

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

IN RE: IMPLEMENTATION OF THE PUERTO RICO ELECTRIC POWER AUTHORITY INTEGRATED RESOURCE PLAN AND MODIFIED ACTION PLAN

CASE NO.: NEPR-MI-2020-0012

SUBJECT: Approval for GSA for the 17 MW VPP; and request for updated interconnection studies inclusive of the BESS First Tranche Projects

RESOLUTION AND ORDER

I. Introduction

On August 24, 2020, the Energy Bureau of the Public Service Regulatory Board ("Energy Bureau") issued the IRP Order¹, regarding the Integrated Resource Plan ("IRP") of the Puerto Rico Electric Power Authority ("PREPA"). The IRP Order approved a Modified Preferred Resource Plan that included a plan for six (6) tranches of procurement of renewable energy and battery storage resources.²

On December 16, 2021, PREPA filed a document titled *Motion Submitting 733 MW of PV Renewable Energy Draft Power Purchase and Operating Agreements Offered in Tranche 1 of PREPA's Renewable Generation and Energy Storage Resources RFP for Energy Bureau Evaluation and Approval* ("December 16 Motion"). In the December 16 Motion, PREPA identified fifteen (15) Photo-Voltaic ("PV") projects totaling 732.7 MW and submitted draft bespoke power purchase and operating agreements ("PPOAs") for those projects, for the evaluation and approval by the Energy Bureau. In the December 16 Motion, PREPA also identified three (3) Battery Energy Storage System ("BESS") resource projects (4-hour duration) totaling 220 MW, for which PREPA indicated it planned the submission of bespoke energy storage services agreements ("ESSAs") by or before December 23, 2021. PREPA included in its December 16 Motion submission, as Attachment A, a memorandum from PREPA's Tranche 1 Evaluation Committee describing the detailed evaluation approach taken to arrive at its selection of project offerings for approval.

On December 23, 2021, PREPA filed a document titled *Supplemental Motion Submitting PV Renewable Energy Draft Power Purchase and Operating Agreements (PPOAs) As Well As Energy Storage Service Agreements (ESSAs) As Part of PREPA's Tranche 1 Renewable Generation and Energy Storage Resources RFP For Energy Bureau Evaluation and Approval* ("December 23 Motion"). PREPA submitted three bespoke ESSA contracts totaling 220 MW reflecting the projects stated in the December 16 Motion and submitted three solar PV bespoke contracts totaling 112.1 MW, additional to the 732.72 MW of solar PV projects submitted for authorization in the December 16 Motion. The combined solar PV resource procurements for which authorization was sought by PREPA was 844.82 MW.

On February 2, 2022, the Energy Bureau issued a Resolution and Order ("February 2 Resolution") authorizing eighteen (18) PV project PPOAs for PREPA to finalize its negotiations with those proponents.

On February 2, 2022, PREPA filed a document titled *Motion in Compliance with the January 28 Order Submitting Energy Storage Resources Information, the Next Two Projects Totaling 50MW of Solar PV Resources and Memorandum of Law Requesting Confidential Treatment*

¹ See, Final Resolution and Order on the Puerto Rico Electric Power Authority's Integrated Resource Plan, *In re: Review of the Puerto Rico Electric Power Authority Integrated Resource Plan*, Case No. CEPR-AP-2018-0001 August 24, 2022 ("IRP Order").

² IRP Order, pp. 266-268, ¶ 860.



("February 2 Motion"). PREPA filed information regarding the six additional BESS projects and the two projects totaling 50 MW of solar PV resources.³

On March 1, 2022, PREPA filed a document titled *Memorandum of Law in Support of Request for Confidential Treatment of Attachment A* ("March 1 Memorandum"). The March 1 Memorandum included as Attachment A, filed under seal, a document titled *Informative Motion Regarding Status of VPP Contract Negotiations and Delays in Finalizing Form of Interconnection Agreement* ("March 1 Motion"). Through the March 1 Motion, PREPA provides an update on the status of PREPA's discussion regarding the Virtual Power Plant ("VPP") Proponents and with representatives of LUMA⁴ regarding a potential significant delay regarding the Interconnection Agreement. The March 1 Motion includes as Exhibit A, on a confidential basis, a Bespoke GSA as it stands with one of the VPP Proponents.⁵

On March 17, PREPA filed a document titled *Memorandum of Law in Support of Request for Confidential Treatment of Attachment A* ("March 17 Memorandum"). The March 17 Memorandum included as Attachment A, filed under seal, a document titled *Informative Motion Identifying Concerns Regarding Pricing and Certain Commercial Terms Offered by Tranche 1 VPP Project Proponents and Request for Confidential Meeting to Discuss Selection of Tranche 1 VPP Proposals* ("March 17 Motion"). The March 17 Motion provides an update on the status of the two VPP Proponents and the finalization of the GSAs.⁶

On April 11, 2022, the Energy Bureau issued a Resolution and Order ("April 11 Resolution") to obtain additional information from PREPA and LUMA about the status of Tranche 1 resource offerings and interconnection cost considerations. In the April 11 Resolution, the Energy Bureau issued questions 1-5 for PREPA to respond and issued questions 6-7 for LUMA to respond. Both PREPA and LUMA were to respond on or before April 19, 2022.

