this Resolution and Order, on or before noon, August 13, 2018.

Be it notified and published.

Edison Avilés Deliz
Chairman

Ángel R. Rivera de la Cruz
Associate Commissioner

CERTIFICATION

I hereby certify that the majority of the members of the Puerto Rico Energy Commission has so agreed on August 8, 2018. I also certify that on this date a copy of this Resolution and Order regarding the Case No. CEPR-AP-2018-0001 was notified by electronic mail to the following: n-vazquez@aeepr.com, jorge.ruiz@prepa.com and astrid.rodriguez@prepa.com. I certify that today, August 8, 2018, I have proceeded with the filing of the Resolution issued by the Puerto Rico Energy Commission and I have sent a true and exact copy to the following:

Puerto Rico Electric Power Authority
Attn.: Astrid I. Rodríguez Cruz
Jorge R. Ruíz Pabón
Nitza D. Vázquez Rodríguez
PO Box 363928
San Juan, PR 00936-4267

For the record, I sign this in San Juan, Puerto Rico, today August 8, 2018.

Brenda Liz Mulero Montes
Interim Clerk

Appendix
Information Requirements on PREPA's IRP Development

PREPA shall respond and file the following information with the Commission on or before noon on August 13, 2018. References to sections refer to Regulation 9021.

1. Section 1.03. Explain PREPA/Siemens overarching approach for determining an appropriate planning reserve margin ("PRM") to meet load, accounting for historically high generation outage rates and understandable uncertainty for near- and longer-term projected peak load levels. Will it reflect conventional "loss of load expectation" constructs, or a variation on that construct? Will it use conventional threshold metrics (such as one-day-in-ten-years loss of load events) or more relaxed metrics? Is it PREPA/Siemen's intention that the IRP process will seek to meet a resource requirement driven by an estimation of a specific planning reserve margin? Please discuss.

2. Explain if or how the results, assumptions, and approach contained in the publicly available white paper "Resilient by Design: Enhanced Reliability and Resiliency for Puerto Rico's Electric Grid" (Siemens) reflects PREPA's current perspective on its expectations for the IRP analysis. Discuss as appropriate.

3. In what ways will any costs associated with potential development of natural gas import capacity in the north or the south be explicitly incorporated into the capital and/or operating and/or fuel costs of new gas-fired resource options available to the IRP model for selection as part of a least-cost portfolio?

4. Refer to answers provided to Question 8 in the August 1, 2018 Compliance Filing. Include the August 1, 2018 Fiscal Plan for PREPA as part of the discussion of legislative changes that could impact PREPA's system and the IRP Update.

5. Refer to answers provided to Question 12 and Question 15 in the August 1, 2018 Compliance Filing:

    a. Include in electronic format the specific deterministic annual load forecast for years 2019-2038, for each of a reference, high and low forecast, including coincident peak demand and annual energy consumption, in total and for each customer class. Provide these data on a monthly basis if available.

    b. Include as forecast components (if/as available) the extent to which the above forecast in Part (a.) (especially for trends over time) includes explicit estimation of changing economic factors that affect overall consumption and peak demand. This would include the specific quantitative estimate for "Quantum Distribution: Additional Variability" as noted in the response.

    c. Include as forecast components (if/as available) the extent to which the above forecast in Part (a.) includes the effect of any projected naturally occurring

energy efficiency, or energy efficiency expected to result from existing and expected building codes, and appliance standards.

d. Include as forecast components (if/as available) the extent to which the above forecast in Part (a.) includes technical losses. Differentiate between transmission and distribution system losses. Include technical loss components as they exist at peak load conditions, and on an average annual energy basis.

e. Include as forecast components (if/as available) the extent to which the above forecast in Part (a.) includes non-technical losses. Include non-technical loss components as they exist at peak load conditions, and on an average annual energy basis.

f. Include in electronic format historic peak demand and energy consumption, for the past ten years, in total and for each customer class. Include monthly estimates for at least 2017.

