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: Motion to Submit Fifth Group of Generation Projects Scope of Work

MOTION TO SUBMIT FIFTH GROUP OF GENERATION PROJECTS SCOPE OF WORK

COMES NOW the Puerto Rico Electric Power Authority (PREPA), through its counsel of

record, and respectfully submits and requests as follows:

1. On March 26, 2021, the Puerto Rico Energy Bureau of the Public Service Regulatory Board

(the "Energy Bureau" or "Bureau") entered a Resolution and Order (the "March 26 Order")

requiring PREPA to, among other things:

submit to the Energy Bureau each new capital investment project. For projects to be funded with the [Federal Emergency Management Administration "FEMA"] fund and/or any other federal funds, PREPA shall submit the specific projects to the Energy Bureau at least thirty (30) calendar days prior to its submittal to the [Central Office for Recovery, Reconstruction and Resiliency "COR3"], FEMA and/or any other federal agency.

March 26 Order at pp. 18-19, ¶ 10.

2. On November 18, 2021, the Honorable Energy Bureau further stated that "[a]ll [of] PREPA's capital projects expenses require the Energy Bureau's approval." Resolution and Order entered on November 18, 2021 (emphasis in the original removed).

3. In compliance with the March 26 Order, PREPA herein submits for the review and approval of the Energy Bureau several scopes of work (SOW) for permanent repairs performed on the Cambalache, Mayaguez, Palo Seco and San Juan generation plants (the "Projects"). The Project works targeted the repair of damages that the referred power plants suffered as a

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consequence of the direct hit of Hurricane Maria. These Projects were necessary to improve the reliability of the system. PREPA herein presents the background of the Projects and also, the scope of work performed, and costs incurred in each power plant for which PREPA will seek reimbursement from the Federal Emergency Management Administration ("FEMA").

4. On September 20, 2017, Hurricane Maria, made landfall as a category 4 hurricane, devastating Puerto Rico. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services, including power generation, were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history. As a result, the Cambalache, Mayaguez Hydro-Gas, Palo Seco Steam and Palo Seco power plants sustained considerable damages. In response, PREPA made permanent repairs to the above-listed power plants. These repairs were needed to bring the units back online as soon as possible.

5. Pursuant to the above, PREPA hereby details the works completed to repair damages sustained by the Cambalache, Mayagüez Hydro-Gas, Palo Seco Steam and Palo Seco power plants and submits them to the Energy Bureau for evaluation and approval. The damages that each power plant suffered, and the permanent works performed to address and repair each damage are listed below.

a. Cambalache Power Plant (Exhibit A). The damages suffered by the plant are listed in Sec. 2.2 and the permanent works performed are listed in Sec. 3.1. The works performed aimed to restore the facilities to pre-disaster function and to approved codes/standards. The codes and standards are detailed in Section 4. The total costs incurred in the permanent repair works total \$ 1,104,705.80. With the Energy Bureau's leave, PREPA will submit to FEMA a request for reimbursement

of the entire amount spent under the Public Assistant program, pursuant Section 428 of the Stafford Act.

- b. Mayaguez Hydro-gas Power Plant (Exhibit B). The damages suffered by the plant are listed in Sec. 2.2 and the permanent works performed are listed in Sec. 3.1. The works performed aimed to restore the facilities to pre-disaster function and to approved codes/standards. The codes and standards are detailed in Section 4. The total costs incurred in the permanent repair works total \$ 197,562.59 With the Energy Bureau's leave, PREPA will submit to FEMA a request for reimbursement of the entire amount spent under the Public Assistant program, pursuant Section 428 of the Stafford Act.
- c. Palo Seco Steam Plant (Exhibit C). The damages suffered by the plant are listed in Sec. 2.2 and the permanent works performed are listed in Sec. 3.1. The works performed aimed to restore the facilities to pre-disaster function and to approved codes/standards. The codes and standards are detailed in Section 4. The total costs incurred in the permanent repair works total \$ 2,507,605.04. With the Energy Bureau's leave, PREPA will submit to FEMA a request for reimbursement of the entire amount spent under the Public Assistant program, pursuant Section 428 of the Stafford Act.
- **d.** San Juan Power Plant (Exhibit D). The damages suffered by the plant are listed in Sec. 2.2 and the permanent works performed are listed in Sec. 3.1. The works performed aimed to restore the facilities to pre-disaster function and to approved codes/standards. The codes and standards are detailed in Section 4. The total costs incurred in the permanent repair works total \$ 1,379,300. With the Energy Bureau's

leave, PREPA will submit to FEMA a request for reimbursement of the entire amount spent under the Public Assistant program, pursuant Section 428 of the Stafford Act.

6. The above-listed projects are aligned with the operative IRP and Modified Action Plan approved by the Energy Bureau on August 24, 2021. *See Final Resolution and Order on the Puerto Rico Electric Power Authority's Integrated Resource Plan* entered in case no. CEPR-AP-2018-0001, *In Re: Review of the Puerto Rico Electric Power Authority Integrated Resource Plan*.

7. Notwithstanding, the SOWs presented contain critical energy infrastructure information (CEII) that cannot be disclosed to the public. The CEII included in the SOWs are global positioning system (GPS) coordinates of the power plants.

