

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

NEPR Received: Oct 12, 2022 3:50 PM
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IN RE: REVIEW OF THE PUERTO RICO
ELECTRIC POWER AUTHORITY’S 10-
YEAR INFRASTRUCTURE PLAN –
DECEMBER 2020

CASE NO.: NEPR-MI-2021-0002

SUBJECT: Supplement to Request to
Amend PREPA’s Integrated Resource Plan

**SUPPLEMENT TO REQUEST TO AMEND PREPA’S
INTEGRATED RESOURCE PLAN**

COMES NOW the Puerto Rico Electric Power Authority (PREPA), through its counsel of record, and respectfully submits and requests as follows:

I.INTRODUCTION

Through this motion, PREPA supplements the Request to Amend PREPA’s Integrated Resource Plan (“Request for IRP Amendment”) filed on October 10, 2022, under the captioned case. Furthermore, PREPA hereby incorporates and restates all the arguments made therein. Also, all capitalized terms used in this motion and not defined herein shall be considered with the meaning provided in the Request for IRP Amendment.

This supplement to the Request for IRP Amendment has three main requests and purposes: (1) clarify PREPA’s timeline to convert the San Juan Steam Units; (2) request the Energy Bureau to amend the Approved IRP and Modified Action Plan or grant a dispensation thereof, to allow the Cambalache Unit 1 to remain operational for a reasonable period; and (3) for leave to provide necessary maintenance and repairs to the San Juan Steam Units and the Cambalache Unit 1 after they are considered operational for the Approved IRP and Modified Action Plan.

II.TIMELINE TO COMPLETE THE CONVERSION OF THE SAN JUAN STEAM UNITS

In the Request for IRP Amendment, PREPA presented the Energy Bureau with a schedule to complete the San Juan Steam Units conversion. *See* Request for IRP Amendment at pp. 40-41, Sec. IV(B)(2). However, this schedule differs from the schedule presented to the DNER on October 7, 2022, with comments on the proposed SIP and amendments to the RCAP.¹ It is respectfully stated that the schedule that PREPA understands is feasible and, if allowed by the Energy Bureau, PREPA will follow, is the schedule included in the Request for IRP Amendment, *not* the schedule included in the SIP comments. PREPA will amend the comments presented to the DNER and the schedule presented with the Request for IRP Amendment as the final proposal of the timeline to complete the conversions.

III.REQUEST TO INCLUDE CAMBALACHE 1 UNIT AS AN EXISTING UNIT IN THE APPROVED IRP

With the submittal of the Proposed IRP, PREPA presented a list of the existing units that are part of PREPA's generation fleet and were considered for developing the 20-year planning period horizon. Prop. IPR at p. 4-3, Exhibit 4-5. The Cambalache Unit 1 was not included in this list. *See id.* at Exhibit 4-6.

The Cambalache Unit 1 is a gas turbine (GT) located at Arecibo with a nameplate capacity of 82.5 MW. This unit, integrated into commercial operation in 1997, generates energy with no. 2 fuel oil. In 2011, Cambalache Unit 1 had a forced outage due to a major failure in the turbo-compressor rotor, which resulted in the loss of its entire capacity. Repairing the damaged

¹ These comments were presented as Annex E to the Request for IRP Amendment.

component will likely bring back the available capacity of Cambalache Unit 1 to be dispatched up to 82.5 MW.

However, both the ESM and the S4S2, on which the Modified Action Plan was based, retire Cambalache Unit 1 after the precedent conditions adopted by the Energy Bureau in the Modified Action Plan materialize. These conditions have not been met; thus, PREPA needs the Cambalache unit 1 to remain fully operational for an additional period to supply the demand.

PREPA, as the party responsible for having energy available to supply the demand required by Puerto Rico, understands that maintaining Cambalache Unit 1 is of the utmost importance. Firstly, keeping the Cambalache Unit 1 in service is of value to the generation system, specifically for the integration of renewable generation. Also, the Cambalache Unit 1 can be used to address peaks because of the fast start-up capacity of the unit and can also be used to regulate frequency. The request to maintain Cambalache Unit 1 in service is not made *sine die* because PREPA is committed to retiring all fossil-fuel generation as soon as the integration of clean and reliable generation allows it. However, reality creates pressing demands that must be met. PREPA understands that, given the condition of the generation system, it is warranted that PREPA maintains most of the generation fleet available, considering their economic dispatch and environmental limitations. The request to maintain the Cambalache Unit 1 in service is made taking into consideration that the Energy Bureau may revisit the necessity of maintaining this and other units in service when the system operator presents a new IRP for the evaluation of the Energy Bureau following the applicable energy regulatory provisions and public policy.

