

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

**IN RE:** REVIEW OF THE PUERTO RICO  
ELECTRIC POWER AUTHORITY'S 10-YEAR  
INFRASTRUCTURE PLAN - DECEMBER  
2020

**CASE NO.:** NEPR-MI-2021-0002

**SUBJECT:** Determination on GENERA's  
October 15, 2023, Motion for the Request  
for Approval of Projects to Replace Critical  
Components and Improve Fuel Efficiency.

**RESOLUTION AND ORDER**

**I. Introduction**

On March 26, 2021, the Energy Bureau of the Puerto Rico Public Service Regulatory Board ("Energy Bureau") issued a Resolution and Order ("March 26 Resolution") in the instant case, through which it ordered the Puerto Rico Electric Power Authority ("PREPA") to submit each specific capital investment project for approval to avoid potential noncompliance with the Approved Integrated Resource Plan ("IRP") and Modified Action Plan.<sup>1</sup> To streamline the process, the Energy Bureau requested PREPA to submit the specific projects to the Energy Bureau at least thirty (30) calendar days before their submittal to the Puerto Rico Central Office for Recovery, Reconstruction and Resiliency ("COR3") and the Federal Emergency Management Agency ("FEMA"), and any other federal agency,<sup>2</sup> and to continue reporting to the Energy Bureau and FEMA, within the next five (5) years, the progress of all ongoing efforts related to the final approval of the submitted projects not yet approved by the Energy Bureau.

On November 15, 2021, PREPA filed a document titled *Motion to Submit Fourth Group of Generation Projects* ("November 15, Motion") which include a list of hundred four (104) repair works projects of its generation assets and for which PREPA will seek reimbursement under several FEMA programs. PREPA stated that should the scope of the Generation Projects included change, PREPA will immediately inform the Energy Bureau of such changes.

The Energy Bureau through several Resolutions and Orders<sup>3</sup> approved most of the Generation Projects submitted as part of the November 15 Motion, except for Generation Projects classified as deferred since they are work intended for units in the Retirement Plan of the Modified Action Plan<sup>4</sup>.

On January 24, 2023, GENERA PR LLC ("GENERA"), PREPA and the Puerto Rico Public-Private Partnership Authority ("P3A") executed the Puerto Rico Thermal Generation Facilities Operation and Maintenance Agreement ("LGA OMA"). According to the LGA OMA, GENERA is the sole operator and administrator of the Legacy Generation Assets<sup>5</sup>, and the exclusive entity authorized to represent PREPA before the Energy Bureau about any matter related to the performance of the Operation and Maintenance ("O&M") services provided by

<sup>1</sup> Final Resolution and Order on the Puerto Rico Electric Power Authority's Integrated Resource Plan, *In re: Review of the Integrated Resource Plan of the Puerto Rico Electric Power Authority*, Case No. CEPR-AP-2018-0001, August 24, 2020 ("IRP Order").

<sup>2</sup> March 26 Resolution, pp. 14-15.

<sup>3</sup> See the Energy Bureau Resolution and Orders dated: January 4, 2022, February 10, 2022, February 28, 2022, March 09, 2022, April 13, 2023, and June 06, 2023 in the Instant Case.

<sup>4</sup> See Approved IRP Order, p. 284 ("Retirement Plan")

<sup>5</sup> As defined in the LGA OMA.



GENERA under the LGA OMA. Further, GENERA is the sole entity responsible for procuring and administering federal funds for projects to repair or replace the LGA<sup>6</sup>.

On October 15, 2023, GENERA filed a document titled *Request for Approval of Projects to Replace Critical Components and Improve Fuel Efficiency* ("October 15 Request"). GENERA include as Annex A, a table titled *Critical Components Replacement- First Group* and as Annex B a table titled *Fuel Efficiency Improvement – First Group*.

## II. Evaluation of the October 15 Request

Through the October 15 Motion, GENERA is filing new projects and amendments for scope of works of projects previously approved by the Energy Bureau. Annex A includes a list of Critical Components that GENERA states that, if replaced, it would be meet the goal of a more reliable and efficient power system for Puerto Rico, until the generation units are replaced by more efficient, clean, and reliable ones<sup>7</sup>. Also, GENERA is proposing as Annex B, the replacement of a group of components, that would meet all the earlier goals and increase fuel efficiency, thus reducing fuel costs.