On April 19, 2022, LUMA filed a document titled *Motion Submitting Partial Response and Requesting Brief Extension to Submit LUMA's Full Answers to Questions 6 and 7 in the Energy Bureau's Resolution and Order of April 11, 2022* ("April 19 Motion"). In the April 19 Motion, LUMA addressed the lack of access to certain information that PREPA provided to LUMA on April 18, 2022. Due to the short period to respond, LUMA prepared partial responses to Questions 6 and 7 and requested an extension until April 29, 2022, to submit its complete answers.⁷

On the same day, PREPA filed a document titled *Motion for Extension of Time Until April 25, 2022, to Comply with Responses Required by the April 11, 2022, Resolution and Order* ("April 19 Request"), where PREPA requested an extension until April 25, 2022, to file its responses to the April 11 Resolution.

On April 22, 2022, the Energy Bureau issued a Resolution and Order granting both PREPA and LUMA to file their complete responses to the April 11 Resolution on or before April 28, 2022.

On April 27, 2022, the Energy Bureau issued a Resolution and Order ("April 27 Resolution") through which it ordered LUMA to file the results of the final Tranche 1 technical studies by May 30, 2022 and ordered PREPA to file the execution copies of the 18 authorized PPOAs by June 30, 2022.

³ February 2 Motion, p. 5.

⁴ LUMA Energy, LLC and LUMA ServCo, LLC (collectively, "LUMA").

⁵ March 1 Motion, pp. 2-3, ¶ 2.

⁶ March 17 Motion, p. 3, ¶ 5.

⁷ April 19, Motion, p. 3, ¶¶ 6-7.



On April 28, 2022, PREPA submitted a document titled *Informative Motion and Responses to Resolution and Order Issued on April 11, 2022* ("April 28 Motion"). The April 28 Motion responded to specific Energy Bureau questions from its April 11 Resolution, provided a draft GSA for the Proponent 2 VPP (the 17 MW VPP), and described concerns and recommendations associated with the two eligible VPP proposals received. It also addressed or noted that these VPP capacity resources would be charged from on-site solar PV resources.⁸

The April 28 Motion also had a recommendation by PREPA for approval of four (4) utility-scale BESS projects totaling 240 MW of capacity with a 4-hour duration, and a 17 MW VPP project. The April 28 Motion also had information on six (6) additional utility-scale BESS resource proposals totaling 275 MW and a 150 MW VPP proposal. The April 28 Motion contained PREPA's reasoning for recommending the four utility-scale BESS projects and one of the two proposed VPPs, and its reasoning for not recommending the remaining six utility-scale BESS projects and the other VPP.

On May 31, 2022 LUMA filed a document titled *Motion Submitting Final Technical Interconnection Studies for Eighteen Tranche 1 Projects Required Under the Energy Bureau's Resolution and Order of April 27, 2022, and Request for Confidential Treatment* ("May 31 Motion"). In this May 31 Motion and the associated filing documents, LUMA provided its interconnection study and cost information for eighteen (18) solar PV projects and three (3) battery energy storage system projects for tranche 1 resources.

On June 13, 2022, the Energy Bureau issued a Resolution and Order ("June 13 Resolution") authorizing PREPA to finalize negotiations on nine (9), 4-hour duration utility-scale BESS projects totaling 490 MW of capacity and one (1) 17 MW VPP, and authorizing PREPA to finalize its contract negotiations with those Tranche 1 proponent offerings. These nine (9) BESS projects were a subset of the ten (10) total BESS projects in PREPA's Table 2 of the April 28 Motion. Three (3) of these nine (9) projects were the BESS resources in LUMA's interconnection studies as submitted on May 31, 2022.