8. The following is a detailed list of the information that PREPA asserts is confidential and must be kept under seal.

Exhibit	Description	Confidential Information	Request for Confidentiality
Exhibit A	Cambalache Power Plant permanent repairs	GPS Location Page 4, Sec. 2.1	CEII
Exhibit B	Mayaguez Hydro-gas Power Plant permanent repairs	GPS Page 4, Sec. 2.1	CEII
Exhibit C	Palo Seco Steam Plant permanent repairs	GPS Page 4, Sec. 2.1	CEII
Exhibit D	San Juan Power Plant permanent repairs	GPS Page 4, Sec. 2.1	CEII

9. Article 6.15 of the *Puerto Rico Energy Transformation and RELIEF Act*, Act no. 57 of 2014, as amended ("Act 57")¹, provides that "any person who is required to submit information to the Energy [Bureau] believes that the information to be submitted has any confidentiality privilege, such person may request the [Bureau] to treat such information as such[.]" *Id.* at Sec. 6.15. "If the Energy [Bureau], after the appropriate evaluation, believes such information should be protected, it shall grant such protection in a manner that least affects the public interest, transparency, and the rights of the parties involved in the administrative procedure in which the allegedly confidential document is submitted." *Id.* at Sec. 6.15(a). If the Energy Bureau determines that the information is confidential, "the information shall be duly safeguarded and delivered exclusively to the personnel of the Energy [Bureau] who needs to know such information under nondisclosure agreements." *Id.* at Sec. 6.15(b). "The Energy [Bureau] shall swiftly act on any privilege and confidentiality claim made by a person subject to its jurisdiction by means of a resolution to such purposes before any allegedly confidential information is disclosed." *Id.* at Sec. 6.15(c).

10. Pursuant to its vested powers, the Energy Bureau approved the *Regulation on Adjudicative*, *Notices of Compliance, Rate Review and Investigations Proceedings* ("Regulation 8543").² Regarding the safeguards that the Energy Bureau gives to confidential information, Regulation 8543 provides that:

[i]f in compliance with the provisions of [Regulation 8543] or any of the Energy Bureau's orders, a person has the duty to disclose to the Energy Bureau information considered to be privileged pursuant to the Rules of Evidence, said person shall identify the allegedly privileged information, request the Energy Bureau the protection of said information, and provide supportive arguments, in writing, for a claim of information of privileged nature. The Energy Bureau shall evaluate the petition and, if it understands

¹ Puerto Rico Energy Transformation and RELIEF Act, Act no. 57 of May 27, 2014, 22 L.P.R.A. §§ 1051-1056.

² Energy Bureau, *Regulation on Adjudicative, Notices of Compliance, Rate Review and Investigations Proceedings*, No. 8543 (December 16, 2015).

the material merits protection, proceed according to what is set forth in Article 6.15 of Act No. 57-2014, as amended.

Regulation 8543 at Sec. 1.15.

11. Federal and Puerto Rico law protect the confidentiality of CEII, the public disclosure of which may pose a security threat in that the information could be useful to a person or group in planning an attack on critical infrastructure. *See, e.g.,* 18 C.F.R. § 388.113, as amended by Federal Energy Regulatory Commission (FERC) Order No. 683, *Critical Energy Infrastructure Information* (issued September 21, 2006); *USA Patriot Act of 2001*, § 1016, creating the *Critical Infrastructures Protection Act of 2001*, including 42 U.S.C. § 5195c(e) (defining Critical infrastructure). FERC regulations subject such information to limitations on use and disclosure to "ensure that information deemed CEII stays out of the possession of terrorists." 18 C.F.R. § 388.113(d)(4). *Off. of People's Counsel v. Pub. Serv. Commn.*, 21 A.3d 985, 991, Util. L. Rep. P 27157, 2011 WL 2473405 (D.C. App. 2011).

12. Under the Critical Infrastructures Protection Act of 2001, the term "critical infrastructure" means "systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters." 42 U.S.C. § 5195c(e).

13. In 2006, FERC Order no. 683 amended the regulations for gaining access to CEII and simplified procedures for obtaining access to CEII without increasing vulnerability of the energy infrastructure and ensuring that access to CEII does not facilitate acts of terrorism.

14. A utility is not required to obtain FERC or other federal government approval in order to designate information as CEII. For example, information required by FERC's Annual Transmission Planning and Evaluation Report, Form No. 715, ("FERC No. 715"), is *de facto*

considered CEII and is automatically afforded the heightened protections. FERC No. 715 requires that any transmitting utility that operates integrated (non-radial) transmission facilities at or above 100 kV must annually submit information including but not limited to: Power Flow Base Cases, Transmitting Utility Maps and Diagrams, Transmission Planning Reliability Criteria, Transmission Planning Assessment Practices, and Evaluation of Transmission System Performance. Any utility that submits the required transmission information pursuant to FERC No. 715 does so with the knowledge that, as stated in the Form's Instructions, FERC "considers the information collected by this report to be CEII and will treat it as such." *See also* 18 C.F.R. § 141.300(d) relating to the Form and CEII.

15. Mainland regulators typically do not require a utility that designates material as CEII to follow any process before the federal government in order to make or support such a designation, and, further, that the regulator, in its informed discretion, can establish limits on how information that it considers CEII can be accessed.

16. Furthermore, and regarding the argument made by PREPA, FERC has ruled on several occasions that global positioning system (GPS) coordinates of any project features "qualify as CEII because it provides more than just location." *See e.g.* Final Rule, Docket Nos. RM02-4-000, PL02-1-000; Order No. 630, Note 31, entered on February 21, 2003 (ruling that FERC considered the global positioning system coordinates of any project features (precise surveyed or GPS coordinates at or above two decimal points of accuracy of equipment and structures) gas information to qualify as CEII because it provides more than just location.³

17. The Energy Bureau, in prior dockets has accepted the Authority's designations of material as CEII, recognizing that both federal law and Puerto Rico law support such designations when

³ Federal Register: March 3, 2003 (Volume 68, Number 41); Rules and Regulations, pp. 9857-9873.

applicable.⁴ Accordingly, and pursuant to the above, it is respectfully requested that the Honorable Energy Bureau find that the information categorized by PREPA as CEII is confidential and that the Secretary of the Energy Bureau be directed to keep the confidential CEII under seal.

WHEREFORE, PREPA respectfully requests the Energy Bureau to approve the above-listed Projects, find that the information categorized by PREPA as CEII is confidential and order the Secretary of the Energy Bureau to keep the confidential CEII under seal.

RESPECTFULLY SUBMITTED.

