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

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| **IN RE:**<br><br>REVIEW OF THE PUERTO RICO ELECTRIC POWER AUTHORITY´S 10-YEAR INFRASTRUCTURE PLAN – DECEMBER 2020 | **CASE NO.:** NEPR-MI-2021-0002<br><br>**SUBJECT:** Motion Submitting Seven (7) Scope of Works in Connection with Genera's FY2025 NME Budget Reallocation Request |

**MOTION SUBMITTING SEVEN (7) SCOPE OF WORKS IN CONNECTION WITH GENERA'S FY2025 NME BUDGET REALLOCATION REQUEST**

**TO THE HONORABLE PUERTO RICO ENERGY BUREAU:**

**COMES NOW GENERA PR LLC** ("Genera"), as agent of the Puerto Rico Electric Power Authority ("PREPA"),[1] through its counsel of record, and respectfully states and requests

1. On March 26, 2021, the Energy Bureau of the Puerto Rico Public Service Regulatory Board ("Energy Bureau") issued a Resolution and Order in the instant case, through which it ordered 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. 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 submission to the Puerto Rico Central Office for Recovery, Reconstruction and Resiliency ("COR3") and the Federal Emergency Management Agency ("FEMA"), and any other federal agency, and to continue reporting to the Energy Bureau and FEMA, within the next five (5) years, the progress of all

[1] Pursuant to the *Puerto Rico Thermal Generation Facilities Operation and Maintenance Agreement* ("LGA OMA"), dated January 24, 2023, executed by and among PREPA, Genera, and the Puerto Rico Public-Private Partnerships Authority, Genera is the sole operator and administrator of the Legacy Generation Assets (as defined in the LGA OMA) and the sole entity authorized to represent PREPA before the Energy Bureau with respect to any matter related to the performance of any of the O&M Services provided by Genera under the LGA OMA.

ongoing efforts related to the final approval of the submitted projects that are not yet approved by the Energy Bureau.

2. On January 24, 2023, Genera, PREPA and the P3 Authority executed the Puerto LGA OMA. Pursuant to the LGA OMA, Genera is the sole operator and administrator of the Legacy Generation Assets, and the exclusive entity authorized to represent PREPA before the Energy Bureau about any matter related to the performance of the O&M services provided by Genera under the LGA OMA. Additionally, **Genera holds sole responsibility for procuring and administering federal funds for projects to repair or replace the LGA**.

3. On May 25, 2024, LUMA[2] filed a document titled *Request for Approval of T&D Budgets and Submission of GenCo Budgets for FY 2025 and Budget Allocations for the Electric Power System*[3], through which LUMA submitted for approval the proposed budget for the Transmission & Distribution System ("T&D System"), developed by LUMA; the budget proposal for the legacy thermal generation units ("GenCo FY2025 Budget Proposal"), developed by Genera; the budget allocation approved by the P3A for the hydroelectric generating units and the public irrigation facilities; and the allocation for PREPA and its subsidiaries (collectively, the "FY2025 Budget Submission").

4. On June 26, 2024, following various procedural developments, the Energy Bureau issued a Resolution and Order titled *Determination on the FY25 Annual Budgets for the Electric Utility*[4], through which the Energy Bureau amended the proposed FY2025 Budget Submission as

[2] LUMA Energy, LLC and LUMA Energy Servco, LLC (jointly referred to as "LUMA").

[3] *See*, *Request for Approval of T&D Budgets and Submission of GenCo Budgets for FY 2025 and Budget Allocations for the Electric Power System,* filed by LUMA on dated May 25, 2024, in case *In Re: LUMA Initial Budgets and Related Terms of Service*, Case No.: NEPR-MI-2021-0004.

[4] *See*, Resolution and Order issued by the Energy Bureau, *In Re: LUMA Initial Budgets and Related Terms of Service*, Case No.: NEPR-MI-2021-0004, June 26, 2024 ("June 26th Resolution")

outlined in the June 26th Resolution. Additionally, the Energy Bureau concluded that the FY2025 Budget Submission as adjusted and amended per the June 26th Resolution, was in compliance with Act No. 57-2014[5] and the 2017 Rate Order[6].