On July 13, 2022 LUMA submitted a document titled *Informative Motion Relating to Energy Bureau's Approval of Nine Tranche 1 BESS Projects* ("July 13 Motion") and stated in part that PREPA had requested on June 15, 2022 that LUMA conduct interconnection studies for the remaining six (6) BESS projects not considered in LUMA's initial interconnection study for the 18 solar PV and three BESS projects.⁹ LUMA completed the interconnection studies for three (3) of the nine (9) battery energy storage system projects authorized by the Energy Bureau in its June 13 Resolution as part of its initial interconnection study for the Tranche 1 solar PV projects. LUMA states it will take twenty (20) weeks to perform the interconnection studies for these 6 BESS projects.¹⁰

LUMA also states in the July 13 Motion that its interconnection study requirements for the 6 BESS projects "do not affect the selected VPP Project since this project will connect to the distribution system".¹¹

On August 26, 2022 PREPA filed a document titled *Motion to Submit Remaining Executed PPOAs and BESS Contracts in Compliance with the August 15, 2022 Resolution and Order* ("August 26 Motion"). In the August 26 Motion PREPA submits the remaining four (4) executed utility-scale solar PV PPOAs for 245 MW in total (each of 120 MW, 80 MW, 25 MW, and 20 MW projects) as part of Exhibit A. PREPA also submits in Exhibit A of the August 26

⁸ April 28 Motion, "...in which the T&D Operator may call upon the Demand Build Service (essentially, the charging of battery resources, generally from connected solar PV resources)...", p. 27.

⁹ July 13 Motion, "PREPA requested LUMA to perform the studies for these six (6) Approved BESS Projects on June 15, 2022, as result of the June 13th Order", page 5. LUMA's initial interconnection study that included three of the nine BESS projects approved in the June 13 Resolution was submitted by LUMA on May 31, 2022.

¹⁰ July 13 Motion, p. 6.

¹¹ July 13 Motion, p. 7.



Motion executed contracts for energy service storage agreements (“ESSAs”) for two (2) four-hour duration utility-scale battery energy storage projects co-located with two of the solar PV PPOAs also submitted with the Motion, each with a nominal rating of 100 MW and 400 MWh.¹²

On September 1, 2022 the Energy Bureau issued its Resolution and Order (“September 1 Resolution”) approving the final four solar PV projects and the first two (2) BESS projects from Tranche 1 based on final execution copies of contracts for projects submitted by PREPA on August 26, 2022.

On November 2, 2022, PREPA filed a document titled *Motion to Submit Draft Copy of GSA in Compliance with the June 13, 2022 Order* (“November 2 Motion”). Exhibit A to the November 2 Motion is a Grid Services Agreement (GSA) between PREPA and the proponent for a 17 MW virtual power plant (VPP), as approved by the June 13 Resolution, consisting of an aggregate of distributed resources.

Annex A to the November 2 Motion contains a listing of the key features of the GSA, which include a guaranteed capability of 17 MW, demand build services during the 10AM-2PM period, demand reduction services during the 6PM-10PM period, a ten-year contract term with an ability to renegotiate pricing at the 5-year mark, an annual cost of roughly \$1.836 million, compliance with Minimum Technical Requirements (MTRs), and anticipated commercial operation within 24 months of the contract closing date. The contract includes Performance Security and Performance Guarantees tied to capability and availability, and compensates the resource provider separately, and monthly, for each of the demand build and demand reduction services on a Capability basis.

II. Discussion and Findings

As of the release date of this Resolution and Order seven (7) BESS projects approved by the Energy Bureau in its June 13 Resolution for final negotiation have yet to be submitted to the Energy Bureau for such final approval. The one VPP authorized in the June 13 Resolution for final negotiation and approval was submitted in the November 2 Motion.

PREPA states that its Governing Board approved the 17 MW VPP GSA on October 26, 2022 and PREPA, LUMA and SunRun PR Operations LLC finalized minor drafting points on November 2, 2022.¹³ PREPA management notes the difference in functionality between this VPP and physical thermal or renewable power plants. PREPA notes it doesn’t provide “ancillary services or standby dispatchable capacity 24 hours a day”, and notes that “it may negotiate additional services from the VPP in the future once PREPA and LUMA have completed the installation of a distributed energy resource management system [DERMS] to allow more automated dispatch and monitoring of the VPP”.¹⁴ PREPA notes that it will pay the monthly fee of \$4.50/kW for each of the two services (demand build and demand reduction) and that it can call on the resource for 260 cycles per year, which is equivalent to daily cycling five days per week for all weeks of the year. PREPA requests Energy Bureau approval of the draft of the GSA attached as Exhibit A of its November 2 Motion.

The final key pricing, capability, and availability contract terms for the 17 MW VPP included as Exhibit A to the November 2 Motion are the same as represented in the March 17 Motion, and as authorized for final negotiation in the June 13 Resolution.

This initial VPP contract is aligned with resource procurement goals of the Modified Action Plan of the IRP and is aligned with overall Puerto Rico policy aims to increase the level of distributed generation. While the GSA is essentially a contract for guaranteed capability (capacity) associated with battery energy storage discharge during peak evening hours, and

¹² PREPA August 26 Motion at pages 1, 3-4, and as indicated in the Exhibit A Energy Storage Service Agreements.