In San Juan Puerto Rico, 1st day of December 2021.

<u>/s Maralíz Vázquez-Marrero</u> Maralíz Vázquez-Marrero <u>mvazquez@diazvaz.law</u> TSPR No. 16,187

<u>/s Katiuska Bolaños-Lugo</u> Katiuska Bolaños-Lugo <u>kbolanos@diazvaz.law</u> TSPR No. 18,888

DÍAZ & VÁZQUEZ LAW FIRM, P.S.C. 290 Jesús T. Piñero Ave. Oriental Tower, Suite 803 San Juan, PR 00918 Tel. (787) 395-7133 Fax. (787) 497-9664

⁴ See e.g. Resolution and Order entered on August 27, 2019, in case no. CEPR-AP-2018-0001, In Re: Review of the Puerto Rico Electric Power Authority Integrated Resource Plan.

CERTIFICATE OF SERVICE

It is hereby certified that I have filed the foregoing with the Clerk of the Energy Bureau using the electronic filing system using <u>https://radicacion.energia.pr.gov/login</u> and also, that I have served a copy on LUMA Energy, LLC and LUMA Energy ServCo, LLC through their counsel of record at <u>laura.rozas@us.dlapiper.com</u> and <u>margarita.mercado@us.dlapiper.com</u>.

In San Juan Puerto Rico on this 1st day of December 2021.

<u>/s Katiuska Bolaños-Lugo</u> Katiuska Bolaños-Lugo Exhibit A

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

Cambalache Power Plant Permanent Repairs

PROJECT SCOPE OF WORK WITH COST ESTIMATES Submittal to COR3 and FEMA





Cambalache Plant – Hurricane Maria Permanent Repairs

11/10/2021

Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- Project Information
- Facilities
- Scope of Work
- Codes and Standards
- Cost Estimate
- 406 Hazard Mitigation Proposal
- Environmental and Historic Preservation (EHP) Requirements
- Program Manager Certification
- PREPA Project Sponsor Comments
- Attachments

Document Revision History

Version	Date	Summary of Changes





Section 1. Project Information

General Information

	-
Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Cambalache Plant – Hurricane Maria Permanent Repairs
PREPA Project Number	<to be="" by="" entered="" prepa=""></to>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager:

<Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Cambalache Power Plant	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

The Cambalache Power Plant in Arecibo sustained damages in the following areas, that were in need of immediate repair to bring the units back on-line as quickly as possible.

All work has been completed and was included within the Fixed Cost Estimate (FCE) under the Generation inventory.

The specific scopes of work completed for each damage are provided in Section 3.1 below.

<u>Sanitary Water Pumping System (Damage 1)</u>: Repair and recondition of the 8 submersible pumps, 2 per station. Cleaning and sanitation of the 4 sanitary water pumping stations, including related pipes replacement.

<u>Hydraulic Equipment (Damage 2)</u>: Repair and maintenance of hydraulic system, emergency generators, tractors, and boat engines of the Hydro Gas Division.

<u>Different areas of the Plant (Damages 3-8)</u>: Provide all the materials, equipment, tools, labor, supervision, and anything else needed to repair the different areas affected by the hurricane.

<u>Different A/C of the Plant (Damages 9-12)</u>: Purchase, installation and repair of different units of air conditioning in the Plant.

<u>Generation Plant Fences (Damage 15)</u>: To be repaired since one third (1/3) of them were damaged by the hurricane.

<u>Storm Water Pump System (Damages 16-18)</u>: Cambalache Plant is located in the middle of a dike. This doesn't allow the storm water to flow on a natural way, therefore it is necessary to have a functional mechanical system for this purpose. The storm water pump system and dike emptying maintain and control the flow of water if a flood occurs, so it is very important to repair the damaged areas.

Fuel Transfer Pump (Damage 19): Circuit breaker was damaged.



<u>Cable Trays (Damage 25)</u>: Around the Generation Plant exists a Cable Trays System that protects the electric wiring of the turbine controls, auxiliary equipment, transmission lines and its interconnections. Due to the hurricane, these cables were severely damaged, exposed to weather and animals.

<u>Lighting (Damage 26)</u>: Lighting replacement for the safety of the Generation Plant and the employees working during night shifts.

Section 3. Scope of Work

3.1. Scope of Work Description (e.g., Plan for Repair)

Scopes of work are noted below for:

Sanitary Water Pumping System (Damage 1):

Repair and recondition of the 8 submersible pumps: recondition of the stator winding with steam cleaning, varnish treatment, and baking. Perform electrical tests, including ground resistance and impulse test. Install mechanical seal. Install joints and/or rings. Install ball box. Install level sensor (buoy), mercury float switch type. Additional repair work to wear rings, drive ends, power cable, grommet, lead thru, temperature detector, protective washer and wear protection.

Cleaning and sanitation of the 4 pumping stations: clean and empty water well. Remove pumps and install new chains. Remove existing lead pipes and install new galvanized lead pipes. Remove existing discharge pipes, assemble new ones, and install them. Re-install pumps.

Hydraulic Equipment (Damage 2):

Engine repairs, electrical calibrations, A/C system repair, glass mounting, electrical system repair, transmissions and differentials repairs, welding, maintenance (oil and filter change, greasing, and washing equipment), computerized diagnosis, all hydraulic system repair, DPF system cleaning, pneumatic break systems.

Different areas of the Generation Plant (Damages 3-8):

Repairs to structures, ceilings, drains, insulation, and extractors damaged. Main entrance door repair. Repairs to mechanical area dining room door. Repairs to mechanical area dining room rolling door. Repairs to consoles glass, and mechanical area dining room glass.