In addition, given that the highest load concentration is in the north of the metropolitan area, the Cambalache units, together with the other generation facilities in the north, have an essential role in restoring the system and controlling the northern voltage profile. The reduction of

generation in the north can cause voltage stability problems. The high energy transfers from south to north can also cause the voltages of the north to collapse and provoke cascade events, which the system cannot manage. The unavailability of the Cambalache units could compromise the system's ability to deliver power to critical loads, such as hospitals and other essential services in the mini-grid composed by Arecibo, Hatillo, and Utuado municipalities during and immediately following an extreme weather event. Also, due to its rapid response and flexibility capabilities, Cambalache contributes to the system's recovery in case of outages of generating units and as a black start unit for the system restoration after a major event. Accordingly, and given its flexibility capabilities, Cambalache Unit 1 is necessary for the integration of renewables as mandated by the Modified Action Plan.

An example of Cambalache Power Plant's importance in restoring the electrical service after a total blackout happened recently during Hurricane Fiona. Main water supply facilities and heavy industrial loads, considered critical and priority loads, are located northwest of the main island. The Cambalache Power Plant is close to these structures and can directly supply energy to the super-aqueduct facilities owned and operated by the Puerto Rico Aqueducts and Sewers Authority (PRASA). This main potable water supply facility serves many customers in the metropolitan area, supplying most of the population in San Juan, Bayamón, and Guaynabo. After the passage of Hurricane Fiona, once the available Cambalache units 2 and 3 were started and interconnected to the grid, the Super-aqueduct facilities received power. Consequently, PRASA's service in the metropolitan area of San Juan was restored. If the Cambalache Unit 1 had been available, the power restoration to this critical load could have been done with much higher reliability than the current circumstances. During the two weeks after the passage of Hurricane Fiona, Cambalache units 2 and 3 served part of the total load demanded in Puerto Rico daily and continuously.

Therefore, PREPA requests the Energy Bureau to amend the Approved IRP and Modified Action Plan, or grant a dispensation thereof, to consider the Cambalache Unit 1 as available for operational considerations until the Energy Bureau makes the three (3) year mandatory revision of the Approved IRP and Modified Action Plan or the Part 9 Caveats and Limitations are fully met, whichever happens first.

IV. REQUEST FOR LEAVE TO ALLOW MAINTENANCE PROJECTS TO PROCEED IN ACCORDANCE WITH THE PETITION TO AMEND THE IRP AND THIS MOTION

In the Request to Amend the IRP, PREPA asked the Energy Bureau for leave to maintain the San Juan Steam Units in operation. Through this motion, PREPA adds the request for leave to maintain Cambalache Unit 1 in service. However, to maintain these units in operation and, more importantly, in reliable operation and service, the units must receive due repairs and maintenance. PREPA has requested leave to perform these repair and maintenance works on November 2021.² However, after several procedural events,³ the Energy Bureau has not approved several projects that target the need to provide adequate maintenance to the San Juan Steam Units and the Cambalache Unit 1. To date, six (6) SOWs for the funding necessary to conduct these works are pending before the Energy Bureau. The following chart shows the number of each SOW presented to the Energy Bureau, the description of the project, and the cost that, once the Energy Bureau provides leave to continue with the projects, would be funded by FEMA, not PREPA's customers.

² See *Motion to Submit Fourth Group of Generation Projects* presented by PREPA on November 15, 2022. This motion asked the Energy Bureau for leave to commence 104 projects to provide maintenance and repair the generation fleet and also, to proceed with the corresponding applications and submissions to FEMA and COR3 for the reimbursement of *all* associated costs.

³ See *i.e.*, *Third Motion to Submit Additional Generation Projects SOWs* presented by PREPA on February 2, 2022; *Fourth Motion to Submit Additional Generation Projects SOWs* presented by PREPA on February 8, 2022; and *Petition for Leave to Conduct Works in PREPA's Steam Units to Achieve Environmental Regulatory Compliance* presented by PREPA on February 11, 2022.