¹³ November 2 Motion at page 4.

¹⁴ Id., page 5.



battery energy storage charging during midday hours, the energy used will be from solar PV rooftop facilities for which different compensation arrangements (e.g., net energy metering) are in place for different a product (energy) than that of the GSA (capacity). The VPP directly allows for predictably timed “generation shifting” from midday to evening hours, the salient feature of this resource. While labeled as a “virtual” power plant, due to industry terminology about the aggregation of many smaller resources combining to produce an equivalent amount of power as that provided by a single larger power plant, the Energy Bureau notes that this VPP indeed comprises physical assets delivering and absorbing real power from the grid at predictable and desired times.

The Energy Bureau **APPROVES** the final GSA contract contained as Exhibit A to the November 2 Motion.

The Energy Bureau **TAKES NOTICE** of and **SUPPORTS** PREPA’s indication that additional services could be negotiated with the resource provider once a DERMS is in place. The Energy Bureau **URGES** all parties to work cooperatively towards reaching full usage of the ancillary capabilities of the VPP resources as soon as reasonably possible and in concert with overall system resource needs planning.

In the June 13 Resolution the Energy Bureau Ordered PREPA to finalize negotiations with the nine (9) BESS projects totaling 490 MW. Two of those nine projects (200 MW in total) have been finalized and approved by the Energy Bureau in its September 1 Resolution. The Energy Bureau has yet to receive a filing from PREPA about the remaining seven projects totaling 290 MW. Of those projects, one (AZ-1-E) was included in LUMA’s initial interconnection study process. The remaining six (6) projects have presumably been undergoing interconnection study during the past twenty (20) weeks.

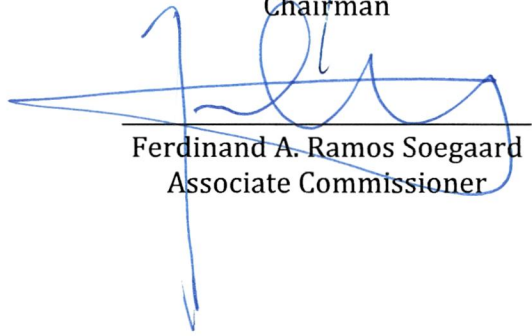
Based on the time LUMA indicated for interconnection study for the six additional battery energy storage contracts authorized for final approval in the Energy Bureau’s June 13 Resolution, the Energy Bureau **ORDERS** LUMA to file with the Energy Bureau no later than 10 business days from the notification of this Resolution and Order a status update on the updated interconnection studies including the six BESS projects. The Energy Bureau also **ORDERS** PREPA to file a status update on the contract negotiation process for the seven BESS projects. These status updates must be filed no later than 10 business days from the notification of this Resolution and Order.

LUMA is **ORDERED** to include in its status update a simplified description of how it models the output of any battery energy storage resources during midday (10AM to 2 PM) periods coinciding with roughly maximal levels of output of utility-scale or distributed scale solar PV resources in Puerto Rico, and an explanation of its reasoning for making such assumptions. The Energy Bureau **REMINDS** LUMA that the terms of the Energy Storage Service Agreements (ESSAs) and the Grid Services Agreement (GSA) provide considerable flexibility to LUMA as the T&D system operator to manage and dispatch battery energy storage resources as necessary, for ultimate delivery of contracted energy resources to meet end user load or to charge battery energy resources when appropriate. The Energy Bureau **ANTICIPATES** receiving detailed explanations in the interconnection studies themselves of both the modeling approach, and LUMA’s intended operational approach, to maximize the value of flexible battery energy storage resources once installed across the Puerto Rico grid.

Be it notified and published.



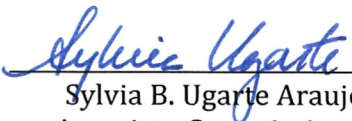
Edison Avilés Deliz
Chairman



Ferdinand A. Ramos Soegaard
Associate Commissioner



Lillian Mateo Santos
Associate Commissioner



Sylvia B. Ugarte Araujo
Associate Commissioner



CERTIFICATION

I hereby certify that the majority of the members of the Puerto Rico Energy Bureau has so agreed on December 19, 2022. I also certify that on December 19, 2022, a copy of this Resolution and Order was notified by electronic mail to the following: laura.rozas@us.dlapiper.com, ana.rodriquezrivera@us.dlapiper.com; kbolanos@diazvaz.law and mvazquez@diazvaz.law. I also certify that today, December 19, 2022, 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, today December 19, 2022.



Sonia Seda Gaztambide
Clerk