Different A/C of the Generation Plant (Damages 9-12):

- CEMS, unit 1 purchase and installation of blades
- Mod. BB, unit 1 purchase and installation of transformer and fuse
- Administration Building, unit 1 purchase and installation of 15 tons condenser

- Administration Building, unit 3 purchase and installation of 5 tons PAQ A/C
- Mod. DD, unit 3 purchase and installation of 5 tons PAQ A/C
- Mod. AA, unit 3 purchase and installation of fan motor
- Mod. AA, unit 2 purchase and installation of 10 tons A/C
- Mod. AA, unit 1 A/C leak repair and refrigerant load
- Supervisor Office 4 purchase and installation of 18,000 BTU A/C
- Safety booth A/C repair, board replacement
- Principal Building purchase and installation of 2 condensers for 18,000 BTU A/C's
- Switch gear A/C purchase and installation

Generation Plant Fences (Damage 15):

Repair of damaged fences and barb wires in the Switch Ward area, and Plant perimeters. Fences were leveled, and also the security camera pole. In addition, contract amendment includes the repair of the raw water line supports.

Storm Water Pump System (Damages 16-18):

Emergency work to repair storm water pumps 75 HP (2 systems). Emergency work to repair fuel dike pumps 10 HP (1 system). In addition, remove 14"x 20" excentric reducer on storm water pit, and install new excentric reducer and nipple. Install NEMA4x non-fused safety disconnects for 75 HP storm water pump.

Fuel Transfer Pump (Damage 19):

Purchase of a Cutler Hammer circuit breaker (Model HLD-3600F) for the fuel transfer pump. In addition, a two holes pattern loads lug, set of 3.

Cable Trays (Damage 25):

Replacement of cable trays, curve and "T", and 9, 12, 15, 21 or 27-inch tab on each side.

Lighting (Damage 26):

Lighting replacement to: generating units chimneys (4 Floodlight 1,000 W), Generation Plant perimeter poles (100 Floodlight 250 W), building's ceilings (15 Floodlight 400 W), walls of buildings and generating units (50 Wall Pack 150 W), and 20 ballast kit replacement for 175 W metal halide lamps of the Generation Plant access bridge.

3.2. Type of Project

Indicate whether the intended plan is a(n):

- 1. **Restoration to Codes/Standards**: Restores the facility(s) to pre-disaster function and to approved codes/standards
- 2. **Improved Project**: Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
- 3. Alternate Project: Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

The work is completed, so no additional A&E work is required.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition -American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure
 American Society of Civil Engineers (ASCE)
- Distribution 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) International Code Council (ICC)
- International Energy Conservation Code (IECC) International Code Council (ICC)
- International Existing Building Code (IEBC) International Code Council (ICC)
- National Electric Safety Code (NESC) Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) National Fire Protection Association (NFPA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.

- · 2018 NFPA 101 Life Safety Code National Fire Protection Association (NFPA)
- ASCE.7 Section C 6.0 Wind Loads American Society of Civil Engineers (ASCE)
- International Building Code (IBC) International Code Council (ICC)
- Page 10 PREPA Standards and Specifications Puerto Rico Electric Power Authority (PREPA)
- Pattern Distribution Systems Manual Puerto Rico Electric Power Authority (PREPA)
- RUS Applicable Bulletins for Electrical and Electronic Installations US Department of Agriculture, Rural Utilities Service (RUS)
- Underground Distribution Patterns Manual Puerto Rico Electric Power Authority (PREPA)

Section 5. Incurred Costs

Sanitary Water Pumping System (Damage 1):

Cost Type	Amount (\$M)
Design and Construction	\$58,230.00
Total Project Estimated Cost	\$58,230.00

Hydraulic Equipment (Damage 2):

Cost Type	Amount (\$M)
Design and Construction	\$42,296.01
Total Project Estimated Cost	\$42,296.01

Different Areas of the Generation Plant (Damages 3-8):

Cost Type	Amount (\$M)
Design and Construction	\$199,676.00
Total Project Estimated Cost	\$199,676.00

Different A/C of the Generation Plant (Damages 9-12):



Cost Type	Amount (\$M)
Equipment Purchase	\$48,300.00
Total Project Estimated Cost	\$48,300.00

Generation Plant Fences (Damage 15):

Cost Type	Amount (\$M)
Design and Construction	\$199,750.25
Total Project Estimated Cost	\$199,750.25

Storm Water Pump System (Damages 16-18):

Cost Type	Amount (\$M)
Design and Construction	\$344,265.00
Total Project Estimated Cost	\$344,265.00

Fuel Transfer Pump (Damage 19):

Cost Type	Amount (\$M)
Equipment Purchase	\$3,579.00
Total Project Estimated Cost	\$3,579.00

Cable Trays (Damage 25):

Cost Type	Amount (\$M)
Equipment Purchase	\$60,000.00
Total Project Estimated Cost	\$60,000.00

Lighting (Damage 26):



Cost Type	Amount (\$M)
Equipment Purchase	\$39,491.55
Total Project Estimated Cost	\$39,491.55

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope is not applicable to this completed work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments

Page | **11**

<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature



Section 10. Attachments

10.1. Project Detailed Cost Estimates

- Damage 1 CT 81316 / Cortes Industrial Organization / \$69,647.00
- Damage 2 CT 81742 / Heavy Equipment Specialists Inc. / \$50,000.00
- Damages 3-8 CT 79215 / Malnat & Asociados / \$199,676.00
- Damages 9-12 CT 79742 / LA Air Conditioning Services / \$48,300.00
- Damage 15 PO 79125 / Malnat & Asociados / \$199,750.25
- Damages 16-18 CT 80740 / Engineered Parts & Services Inc. / \$344,265.00
- Damage 19 PO 79165 / Phoenix Industrial Sales Inc. / \$3,579.00
- Damage 25 CT 79881 / Malnat & Asociados / \$60,000.00
- Damage 26 PO 81394 / WDC Puerto Rico Inc / \$39,491.55