The Critical Components Projects in Attachment A include the replacement of air and water heater baskets, water pumps, motors, hydrogen coolers, seals, screens, valves, breakers, switch gears, controls, fire protection systems, and cooling towers, among others. The cost estimate is \$127,316,610.00.<sup>8</sup>

The Fuel Efficiency Components Projects in Attachment B include the replacement of heaters tubes, soot blowers' systems, steam coils, cleaning systems, motors, compressors, cold reheat, condensers, traveling screens, fans, ducts and dampers, turbines, and chillers. The cost estimate is \$106,758,328.

The proposed projects are aligned to repair, improve, and sustain the reliability, capacity, resiliency, and efficiency of the Puerto Rico electric system. All these reconstruction efforts on the island need to be aligned with local and federal regulations, and actual codes and standards.

The Modified Action Plan includes several directives to retire fossil fuel plants consisting of the retirement of the oil-fired steam resources over the next five (5) years, at San Juan, including units 7, 8, 9 and 10; at Palo Seco, including units 3 and 4 and at Aguirre including Steam Units 1 and 2; and the plans for the retirement of the Aguirre CC Units 1 and 2 ("Retirement Plan").<sup>9</sup>

## III. Energy Bureau Determination

Upon review of Annex A and B of the October 15 Motion, the Energy Bureau **DETERMINES** that most of the projects are necessary to improve the reliability and resiliency of the electrical system while achieving fuel efficiency and the reducing the impact to the environment, and at the same time increasing safety of the personnel and the equipment. The Energy Bureau **CONDITIONALLY APPROVES** the projects in **Attachment A and B** to this Resolution and Order. This approval represents **\$198,596,610.00** based on Cost Estimates as informed by GENERA.

The October 15 Motion includes Annex A and Annex B. On each table it includes work to be performed at San Juan 9 with similar description and similar costs. Therefore, the Energy

<sup>6</sup> LGA OMA, Section 5.8 (c).

<sup>7</sup> See October 15 Motion, p.2, ¶2.

<sup>8</sup> See October 15 Motion Annex A, p.4.

<sup>9</sup> See Approved IRP, p. 284.





Bureau **DEFERS** both projects and **ORDERS** Genera to clarify **within five (5) business day** of the notification of this Resolution and Order if they are the same project and if so, indicate the project that should remain.

The Energy Bureau **DEFERS FOR FURTHER EVALUATION** the projects described in **Attachment C** of this Resolution and Order. This is to ensure that the projects for such units are aligned with the Approved IRP and the Retirement Plan. **Attachment C** represents **\$35,478,328.00** based on Cost Estimates as informed by GENERA.


The Energy Bureau **CONDITIONALLY APPROVES** the projects in **Attachment A and B** to this Resolution and Order, pending the submittal by GENERA of the Scope of Work (“SOW”) of each project. The Energy Bureau **DEFERS FOR FURTHER EVALUATION** the projects described in **Attachment C** of this Resolution and Order. The conditionally approved projects shall be presented to FEMA and COR3 to finalize its approval process once the Energy Bureau makes its final determination based on the evaluation of the requested SOWs. The Energy Bureau conditionally approved these projects based on the information provided by GENERA. Should the scope of the project change, GENERA **SHALL** immediately seek the Energy Bureau’s approval of such changes.

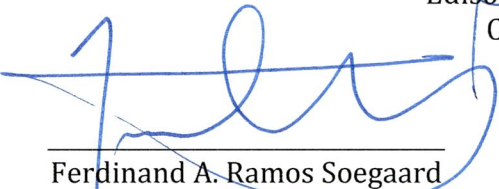
The Energy Bureau **ORDERS** GENERA to: (i) submit to the Energy Bureau, **within ten (10) business days of the notice of this Resolution and Order**, the SOWs for each project presented in Attachment A, B and C of this Resolution and Order for the Energy Bureau evaluation; , (ii) explain if there is any difference between the two (2) projects for San Juan 9 mentioned above, **within five (5) days of the notice of this Resolution and Order**; (iii) submit to the Energy Bureau copy of the approval by COR3 and/or FEMA of the project in **Attachment A and B**, which shall have the costs obligated for each individual facility in the project, **within ten (10) days of receipt of this approval**; (iv) provide the Energy Bureau the actual contracted cost to construct each individual facility of the project in **Attachment A and B, within ten (10) days from the execution of the contract**; and (v) inform the Energy Bureau once the projects are completed.


The directive established in the March 26 Resolution regarding the submission of projects before the Energy Bureau at least thirty (30) calendar days before submitting such projects to FEMA and/or COR3 remains unaltered.

The Energy Bureau **WARNS** GENERA that, noncompliance with any provision of this Resolution and Order, may result in the imposition of fines pursuant to Act 57-2014 and applicable Energy Bureau’s regulations and any other appropriate administrative sanctions, as deemed appropriate by the Energy Bureau.