6. Refer to answers provided to Question 16 and Question 17, and Question 25 in the August 1, 2018 Compliance Filing:

   a. Provide a forecast for "future energy efficiency programs", in the same format and categorization as requested above in Question 5, Part (a.). [i.e., annually, for coincident peak demand and energy, and by customer class, for 2019-2038].

   b. Provide projected coincident peak demand savings, annual energy savings, and costs for both energy efficiency and demand response resources to be used in the IRP. Provide this information for each of the years 2019-2038. Confirm that this information is the same as what was described in the response to Question 25 in the August 1, 2018 Compliance Filing.

   c. Fully describe how the costs and savings associated with "future energy efficiency programs" will be characterized in the IRP modeling process; in particular, state if such costs and savings will be used to modify the load inputs or will be made available as resources to meet load projections made without consideration of the effect of these resources.

   d. Fully describe how the IRP modeling will account for technical loss savings on a coincident peak demand basis and on an annual energy basis for any "future energy efficiency programs".

   e. Provide a forecast for the effect on annual energy and coincident peak demand for deployment of behind-the-meter distributed generation, annually for the period 2019-2038. Specifically, explain how this will be treated in the IRP modeling. Note if the load forecasts requested above in Question 5, Part (a.)

include or exclude such distributed generation effects on "net load" seen on the grid.

7. Refer to answers provided to Question 19 in the August 1, 2018 Compliance Filing. Provide a list of the utility-owned and non-utility-owned existing resources to be considered in the IRP, with at least the following attributes included:

    a. Nameplate capacity.

    b. Current "summer" or peak period capacity.

    c. Expected annual utilization (capacity factor) or expected annual energy production.

    d. Fuel type or types.

    e. Current operational status.

    f. Projected forced and planned outage rates (for all fossil resources) to be used in the IRP, with variation by year if anticipated changes to current forced and planned outage rates.

    g. Anticipated contribution to peak load requirements (as a % of nameplate capacity) for hydro, wind and solar PV resources for resource adequacy purposes.

8. Refer to answers provided to Question 23 in the August 1, 2018 Compliance Filing.

    a. State which zones the IRP will define for the "zonal level" indicated.

    b. Confirm, or explain otherwise, that these zones are the same as the "minigrids" noted on page 15 of Attachment 1 of the August 1, 2018 Compliance Filing.

    c. What are the projected transmission limitations between these zones, at this time, and as projected over the early years of the IRP planning horizon?

    d. What is PREPA's current projections for the value of lost load (VOLL) to be used in the IRP, and does VOLL vary across the customer sectors?

    e. What are the sources of information used to project VOLL levels?

9. Refer to answers provided to Question 24 in the August 1, 2018 Compliance Filing.

    a. What is the current status of the ability of the distribution grid to support any particular level of distributed generation?

10. Refer to answers provided to Question 26 in the August 1, 2018 Compliance Filing.

    a. Specify the exact battery energy storage system (BESS) options (e.g., type, size, duration, intended use, and performance parameters) to be available as options in the IRP.

    b. Provide PREPA's estimate of the capital costs, and any other costs to be modeled in the IRP, for all battery resource options.

    c. Provide the projected cost trajectory reflecting any changes to estimated costs over time to be included in the BESS resource attributes to be modeled in the IRP.

    d. Describe (as applicable) how the IRP will model any technical loss benefits that may accrue from BESS resources installed close to load, in particular during peak system loading periods.

11. Refer to answers provided to Question 30 in the August 1, 2018 Compliance Filing.

    a. Explain PREPA's rationale for including a zero price for carbon emissions in its base case.

    b. Are there any technical (modeling input) hurdles to incorporating a non-zero carbon emissions price in each of the four scenarios under consideration?

    c. In what ways are basis costs (from Henry Hub prices) to be explicitly considered in the IRP for delivering natural gas to Puerto Rico? Provide any specific estimates for the basis between Henry Hub and Puerto Rico to be used in the IRP modeling.

12. Refer to answers provided to Question 32 in the August 1, 2018 Compliance Filing.

    a. It appears that PREPA is planning to use the same underlying load forecast for each of the four scenarios. Please confirm or explain otherwise.

    b. If it is true that the same load forecast is to be used, explain how that approach comports with Section 2.03 (C)(2) which describes a need to prepare low, reference, and high load forecast cases.

    c. Provide the statistical parameters associated with the load forecast planned to be used in developing the stochastic analysis for each of the scenarios.

    d. The response to Question 32 states "The model will be run with a variety of generation options to determine the least cost portfolio for each Scenario". Explain how non-generation options (e.g., demand response, energy

efficiency, battery storage) will be available to the IRP model to be selected as part of a least cost portfolio in each of the four scenarios.

13. Refer to answers provided to Question 36 in the August 1, 2018 Compliance Filing.

    a. Is PREPA/Siemens planning to directly use the long-term capacity expansion (LTCE) feature of Aurora when producing any, each or all of the scenario results for a least cost expansion plan?

    b. The response to Question 36 states that LTCE is utilized by Aurora "As part of the screening analysis". Exactly how is resource screening analysis planning to be incorporated as part of the IRP?