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures





10.4. Other: (Please Describe)



<Insert other documents attached to this submittal>



Exhibit B

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

Mayaguez Hydro-Gas Power Plant Permanent Repairs

PROJECT SCOPE OF WORK WITH COST ESTIMATES Submittal to COR3 and FEMA



Mayaguez Plant – Hurricane Maria Permanent Repairs

11/3/2020

Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- Project Information
- Facilities
- Scope of Work
- Codes and Standards
- Cost Estimate
- 406 Hazard Mitigation Proposal
- Environmental and Historic Preservation (EHP) Requirements
- Program Manager Certification
- PREPA Project Sponsor Comments
- Attachments

Document Revision History

Version	Date	Summary of Changes





Section 1. Project Information

General Information

	-
Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Mayaguez Plant – Hurricane Maria Permanent Repairs
PREPA Project Number	<to be="" by="" entered="" prepa=""></to>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager:

<Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Mayaguez Hydro-Gas Power Plant	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

The Mayaguez Hydro-Gas Power Plant sustained damages in the following areas, that were in need of immediate repair to bring the units back on-line as quickly as possible.

All work has been completed and was included within the Fixed Cost Estimate (FCE) under the Generation inventory.

The specific scopes of work completed for each damage are provided in Section 3.1 below.

Gas Generator (Damage 2): Material purchase for Mayaguez Warehouse.

Brush Generator Unit 1 (Damage 4): Parts purchase for Unit 1.

<u>Fuel Tank 1 (Damage 11)</u>: Labor and materials for the removal, adequate disposition, and replacement of the fuel tank 1 cyclone fence that was damaged because of the trees that fell on it.

<u>Mayaguez Plant Operations (Damage 12)</u>: Purchase of membranes and its related parts for the Plant operation.

Section 3. Scope of Work

3.1. Scope of Work Description (e.g., Plan for Repair)

Scopes of work are noted below for:

Gas Generator (Damage 2):

Purchase of a Variable Frequency Control Water Pump for gas generator, aeroderivatives turbine, 8 ft.

Brush Generator Unit 1 (Damage 4):



Purchase of 3 Fuses, 1 Electrical Joint Compound (unial paste), 3 Exciter - rectifier diode, and 1 BICCON Compound for unit 1 Brush generator.

Fuel Tank 1 (Damage 11):

Cyclone fence replacement of approximately 100 ft. long and 10 ft. height.

Mayaguez Plant Operations (Damage 12):

Purchase of 90 RO Toray Membranes, 10 Interconnectors, 10 Vessel Assembly Cap, 600 O-rings Spare Parts for membrane interconnectors, and 60 O-rings Vessel End-cap permeate port for the Plant operations.

3.2. Type of Project

Indicate whether the intended plan is a(n):

- 1. **Restoration to Codes/Standards**: Restores the facility(s) to pre-disaster function and to approved codes/standards
- Improved Project: Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
- 3. Alternate Project: Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

The work is completed, so no additional A&E work is required.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition -American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) International Code Council (ICC)
- International Energy Conservation Code (IECC) International Code Council (ICC)
- International Existing Building Code (IEBC) International Code Council (ICC)
- National Electric Safety Code (NESC) Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) National Fire Protection Association (NFPA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.

- 2018 NFPA 101 Life Safety Code National Fire Protection Association (NFPA)
- ASCE.7 Section C 6.0 Wind Loads American Society of Civil Engineers (ASCE)
- International Building Code (IBC) International Code Council (ICC)
- Page 10 PREPA Standards and Specifications Puerto Rico Electric Power Authority (PREPA)
- Pattern Distribution Systems Manual Puerto Rico Electric Power Authority (PREPA)
- RUS Applicable Bulletins for Electrical and Electronic Installations US Department of Agriculture, Rural Utilities Service (RUS)
- Underground Distribution Patterns Manual Puerto Rico Electric Power Authority (PREPA)

Section 5. Incurred Costs

Gas Generator (Damage 2):

Cost Type	Amount (\$M)
Design and Construction	\$12,079.00
Total Project Estimated Cost	\$12,079.00

Brush Generator Unit 1 (Damage 4):



Cost Type	Amount (\$M)
Design and Construction	\$70,808.58
Total Project Estimated Cost	\$70,808.58

Fuel Tank 1 (Damage 11):

Cost Type	Amount (\$M)
Design and Construction	\$34,500.00
Total Project Estimated Cost	\$34,500.00

Mayaguez Plant Operations (Damage 12):

Cost Type	Amount (\$M)
Equipment Purchase	\$80,175.00
Total Project Estimated Cost	\$80,175.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope is not applicable to this completed work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments	
<insert any="" comments="" here=""></insert>	
PREPA Project Sponsor's Printed Name	Date
Title	Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

- Damage 2 PO 79693 / ARG Precision Corp / \$12,079.00
- Damage 4 PO 79447 / ARG Precision Corp / \$70,808.59
- Damage 11 CT 82790 / Lorck Contractors Corp / \$34,500.00
- Damage 12 PO 81632 / ENVIRECS LLC / \$80,175.00

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures







<Insert other documents attached to this submittal>

Exhibit C

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

Palo Seco Steam Plant Permanent Repairs

PROJECT SCOPE OF WORK WITH COST ESTIMATES Submittal to COR3 and FEMA





Permanent Repairs

11/10/2021

Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- Project Information
- Facilities
- Scope of Work
- Codes and Standards
- Cost Estimate
- 406 Hazard Mitigation Proposal
- Environmental and Historic Preservation (EHP) Requirements
- Program Manager Certification
- PREPA Project Sponsor Comments
- Attachments

Document Revision History

Version	Date	Summary of Changes





Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Palo Seco Plant – Hurricane Maria Permanent Repairs
PREPA Project Number	<to be="" by="" entered="" prepa=""></to>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager:

<Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Palo Seco Steam Plant	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

The Palo Seco Steam Plant in Toa Baja sustained damages in the following areas, that were in need of immediate repair to bring the units back on-line as quickly as possible.

All work has been completed and was included within the Fixed Cost Estimate (FCE) under the Generation inventory.