SOW NO.	FACILITY	PROJECT NAME	SCOPE OF WORK	PRESENTED ESTIMATE⁴	REFERENCE OF SUBMITTAL	REFERENCE OF ORDER ADDRESSING SUBMITTAL
1016	San Juan Power Plant	Unit 10 Rehabilitation	Provide parts and service for the open inspection and close of the steam turbine and generator. Also, in-shop repairs for due repairs and maintenance rotor and oil flush of the turbine.	\$15.9	Feb. 14 Motion, Att. A, pp. 247-316	Apr. 13 Order
1021	San Juan Power Plant	Unit 8 Rehabilitation (Turbine)	Inspect and replace the high-pressure, intermediate pressure and low-pressure rotors of the turbine and perform all the testing and commissioning of the equipment.	\$10	Feb. 8 Motion, Att. A, pp. 37-79	Apr. 13 Order
1022	San Juan Power Plant	Unit 7 Rehabilitation (Turbine)	Inspect and replace the high-pressure, intermediate pressure and low-pressure rotors of the turbine and perform all the testing and commissioning of the equipment.	\$10	Feb. 8 Motion, Att. A, pp. 80-125	Apr. 13 Order
1027	San Juan Power Plant	Unit 7 - Major Outage - Boiler Sections Replacement and Repairs & Auxiliary Equipment Inspection Work	Necessary repairs of deteriorated boiler tubes and assemblies and auxiliary equipment.	\$8	Feb. 8 Motion, Att. A, pp. 126-142	Apr. 13 Order

⁴ Presented in millions of dollars.

SOW NO.	FACILITY	PROJECT NAME	SCOPE OF WORK	PRESENTED ESTIMATE⁴	REFERENCE OF SUBMITTAL	REFERENCE OF ORDER ADDRESSING SUBMITTAL
1028	San Juan Power Plant	Unit 8 - Major Outage - Boiler Sections Replacement and Repairs & Auxiliary Equipment Repairs	Necessary repairs of deteriorated boiler tubes and assemblies and auxiliary equipment.	Inspect and replace	Feb. 8 Motion, Att. A, pp. 143- 162	Apr. 13 Order
6088	Cambalache Power Plant	Unit 1 Rehabilitation	Perform the required inspections, repair the exhaust gas housing and gt enclosure and filter house, and replacement of all of the hot gas path components, turbo compressor and blades, and inspect and replace gas turbine no. 1. Also, conversion of the control system to blue-line similar to gas turbines 2 and 3, upgrade the combustor pulsation monitoring system, upgrade the automatic voltage regulator and upgrade the opacity monitoring system.	\$18	Feb. 2 Motion, Att. A, pp. 626- 643	Feb. 28 Order

Unfortunately, the Energy Bureau has repeatedly denied PREPA leave to move forward with these critical projects. The most recent denial was entered on June 4, 2022. *See Resolution and*

Order entered by the Energy Bureau on June 4, 2022 (“June 4 Order”). Regarding the Cambalache Unit 1 rehabilitation project, the Energy Bureau stated that:

Regarding the project proposed under SOW 6088 ("Cambalache Power Plant Deferred Project"), the Energy Bureau determined that it comprises major works at Cambalache Plant (Gas turbine GT-1), which was excluded from the Proposed IRP as an available generation resource because it is not planned to be returned to operating condition in the foreseeable future. Therefore, the Energy Bureau determined that is inconsistent with the Approved IRP.

See Resolution and Order entered on July 7, 2022, citing the June 4 Resolution at pp. 6-7.

Maintaining the same line, but regarding the San Juan Steam Units, the Energy Bureau has stated that:

Regarding the projects proposed under SOWs No. 1016, 1021, 1022, 1027, and 1028, the Energy Bureau determined that they comprise major works at the San Juan Power Plant Units 7, 8, and 10 (collectively, the "San Juan Power Plant Deferred Projects"), and noted that some of those units were not even considered as available resources for the Approved IRP, while others are within the retirement schedule for years 2021-2025. Since the San Juan Plant Deferred Projects were directed at extending the useful life beyond such schedule, the Energy Bureau determined that the San Juan Power Plant Deferred Projects are not supported by the Approved IRP.

See id.

In response to the June 4 Order, on June 24, 2022, PREPA presented the *Urgent Motion for Reconsideration of the June 4 Order* (“June 24 Request for Reconsideration”) by which it requested that the Energy Bureau (i) stay its decision concerning the Denied Generation Projects; (ii) schedule a technical conference to further discuss each of those proposed projects; and (iii) reconsider its decision to deny such projects and approve them. In response, the Energy Bureau informed it would continue analyzing SOWs 1016, 1021, 1022, 1027, 1028, and 6088. As stated above and as included in the table, these SOWs are for maintenance and retrofit projects of the San Juan Steam Units 7, 8, and 10 and the Cambalache Unit 1. However, the Energy Bureau has not notified a decision regarding PREPA’s request for leave to proceed. It is respectfully stated that

such denials and/or belatedness jeopardize PREPA's availability to produce reliable energy to allow the system operator to supply the customers' demand.

