

**GOVERNMENT OF 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.:** CEPR-AP-2018-0001

**SUBJECT:** Resolution and Order regarding  
topics discussed at the November 2, 2018  
Technical Conference.

**RESOLUTION AND ORDER**

On November 2, 2018, the Puerto Rico Energy Bureau ("Energy Bureau") held a Technical Conference Call to discuss: (1) preliminary results of the Integrated Resource Plan ("IRP") and (2) possible modifications to the definition of "Scenario 3" of the IRP. As part of the discussion, the Puerto Rico Electric Power Authority ("PREPA") proposed replacing "Scenario 3" with a high renewable energy price scenario. PREPA argued that such scenario will provide more information, as it represents, in PREPA's opinion, a more realistic scenario. Furthermore, PREPA suggests that a revised Scenario 3 will provide more "insight in the robustness of the solution provided by other scenarios, and modifications to the strategies (if required) to address higher than forecasted renewable prices."<sup>1</sup>

Based on the information provided to date and the November 2, 2018 Technical Conference, the Energy Bureau **DETERMINES** the following:

1. PREPA must allow the capacity expansion model to deploy a reasonable amount of renewable resources (solar PV and battery storage) in years 2019, 2020, and 2021.
  - a. PREPA must allow the model to provide optionality for the system to deploy solar PV in 2019, 2020, and 2021, up to a cumulative amount equal to the amount of solar PV required to achieve compliance with the statutory Renewable Portfolio Standard ("RPS") goal by the end of 2021.<sup>2</sup>
  - b. The capacity expansion model must be allowed to select a reasonable ramp up in the deployment of battery capacity, starting with the 20 MW in 2019

<sup>1</sup> See PREPA's (1) Compliance Filing (Partial), (2) Motion to Provide Initial Scenario 3 Results on November 1, and (3) Motion to Start November 2 Technical Conference One Hour Later, October 31, 2018, Case No. CEPR-AP-2018-0001.

<sup>2</sup> See Article 2.3 of Act 82-2010, Public Policy on Energy Diversification by Means of Sustainable and Alternative Renewable Energy in Puerto Rico Act.

requested by the Public-Private Partnerships Authority<sup>3</sup> and ramping up in each following year, becoming unlimited in 2022. PREPA must allow the model to deploy at least as much battery capacity as one half of the solar PV capacity allowed each year. (i.e., if the RPS compliance would require 600 MW of new solar PV, then the model must be allowed to select at least 300 MW of battery storage.)

- c. The IRP filing must provide explicit assumptions, with justifications, for each limitation placed on solar or batteries prior to 2022.

2. "Scenario 3" must continue to be modeled as a low price, high availability case for renewable energy and battery deployment. PREPA must allow the capacity expansion model to deploy up to 1,200 MW of solar in any year. This run is intended to inform the Energy Bureau regarding the impact of such limits on optimal generation portfolios, and not necessarily to indicate that such a pace for renewable energy and battery deployment is achievable. The solar PV and battery made available in those early years should reflect the NREL low price or equivalent trajectory.
3. Scenarios 2 and 4 must be combined unless PREPA shows that the least cost solution for Scenario 4 does not also meet the restrictions of Scenario 2.
4. PREPA is welcome to model the proposed Scenario "3R" with higher renewable energy prices.<sup>4</sup>
5. PREPA must demonstrate the impact of relaxing the thermal constraint across the eight mini-grids.<sup>5</sup> This can be accomplished by modeling Strategy 1 (no mini-grids) in the cases of Scenarios 1 and 2. The purpose of this examination is to isolate the effect of the mini-grid constraints on the resource selection in Scenario 1 and Scenario 2.

<sup>3</sup> See Puerto Rico Public-Private Partnerships Authority Request for Qualifications for the Puerto Rico Electric Power Authority Utility Scale Energy Storage System, June 22, 2018.

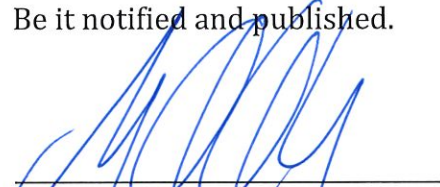
<sup>4</sup> See motion titled "PREPA's (1) Compliance Filing (Partial), (2) Motion to Provide Initial Scenario 3 Results on November 1, and (3) Motion to Start November 2 Technical Conference One Hour Later", October 31, 2018, Case No. CEPR-AP-2018-0001, at p. 2.


<sup>5</sup> PREPA's Strategy 2 and 3 require local supply for 80% and 50% of peak loads respectively across the 8 mini-grids. During the November 2, 2018 Technical Conference, PREPA indicated that critical loads within a mini-grid (typically about 30% of the load) require thermal resources. However, based on the information contained on slides 83 through 89 of PREPA's IRP 2018 Preliminary Results of the Long Term Capacity Expansion Plan of October 24, 2018 ("PREPA's Presentation"), it appears that the results indicate that thermal plants meet the entirety of peak load needs on the 2023-2026 time period, across all of the mini-grids. This constraint appears to result in the need for generic new diesel units across all of the model results. PREPA has not explained why the mini-grid loads require thermal generation back-up to the full peak load for the mini-grid region. It would be reasonable to consider some amount of thermal back-up, and perhaps to cover critical, or even critical plus priority loads (see load matrix at slide 80 of PREPA's Presentation), but the level of total capacity shown on slides 83-89 of PREPA's Presentation, including the capacity associated with storage in the model, appears excessive as it is far in excess of the full peak load of each mini-grid.



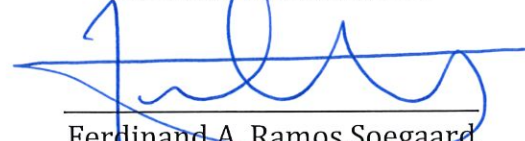
6. PREPA must ensure that the optionalities given to the IRP model take into consideration realistic characteristics (*i.e.*, timelines, scope of projects, etc.) regarding projected or planned projects in order for the IRP evaluation process to accurately contemplate such projects.

Be it notified and published.

  
Edison Avilés Deliz  
Chairman

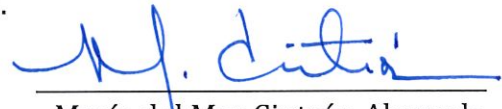
  
Lillian Mateo Santos  
Associate Commissioner

  
Ángel R. Rivera de la Cruz  
Associate Commissioner

  
Ferdinand A. Ramos Soegaard  
Associate Commissioner

#### CERTIFICATION

I hereby certify that the majority of the members of the Puerto Rico Energy Bureau has so agreed on November 8, 2018. I also certify that on this date a copy of this Resolution and Order was notified by electronic mail to the following: n-vazquez@prepa.com, astrid.rodriguez@prepa.com and jorge.ruiz@prepa.com.

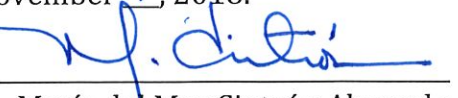
  
María del Mar Cintrón Alvarado  
Clerk

I also certify that today, November 9, 2018, I have proceeded with the filing of the Resolution and Order issued by the Puerto Rico Energy Bureau and I have sent a true and exact copy to the following:

**Puerto Rico Electric Power Authority**

Attn.: Nitza D. Vázquez Rodríguez  
Astrid I. Rodríguez Cruz  
Jorge R. Ruíz Pabón  
PO Box 364267  
Correo General  
San Juan, PR 00936-4267

For the record, I sign this in San Juan, Puerto Rico, today November 9, 2018.

  
María del Mar Cintrón Alvarado  
Clerk