The specific scopes of work completed for each damage are provided in Section 3.1 below.

<u>Cooling Towers 3 & 4 (Damage 1)</u>: Cooling towers have to be replaced since they suffered significant damages, principally to its structural components in the mechanical equipment support area, meaning motors, transmissions, and fans among others.

<u>Boiler's cameras (Damage 2)</u>: Purchase of cameras to monitor opacity through boiler's chimneys. Cameras are an important tool in the boilers operation, to visually verify that the combustion controls are properly adjusted. Through the image, important decisions are made to make adjustments to the boiler's air and fuel parameters, that directly affect the gases emitted by the chimneys. In addition, help comply with Clean Air, and Air Pollution Regulations.

<u>Federal Alert System (Damage 3)</u>: Repairs to the Federal Alert System to maintain coverage in the determined areas and to fulfill the purpose of alerting the generation units personnel during emergencies.

<u>All Generation Units (Damage 6)</u>: Refractory work, paint, and insulation in all Generation Units and related structures, including scaffolding rent.

Section 3. Scope of Work

3.1. Scope of Work Description (e.g., Plan for Repair)

Scopes of work are noted below for:

Cooling Towers 3 & 4 (Damage 1):

Demolition of existing Cooling Tower, and provide a New (4) Cell FRP Counterflow Cooling Tower to fit in the existing basin. The new tower will cool 18,000 GPM of water from 100.0°F to 85.0°F, at an inlet wet bulb temperature of 80.0°F, using 60 HP motors. Working order: demolition of existing tower, tower structure, fan deck, casing, fill system, drift eliminators, partition walls and end walls, wind walls, plenum access, distribution system, mechanical equipment, louvers, and tower access.

Boiler's cameras (Damage 2):

Purchase of 2 Ultra-High Image Resolution IP cameras with Monitoring Stations, including related materials, installation and configuration.

Federal Alert System (Damage 3):

Installation and equipment needed to repair damages: replacement of the speaker stands, siren antenna, battery charger, batteries, power supply/base radio/activation console, and crane.

All Generation Units (Damage 6):

Provide labor, materials, tools, equipment, and supervision to perform the require work to inspect, install and repair the refractory in ducts, lobby, chimneys, other boilers areas, inspect chimney top rings, paint chimneys and related structures, repair boiler's air traffic warning lights, and to repair the insulation of all needed areas in the Generation Units. In addition, the contract amendment includes pending rehabilitation work and hidden damages in penthouse, lobby, air and gas ducts, interior and exterior of chimneys, boiler's walls and slabs, fan ducts, doghouse, high energy lines, and fluid and steam lines related to the Generation Units.

3.2. Type of Project

Indicate whether the intended plan is a(n):

- 1. **Restoration to Codes/Standards**: Restores the facility(s) to pre-disaster function and to approved codes/standards
- 2. **Improved Project**: Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
- 3. Alternate Project: Does not restore the pre-disaster function of the damaged facility(s)





Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

The work is completed, so no additional A&E work is required.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition -American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) International Code Council (ICC)
- International Energy Conservation Code (IECC) International Code Council (ICC)
- International Existing Building Code (IEBC) International Code Council (ICC)
- National Electric Safety Code (NESC) Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.

- 2018 NFPA 101 Life Safety Code National Fire Protection Association (NFPA)
- 2010 NFPA 72 Fire Alarm and Signaling Code National Fire Protection Association (NFPA)
- ASCE.7 Section C 6.0 Wind Loads American Society of Civil Engineers (ASCE)
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- Page 10 PREPA Standards and Specifications Puerto Rico Electric Power Authority (PREPA)
- Pattern Distribution Systems Manual Puerto Rico Electric Power Authority (PREPA)
- RUS Applicable Bulletins for Electrical and Electronic Installations US Department of Agriculture, Rural Utilities Service (RUS)
- Underground Distribution Patterns Manual Puerto Rico Electric Power Authority (PREPA)

Section 5. Incurred Costs

Cooling Towers 3 & 4 (Damage 1):

Cost Type	Amount (\$M)
Design and Construction	\$1,432,953.75
Total Project Estimated Cost	\$1,432,953.75

Boiler's cameras (Damage 2):

Cost Type	Amount (\$M)
Design and Construction	\$25,142.29
Total Project Estimated Cost	\$25,142.29

Federal Alert System (Damage 3):

Cost Type	Amount (\$M)
Design and Construction	\$9,509.00
Total Project Estimated Cost	\$9,509.00

All Generation Units (Damage 6):

Cost Type	Amount (\$M)
Equipment Purchase	\$1,040,000.00
Total Project Estimated Cost	\$1,040,000.00



Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope is not applicable to this completed work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments

<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

- Damage 1 CT 79159 / International Cooling Tower USA, Inc. / \$1,439,250.00
- Damage 2 CT 80665 / Protective Security Systems / \$25,142.29
- Damage 3 CT 80154 / NSES Inc. / \$9,509.00
- Damage 6 CT 80457 / JR Industrial Contractors Inc. / \$1,040,000.00

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures





10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>



<u>Exhibit D</u>

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

San Juan Power Plant Permanent Repairs

PROJECT SCOPE OF WORK WITH COST ESTIMATES Submittal to COR3 and FEMA





San Juan Plant – Hurricane Maria Permanent Repairs

11/10/2021

Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- Project Information
- Facilities
- Scope of Work
- Codes and Standards
- Cost Estimate
- 406 Hazard Mitigation Proposal
- Environmental and Historic Preservation (EHP) Requirements
- Program Manager Certification
- PREPA Project Sponsor Comments
- Attachments

Document Revision History

Version	Date	Summary of Changes
V.1	10.18.2021	Initial SOW





Section 1. Project Information

General Information

	-
Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	San Juan Plant – Hurricane Maria Permanent Repairs
PREPA Project Number	<to be="" by="" entered="" prepa=""></to>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager:

<Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
San Juan Power Plant	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

The San Juan Power Plant sustained damages in the following areas, that were in need of immediate repair to bring the units back on-line as quickly as possible. The specific scopes of work completed for each damage are provided in Section 3.1 below.