Be notified and published.

  
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Edison Avilés Deliz  
Chairman

  
\_\_\_\_\_  
Ferdinand A. Ramos Soegaard  
Associate Commissioner

  
\_\_\_\_\_  
Lillian Mateo Santos  
Associate Commissioner

  
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Sylvia B. Ugarte Araujo  
Associate Commissioner

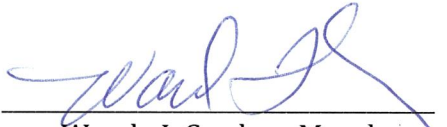
  
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Antonio Torres Miranda  
Associate Commissioner



**CERTIFICATION**

I certify that the majority of the members of the Puerto Rico Energy Bureau have agreed on November 8, 2023. I also certify that in November 8, 2023 a copy of this Resolution and Order was notified by electronic mail to the following: [kbolanos@genera-pr.com](mailto:kbolanos@genera-pr.com); [lionel.santa@prepa.com](mailto:lionel.santa@prepa.com); [lionel.santa@prepa.com](mailto:lionel.santa@prepa.com); [laura.rozas@us.dlapiper.com](mailto:laura.rozas@us.dlapiper.com); [margarita.mercado@us.dlapiper.com](mailto:margarita.mercado@us.dlapiper.com). I also certify that today, November 8, 2023, I have moved forward with filing the Resolution and Order issued by the Puerto Rico Energy Bureau.

I sign this in San Juan, Puerto Rico, today November 8, 2023.

  
Wanda I. Cordero Morales  
Interim Clerk





Attachment A

Projects Conditionally Approved by the Energy Bureau for Critical Components Replacement  
-First Group

Legacy Generation Asset	FEMA Project No.	Work Description	Total Cost
Costa Sur 5&6/Aguirre 1&2	672950 669233	Removal of existing Air heater baskets (cold and hot) and installation of new Air heater baskets (cold and hot).	\$1,800,000
Costa Sur 5&6/Aguirre 1&2	672950 669233	Removal of existing and installation of new Condensing Circulating Water Pump Vertical motor1000HP, 4000/146.	\$9,159,480
Costa Sur 5&6/Aguirre 1&2	672950 669233	Removal of existing and installation of new Main Condensing Pump Vertical motor 500HP, 4000 / 66.	\$4,822,608
Costa Sur 5&6/Aguirre 1&2	672950 669233	Removal of existing and installation of new Boiler Circulating Water Pump Vertical Motor 700 HP, 4000/90.	\$2,851,200
Costa Sur 5&6/Aguirre 1&2	672950 669233	Removal of existing and installation of new Boiler Feed Pump Horizontal Motor 4500HP.	\$3,818,122
Costa Sur 5&6/Aguirre 1&2	672950 669233	Removal of existing and installation of new IDF Horizontal Motor 1750HP, 4000/580.	\$4,272,000
Palo Seco 3&4	662957	Removal of existing and installation of new Air Heaters.	\$900,000
Palo Seco 3&4	662957	Removal of existing and installation of new Hydrogen cooler.	\$2,088,000
Palo Seco 3&4	662957	Removal of existing and installation of new Turning Gear Assembly.	\$360,000
Palo Seco 3&4	662957	Removal of existing and installation of new Set of open and close hardware - honeycomb seals, etc.	\$4,200,000
Palo Seco 3&4	662957	Removal of existing and installation of new Reduction station for temperatures.	\$144,000
Palo Seco 3&4	662957	Removal of existing and installation of new Fixed screens.	\$714,000
Palo Seco 3 &4	662957	Removal of existing and installation of new Fuel pump.	\$192,000
Palo Seco 3&4	662957	Removal of existing and installation of new Breakers 480 & 4160.	\$600,000
Palo Seco 4	662957	Removal of existing and installation of new Recirculating valves.	\$192,000
Palo Seco 3&4	662957	Removal of existing and installation of new Acid pumps P3 and P4.	\$120,000
Palo Seco 3 & 4	662957	Removal of existing and installation of new Boiler and burners recirculation valves.	\$40,800