According to the Approved IRP Caveats and Limitations, the load served by PREPA is expected to significantly decline over the IRP's planning horizon due to a combination of expected base load reduction (driven by population and economic changes), energy efficiency gains and demand-side resources. These conditions of declining load forecast have not been met in the last three years, as the load demand has increased, and the projection is that the demand could increase near 3,000 MW in the following years, according to PREPA's certified 2022 Fiscal Plan approved by the Financial Oversight and Management Board.⁵ Therefore, the power system must have enough dependable generation capacity to supply the demand safely and reliably and, thus, avoid huge and frequent load-shedding events.

The reality mentioned above directly affects the feasible retirement schedule of PREPA's thermal units. PREPA fully supports the current public policy regarding renewable energy integration and transition. Notwithstanding, and especially considering that sufficient capacity of new renewable resources is not expected to be reliably interconnected with the power system at least during the following three to five years, it is imperative that the Energy Bureau act accordingly and allow Puerto Rico's energy system to provide reliable energy to the People of Puerto Rico. For this purpose, PREPA's priority is that the requested repairs are conducted to maintain the generating units online with the primary purpose of providing the necessary resources to serve the growing demand projections and to provide continuity and reliability in the electrical service.

⁵ Available for review at <https://oversightboard.pr.gov/fiscal-plans-2/>

It is also stressed that the requested repairs do not constitute a major overhaul of the generating units, in which every and all components and auxiliary equipment of the generating unit are inspected and repaired. The requested repairs are major but do not cover all the parts and equipment of the unit. The following list provides details of the repairs that PREPA herein requests the Energy Bureau to allow:

- San Juan Unit 7 – This unit needs the replacement of the turbine rotors, as its components (high, intermediate, and low-pressure rotor) have expired operating hours. The manufacturer recommends major inspection between 50,000 and 70,000 hours, and the low-pressure rotor is close to 100,000 hours of operation. The inspection and repairs to the generator is also recommended. In addition, there are pipe walls to be replaced in the boiler furnace and replacement of the air preheaters to add 30 MW to the unit. It is currently dispatched at 65-70 MW. It is also necessary to repair various auxiliary components, such as feed pumps, circulation pumps, deaerator pumps, and induced and forced draft fans, including their motors.
- San Juan Unit 8 – In this unit, it is necessary to replace most of the boiler furnace wall piping and repair auxiliary components, such as feed pumps, circulation pumps, deaerator pumps, and induced and forced draft fans, including their motors. Also, it is necessary to inspect and repair the main power transformer (MPT) and conduct an inspection of the generator.
- San Juan Unit 10 – This unit has been out of service for several years due to the failure of the low-pressure turbine rotors. It is necessary to replace the low-pressure rotors, conduct an inspection, and repair the generator. This, in addition to boiler work on burners, an inspection of air preheaters, and repair of air and gas expansion joints, among other work

on the boiler. In addition, it is necessary to repair several auxiliary components, such as the condenser, feed pumps, circulation pumps, deaerator pumps, and induced and forced draft fans, including their motors.

An example of the repairs PREPA conducts in its generating units that do not constitute a major overhaul is Aguirre Unit 1. PREPA performed a major repair of part of the boiler and the steam turbines of this unit during March and July 2022. In the first week of August 2022, the unit was synchronized with the system, and the generator failed. This unit component was not inspected as part of the major repair, as the works were limited due mainly to budget constraints. It is not uncommon for situations similar to those in Aguirre Unit 1 to occur in other generating units of the power system.

PREPA respectfully restates and reiterates that the repairs that PREPA deems necessary to be performed as promptly as possible to these units are not contrary to the Approved IRP. However, to expedite matters and follow the Energy Bureau's determination that PREPA is to seek a revision of the Approved IRP and Modified Action Plan, PREPA requests that the Energy Bureau allow PREPA to maintain the San Juan Steam Units and Cambalache Unit 1 in service and allow PREPA to provide the necessary maintenance and repairs to these units.