Boilers 7 & 8 (Damage 2): Thermal insulation and lagging damaged in several areas of the boilers.

<u>Boilers 9 & 10 (Damage 3)</u>: Thermal insulation and lagging damaged in several areas of the boilers.

Units 9 & 10 (Damage 4): Derailed overhead crane.

<u>Units 7 & 8 (Damage 5)</u>: These units have a Battery Bank of 125 Vdc per unit for the control circuits of the switch rooms, and the lubricating oil pumps of the turbo-generators. Each Battery Bank consists of two chargers. After the hurricane, San Juan Plant had several power loss events, where battery chargers and banks had to be used in an extraordinary way to maintain the power of the lubricating pumps, causing that three chargers and the unit 8 battery bank stopped working.

<u>Plant's Emergency Notification System (Damage 6)</u>: The alert system for mass notification in case of an emergency at the Plant was broken.

"Diques" R1, R2, R3, R4 (Damage 8): Membrane liner system XR-5 was damaged.

Boiler's dining room (Damage 9): Air conditioning was damaged.

NPDES office (Damage 10): Air conditioning was damaged.

Units 5 & 6 (Damage 11): Package air conditioner was damaged.

<u>General Mechanic Workshop – North (Damage 12)</u>: Roof sealing treatment suffered serious damages, causing significant water leaks into the workshop, putting equipment and employees at risk.



<u>Power Plant Rehabilitation (Damage 18 – two contracts)</u>: Contractor will provide all materials, equipment, tools, scaffolds, crane, insurance, labor and supervision to repair the hurricane affected structures in a safe way for the environment and the employees.

Section 3. Scope of Work

3.1. Scope of Work Description (e.g., Plan for Repair)

Scopes of work are noted below for:

Boilers 7 & 8 (Damage 2):

Install the scaffolding material necessary to repair the thermal insulation and the lagging with anchors of the following areas of boilers 7 and 8:

- 1. Penthouse elevation 143' approx.
- 2. Level #6, Boiler Waterwalls, elevation 126' approx.
- 3. Level #5, Boiler Waterwalls, elevation 122' approx.
- 4. Headers Vestibule Area, elevation 99' up.
- 5. Dearetor Chamber, elevation 115' approx.
- 6. Dearetor Tank, elevation 80' approx.
- 7. GRF Suction Duct, elevation 119' approx.
- 8. GRF Discharge Duct, elevation 16' approx.
- 9. Air Heater 7-1 Area, elevation 92' approx.
- 10. Air Heater 7-2 Area, elevation 92' approx.
- 11. Air Duct 7-1 from Boiler to Fan
- 12. Air Duct 7-2 from Boiler to Fan
- 13. Gas Duct 7-1 from Boiler to Fan
- 14. Gas Duct 7-2 from Boiler to Fan
- 15. Boiler Waterwalls
- 16. Boiler Windbox
- 17. Boiler Downcomers

Boilers 9 & 10 (Damage 3):

Install the scaffolding material necessary to repair the thermal insulation and the lagging with anchors of the following areas of boilers 9 and 10:

- 1. Penthouse elevation 125' approx.
- 2. Air Ducts from Fans to Air Heaters to Windbox
- 3. Gas Ducts from Fans to Air Heaters to Windbox
- 4. Gas Recirculating Ducts from Economizer to bottom of the furnace.

- 5. Gas ducts from Fans to Stacks
- 6. Windbox
- 7. Waterwalls
- 8. Dearetor Tank
- 9. Dearetor Chamber
- 10. Downcomers Piping
- 11. Hoppers
- 12. Burners Corners
- 13. Dog House Area
- 14. Vestibule Area
- 15. Auxiliary Steam Piping

Units 9 & 10 (Damage 4):

Rigging services to straighten and place the overhead crane on its rail. The following services and equipment are needed: slings, shackles, cranes of 350, 120, 70 and 28 tons, operators, riggers to tie up parts, assembly and disassembly of counterweight.

Units 7 & 8 (Damage 5):

Purchase of 4 Cyberex load sharing battery chargers, rated 200 Amps, model RBEII-AT30-130-200, weight 750 pounds/ea. The price includes: battery eliminator, AUX alarm relay board, MODBUS, ground bus, ground detection meter with test switch, fungus proofing, forced load sharing cable, AC Input ammeter, AC Input voltmeter, barrier terminal block, approval drawings, certified production test data, certificate of conformance, export packing.

Plant's Emergency Notification System (Damage 6):

Activities needed to repair the damages caused to the equipment, in order to meet the industry standards:

- 1) Replacement of the speaker stands (6), and review of the post anchors to verify their integrity and support.
- 2) Reinstallation of the system antenna.
- 3) Battery charger installation and Certification of Good Performance.
- 4) Batteries installation, model AC Delco, Deep Cycle, marine type.
- 5) Replacement of steel support to the wall of the building for pole, and welding on the edge of the pole base.

"Diques" R1, R2, R3, R4 (Damage 8):

Membrane liner system repair works had to be done on tanks, since debris impacted them during the strong winds of hurricane Maria. The work was done with an amendment to the original contract, that was created for the Remediation works – reinforcement of membrane liner system of "Diques" R1-4 and Diesel tanks in Bunker C, realized just before the hurricane. Therefore, Geomembrane Installation and Testing had to be done again to reserve tanks R1 thru R4 after the hurricane.

Boiler's dining room (Damage 9):

Purchase and installation of a 36,000 BTU mini split A/C with circuit arrester and phase monitor, to replace the damaged one.

NPDES office (Damage 10):

Purchase and installation of a 12,000 BTU mini split A/C with circuit arrester and phase monitor, to replace the damaged one.