Legacy Generation Asset	FEMA Project No.	Work Description	Total Cost
Palo Seco 3 &4	662957	Removal of existing and installation of new Spill over, cold reheat & superheater turbine seal steam valves.	\$408,000
Palo Seco Lab	671481	Removal of existing and installation of new Demi 4 tank inlet regulation valve.	\$117,600
Aguirre CC 2-3	669815	Removal of existing and installation of new Turbine section Stage 1, 2 & 3.	\$1,200,000
Aguirre CC 2-3	669815	Removal of existing and installation of new Torque converter.	\$420,000
Aguirre CC 2-3	669815	Removal of existing and installation of new switch gears 4kv.	\$1,500,000
Aguirre CC	669815	Removal of existing and installation of new cooling tower motors.	\$336,000
Aguirre CC 2-3	669815	Removal of existing and installation of new generator breaker 13kv.	\$600,000
Cambalache 3	663383	Removal of existing and installation of new Fill shutoff valves.	\$122,400
Cambalache 3	663383	Removal of existing and installation of new Trip shutoff valve.	\$122,400
Cambalache 3	663383	Removal of existing and installation of new Nozzle valve.	\$108,000
Cambalache 3	663383	Removal of existing and installation of new leakage valve.	\$108,000
Cambalache 3	663383	Removal of existing and installation of new fuel control valve.	\$42,000
Cambalache	663383	Removal of existing and installation of new leak detection system - fuel transfer line.	\$600,000
Cambalache	663383	Removal of existing and installation of new demin water resin.	\$480,000
Cambalache 2,3	663383	Removal of existing and installation of new steam bypass valve.	\$672,000
Cambalache 2,3	663383	Removal of existing and installation of new steam release valve.	\$264,000
Cambalache	663383	Removal of existing and installation of new fire protection system.	\$360,000
Cambalache	663383	Removal of existing and installation of new generator breaker 13kv.	\$600,000





Legacy Generation Asset	FEMA Project No.	Work Description	Total Cost
Cambalache	663383	Removal of existing and installation of new high-speed control.	\$1,200,000
Cambalache 2,3	663383	Removal of existing and installation of new safety valve.	\$140,000
Mayaguez	663385	Removal of existing and installation of new Fuel skid pumps.	\$18,000
Mayaguez	663385	Removal of existing and installation of new Fuel skid solenoid valves.	\$36,000
Mayaguez	663385	Removal of existing and installation of new Fuel Transfer valve.	\$12,000
Mayaguez	663385	Removal of existing and installation of new Clutch removal kit.	\$180,000
Mayaguez	663385	Removal of existing and installation of new DCS.	\$3,876,000
Mayaguez	663385	Removal of existing and installation of new Demin RO system pump.	\$360,000
Mayaguez	663385	Removal of existing and installation of new EDI System.	\$60,000
Mayaguez	663385	Removal of existing and installation of new PI-DAS System.	\$168,000
Costa Sur 5&6/Aguirre 1&2	673006 669233	Removal of existing feed water heaters: installation, start up and commissioning feed water heaters.	\$12,240,000
Costa Sur 5&6	672950	Removal of existing feed water heaters: installation, start up and commissioning feed water heaters.	\$3,600,000
Costa Sur 5&6	672950	Removal of existing feed water heaters: installation, start up and commissioning feed water heaters.	\$5,760,000
Costa Sur 5&6/Aguirre 1&2	672950 669233	Removal of existing and installation of new Continuous Condenser Wash.	\$600,000
Aguirre 1	669233	Removal of existing and installation of new Feedwater Heaters 7.	\$3,600,000
Aguirre 2	669233	Removal of existing and installation of new Feedwater Heaters 3.	\$7,200,000
San Juan 5 & 6	662947	Removal of existing and installation of new GT fully bladed rotor.	\$10,800,000
Palo Seco 3	662957	Removal of existing and installation of new Water heater 5.	\$2,400,000



Legacy Generation Asset	FEMA Project No.	Work Description	Total Cost
Palo Seco 3&4	662957	Removal of existing and installation of new Deaerator pump recirculation valves.	\$216,000
Palo Seco 3&4	662957	Removal of existing and installation of new Feedwater heaters & Boiler lead valves actuators.	\$240,000
San Juan 5	662947	Removal of existing and installation of new Continuous Condenser Wash.	\$2,880,000
San Juan 7	687480	Removal of existing and installation of new Continuous Condenser Wash.	\$2,880,000
San Juan 7	687480	Removal of existing and installation of new Circulating pumps.	\$72,000
San Juan 5,6,7	662947	Removal of existing and installation of new Traveling screens.	\$1,200,000
San Juan 7	687480	Removal of existing and installation of new cooling tower.	\$2,040,000
Aguirre CC 2-3	669815	Removal of existing and installation of new GT compressor rotor.	\$6,360,000
Aguirre CC	669815	Removal of existing and installation of new Condensing Circulating Water Pump.	\$2,640,000
Aguirre CC	669815	Removal of existing and installation of new boiler feed pumps.	\$2,160,000
Aguirre CC 2-3	669815	Removal of existing and installation of new Exhaust duct.	\$480,000
Cambalache	663383	Removal of existing and installation of new overhead crane.	\$900,000
Cambalache	663383	Removal of existing and installation of new feedwater pump and motor.	\$180,000
Cambalache 1, 2 y 3	663383	Removal of existing and installation of new Starting Frequency Converter Transformer.	\$84,000
Cambalache	663383	Removal of existing and installation of new DCS.	\$3,600,000
San Juan 5 & 6	662947	Removal of existing and installation of new GT compressor wash.	\$1,200,000
Total			\$123,716,610