V.GENERATION AVAILABILITY ANALYSES AND PRESENTATIONS MADE BY THE SYSTEM OPERATOR

On August 30, 2022, LUMA Energy, LLC and LUMA Energy ServCo, LLC (collectively, LUMA) submitted to the Energy Bureau a Resource Adequacy Report.⁶ According to LUMA's assertions in the report, the Resource Adequacy Report was developed to inform strategic resource

⁶ See *Motion to Submit LUMA's Resource Adequacy Study* in case no. NEPR-MI-2022-0002, *In Re: LUMA Resource Adequacy Report*. Available at <https://energia.pr.gov/wp-content/uploads/sites/7/2022/09/Motion-to-Submit-Lumas-Resource-Adequacy-Study-NEPR-MI-2022-0002.pdf>

planning decisions for the Puerto Rico electric system and includes an assessment of electricity generation and sufficiency needs by evaluating the needs of insufficient electric supply to meet demand. LUMA states that the report is a tool that could aid in making decisions regarding retirements, modifications, maintenance schedules, and other items to reduce the risk of insufficient electric supply.

PREPA agrees with the methodology used to develop the Resource Adequacy Report, the inputs, and the conclusions that follow such analyses. The report duly represents the state of the generation fleet and, most importantly, the dire conditions of the system. PREPA hereby requests the Energy Bureau to incorporate the Resource Adequacy Report into the record of the captioned case and to consider its findings and conclusions in the process to analyze and decide on PREPA's Request to Amend the IRP and the requests incorporated in this motion.⁷

Additionally, on October 7, 2022, the Energy Bureau notified a Resolution and Order regarding a letter LUMA sent on October 6, 2022 ("October 6 LUMA Letter"). *See Resolution and Order* in case no. NEPR-MI-2022-0003, *In Re: LUMA's Response to Hurricane Fiona* ("LUMA Hurricane Response Docket").⁸ In response to the latter, and per the October 7 order, on October 11, 2022, the Energy Bureau held a Technical Conference ("October 11 Technical Conference") in which LUMA thoroughly discussed the (i) dispatch status of the available baseload generation post-Hurricane Fiona and (ii) the identified temporary emergency mitigation measures thought to address the generation deficiencies arising from Hurricane Fiona. During the October 11 Technical Conference, LUMA presented the status of the PREPA generation fleet, the operational challenges

⁷ This request is made in accordance with Section 9.03 of the Energy Bureau, *Regulation on Adjudicative, Notices of Compliance, Rate Review and Investigations Proceedings*, No. 8543 (December 16, 2015).

⁸ The LUMA Hurricane Response Docket can be accessed at <https://energia.pr.gov/en/dockets/?docket=nepr-mi-2022-0003>

due to its age and condition, and short- medium- and long-term solutions to the situations identified. All these matters were presented through oral testimony under oath guided by a presentation prepared and projected by LUMA during the conference and in response to the Energy Bureau's questions to LUMA's representatives.⁹

PREPA agrees and supports the statements made by LUMA in the October 6 LUMA Letter, the statements made by LUMA during the October 11 Technical Conference, and the facts and findings presented by LUMA in the presentation projected during such conference. Accordingly, PREPA hereby requests the Energy Bureau to incorporate the October 6 LUMA Letter, the testimony proffered by LUMA during the October 11 Technical Conference, and the presentation projected by LUMA during the October 11 Technical Conference.

VI.CONCLUSION

WHEREFORE, PREPA respectfully requests that the Energy Bureau (1) note the schedule to convert the San Juan Steam Units, (2) amend the Approved IRP and Modified Action Plan or grant a dispensation of the Approved IRP and Modified Action Plan to allow Cambalache Unit 1 to remain in operation, and (3) grant PREPA leave to continue with the repair and maintenance of the San Juan Steam Units and the Cambalache Unit 1 granting leave to present SOWs. 1016, 1021, 1022, 1027, 1028, and 6088 to COR3 and FEMA.

In San Juan, Puerto Rico, this 12th day of October 2022.

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⁹ The Technical Conference can be accessed at https://www.youtube.com/watch?v=DQbrg5oka_k .

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CERTIFICATE OF SERVICE

It is hereby certified that, on this same date, I have filed the above motion with the Office of the Clerk of the Energy Bureau using its Electronic Filing System at <https://radicacion.energia.pr.gov/login>, and a courtesy copy of the filing was sent to LUMA through its legal representatives at margarita.mercado@us.dlapiper.com and laura.rozas@us.dlapiper.com.

In San Juan, Puerto Rico, this 12th day of October 2022.

f/ Katuska Bolaños Lugo
Katuska Bolaños Lugo