<u>Units 5 & 6 (Damage 11):</u>

Purchase and installation of a RTU package unit of 20 tons, to replace the damaged one for the battery charger of units 5 and 6.

General Mechanic Workshop - North (Damage 12):

- 1) Removal and disposition of ceiling surface existing materials.
- 2) Ceiling surface cleaning with pressure machine, and ceiling surface preparation to remove any dirt, dust, etc
- 3) Primer application to ceiling surface.
- 4) 1st Membrane Base installation to ceiling surface.
- 5) 2nd Membrane Base installation to ceiling surface.
- 6) Flashing liquid installation on ceiling edge and walls with caulking termination.
- 7) Aluminum paint coat application to the joints of the membrane to help preserve it.

Power Plant Rehabilitation (Damage 18):

Two contracts were awarded to repair the following hurricane affected structures:

- A) (1) Carpentry workshop (3,228 sq. ft.), (2) Compressors room treatment plant (1,440 sq. ft.), (3) Diesel pumps room fire protection system (1,025 sq. ft.), (4) Entrance doors and their rails environmental hangar, (5) Aluminum curtains B&G Building (130 sq. ft.), and (6) Door fuel pumps room.
- B) (1) Scrap metal area / waste with oils, (2) Spill control boats area, (3) Transfer pumps, and (4) Curtains administrative building.

Page 8

3.2. Type of Project

Indicate whether the intended plan is a(n):

- 1. **Restoration to Codes/Standards**: Restores the facility(s) to pre-disaster function and to approved codes/standards
- 2. **Improved Project**: Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
- 3. Alternate Project: Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

The work is completed, so no additional A&E work is required.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition -American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) International Code Council (ICC)
- International Energy Conservation Code (IECC) International Code Council (ICC)
- International Existing Building Code (IEBC) International Code Council (ICC)
- National Electric Safety Code (NESC) Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions National Roofing Contractors Association (NRCA)



4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.

- 2018 NFPA 101 Life Safety Code National Fire Protection Association (NFPA)
- 2010 NFPA 72 Fire Alarm and Signaling Code National Fire Protection Association (NFPA)
- ASCE.7 Section C 6.0 Wind Loads American Society of Civil Engineers (ASCE)
- International Building Code (IBC) International Code Council (ICC)
- Page 10 PREPA Standards and Specifications Puerto Rico Electric Power Authority (PREPA)
- Pattern Distribution Systems Manual Puerto Rico Electric Power Authority (PREPA)
- RUS Applicable Bulletins for Electrical and Electronic Installations US Department of Agriculture, Rural Utilities Service (RUS)
- Underground Distribution Patterns Manual Puerto Rico Electric Power Authority (PREPA)

Section 5. Incurred Costs

Boilers 7 & 8 (Damage 2):

Cost Type	Amount (\$M)
Design and Construction	\$413,235.00
Total Project Estimated Cost	\$413,235.00

Boilers 9 & 10 (Damage 3):

Cost Type	Amount (\$M)
Design and Construction	\$342,783.00
Total Project Estimated Cost	\$342,783.00

Units 9 & 10 (Damage 4):

Cost Type	Amount (\$M)
Design and Construction	\$37,000.00
Total Project Estimated Cost	\$37,000.00

Units 7 & 8 (Damage 5):

Cost Type	Amount (\$M)
Equipment Purchase	\$95,535.00
Total Project Estimated Cost	\$95,535.00



Plant's Emergency Notification System (Damage 6):

Cost Type	Amount (\$M)
Design and Construction	\$9,775.00
Total Project Estimated Cost	\$9,775.00

"Diques" R1, R2, R3, R4 (Damage 8):

Cost Type	Amount (\$M)
Design and Construction	\$99,723.00
Total Project Estimated Cost	\$99,723.00

Boiler's dining room (Damage 9):

Cost Type	Amount (\$M)
Equipment Purchase	\$3,995.00
Total Project Estimated Cost	\$3,995.00

NPDES office (Damage 10):

Cost Type	Amount (\$M)
Equipment Purchase	\$995.00
Total Project Estimated Cost	\$995.00

Units 5 & 6 (Damage 11):

Cost Type	Amount (\$M)
Equipment Purchase	\$19,500.00
Total Project Estimated Cost	\$19,500.00



General Mechanic Workshop – North (Damage 12):

Cost Type	Amount (\$M)
Design and Construction	\$185,743.00
Total Project Estimated Cost	\$185,743.00

Power Plant Rehabilitation (Damage 18 - two contracts):

Cost Type	Amount (\$M)
Design and Construction (\$83,450 + \$87,566)	\$171,016.00
Total Project Estimated Cost	\$171,016.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope is not applicable to this completed work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature



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Section 9. PREPA Project Sponsor Comments

Comments

<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature



Section 10. Attachments

10.1. Project Detailed Cost Estimates

- Damage 2 CT 84660 / JR Industrial Contractors Inc. / \$413,235.00
- Damage 3 CT 84662 / JR Industrial Contractors Inc. / \$478,216.00
- Damage 4 CT 79158 / ESMO Corporation / \$37,000.00
- Damage 5 PO 79775 / MR Franceschini Inc. / \$95,535.00
- Damage 6 CT 80480 / NSES Inc. / \$9,775.00
- Damage 8 CT 74983, Amendment 1 / Industrial Technical Services / \$99,723.00
- Damage 9 CT 82153 / AIT Technologies Inc. / \$3,995.00
- Damage 10 CT 82152 / AIT Technologies Inc. / \$995.00
- Damage 11 CT 78683 / Bermudez, Longo, Diaz-Masso, LLC / \$19,500.00
- Damage 12 CT 82831 / Vital Energy Corporation / \$185,743.00
- Damage 18 (A) CT 80458 / ENATURA LLC / \$86,125.00
- Damage 18 (B) CT 80617 / ENATURA LLC / \$96,864.00

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures





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10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>