**Attachment B**  
**Projects Conditionally Approved by the Energy Bureau for Fuel Efficiency Improvement**  
**First Group**

Legacy Generation Asset	FEMA Project No.	Work Description	Total Cost
Costa Sur 5 & 6	672950	Remove and install new tubes of the low-pressure feedwater heaters 1A, 1B, 2 y 3 to Increase the efficiency of the boiler.	\$8,000,000
Costa Sur 5 & 6	672950	Remove and install new air preheater soot blower system to Increase the efficiency of the boiler	\$2,000,000
Costa Sur 5 & 6	672950	Remove and install new steam coils to Increase the efficiency of the boiler.	\$5,000,000
Costa Sur 5 & 6	672950	Remove and install new Condenser Continuous Cleaning System to Increase the efficiency of the boiler.	\$4,920,000
Costa Sur 5 & 6	672950	Remove and install new Cold Reheat reducing Station to increase the efficiency of the Boiler and turbine.	\$4,200,000
Costa Sur 5 & 6	672950	Remove and install new Variable frequency Drives for IDF Motors to Increase overall efficiency of the boiler.	\$5,000,000
Costa Sur 5 & 6	672950	Remove and install new Variable frequency Drives for FDF Motors to Increase overall efficiency of the boiler.	\$5,000,000
Costa Sur 5 & 6	672950	Remove and install new Variable frequency Drives for BFWP Motors to Increase overall efficiency of the boiler.	\$20,000,000
Aguirre 1	669233	Remove and install new steam coils to Increase the efficiency of the boiler.	\$2,500,000
Aguirre 2	669233	Remove and install new steam coils to Increase the efficiency of the boiler.	\$2,500,000
Aguirre 1 & 2	669233	Remove and install new Continuous Condenser Wash to increase the efficiency of the boiler.	\$2,460,000
Palo Seco 3	662957	Remove and install new Water Heater 5 to Increase the efficiency of the boiler	\$2,000,000
San Juan 5 & 6	662947	Remove and install new Combustion Turbine (CT) Compressor Online/Offline Water Wash System to Improve CT Performance.	\$1,000,000
San Juan 7	687480	Remove and install new Condenser: Overhauling Debris Filters; Replacement Continuous Cleaning System To help maintain vacuum pressure in the steam condenser improving MW production.	\$2,300,000
San Juan 5, 6 & 7	662947 & 687480	Remove and install new Traveling Screens To help maintain vacuum pressure in the steam condenser improving MW production.	\$2,000,000

Legacy Generation Asset	FEMA Project No.	Work Description	Total Cost
Mayaguez	663385	Remove and install new Demi Water Injection in the compressor.	\$6,000,000
TOTAL			\$74,880,000





Attachment C  
Projects Which Require Further Evaluation

Legacy Generation Asset	FEMA Project No.	Work Description	Total Cost
Critical Components Replacement – First Group			
San Juan 9*	No project #	Removal of existing and installation of new Recirculating fan duct and GRF	\$2,400,000
San Juan 9	No prior project approved	Removal of existing and installation of new Traveling screens	\$1,200,000
Fuel Improvement – First Group			
San Juan 9*	No approved project	Replacement Gas Recirculating Fan, Duct and Dampers To help increase steam reheat temperature in the boiler reducing fuel consumption.	\$2,000,000
Cambalache	663383	Remove and install new Convert to GT 11NM. The upgrade configuration from GT11N to 11NM includes new blades and turbine blades, heat shield segments, blade carrier and exhaust shroud. The update improves power output without increasing emissions. This leads to a power output increase of 16 MW per unit.	\$26,878,328
Cambalache	663383	Remove and install new Inlet Chillers- Cooling by inlet air or demineralized water mist at the inlet of the filter house improves the energy efficiency of the unit.	\$3,000,000
Total			\$35,478,328
*Projects with same description for the same facility.			