5. On August 23, 2024, Genera filed a document titled *Motion to Request Reapportionment of GenCo's FY2025 Necessary Maintenance Expense Budget*[7], through which Genera requested authorization to reapportion its approved Necessary Maintenance Expense ("NME") Budget for Fiscal Year 2025 ("FY25"). Considering its operational requirements and with reliability of service as the cornerstone, alongside the determinations made by the Energy Bureau in the June 26th Resolution, Genera sought to reapportion the NME Budget to better align with the company's current and projected needs to ensure reliability. This realignment was essential to provide Genera the financial flexibility needed to adapt to changing operational demands. To achieve this, Genera proposed establishing new budget lines for the precise allocation of resources to critical areas. Additionally, the proposed reapportionment aimed to further reallocate resources to alternative federal funding sources.

6. On August 28, 2024, Genera filed a document titled *Motion to Supplement the Reapportionment Request of GenCo FY2025 Necessary Maintenance Expense Budget*[8], through which Genera expanded on the need for the requested reapportionment of funds, mainly those to

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[5] *See* Act No. 57, of May 27, 2014, as amended, also known as the "*Puerto Rico Energy Transformation and RELIEF Act*" ("Act No. 57-2014").

[6] *See* Final Resolution and Order, *In Re: Puerto Rico Electric Power Authority Rate Review*, Case No. CEPR-AP-2015-0001, January 10, 2017 ("2017 Rate Order").

[7] *See*, *Motion to Request Reapportionment of GenCo's FY2025 Necessary Maintenance Expense Budget*, filed by Genera on August 23, 2024 ("August 23rd Motion"), in case *In Re: LUMA Initial Budgets and Related Terms of Service*, Case No.: NEPR-MI-2021-0004.

[8] *See,* Motion *to Supplement the Reapportionment Request of GenCo FY2025 Necessary Maintenance Expense Budget*, filed by Genera on August 28, 2024 (" August 28th Motion")

operate the fourteen (14) TM2500 aeroderivative gas generators. Additionally, in the August 28th Motion, Genera articulated that to achieve reliability of service, it was crucial to reevaluate the approved NME budget allocation to better align with its current and projected operational demands. In pertinent part to this motion, Genera's proposed reallocation included modifying the source of funding for some existing and budgeted projects to alternative Federal Funding sources. Genera further argued that the proposed reallocation would enhance its resource management capabilities and the utilization of Federal Funding sources.

7. On September 9, 2024, the Energy Bureau issued a Resolution and Order titled *Genera's Reapportionment Petition* ("September 9th Resolution"), which specified the need for additional information to effectively review Genera's submission associated with the August 23rd Motion.

8. On September 23, 2024, Genera submitted a document titled *Motion Submitting Response to Resolution and Order Dated September 9, 2024* ("September 23rd Motion"), which provided detailed justifications for the proposed adjustments to the NME Budget allocations, directly addressing each concern raised by the Energy Bureau in its September 9th Resolution. Exhibit A to the September 23rd Motion detailed the reallocation of funds based on revised assessments, procurement updates, and equipment availability, while highlighting ongoing efforts to secure FEMA[9] funding for significant repairs, including turbine rotor refurbishments and environmental projects. Genera noted that these projects are scheduled for completion within FY2025, with some extending into subsequent fiscal years, ensuring the operational reliability, efficiency, and regulatory compliance of Puerto Rico's power generation infrastructure under Genera's management.

[9] Federal Emergency Management Agency ("FEMA")

9. On October 28, 2024, the Energy Bureau issued a Resolution and Order titled *FY 2025 NME Genera Budget Reallocation Petition* ("October 28th Resolution"). Through the October 28th Resolution, the Energy Bureau highlighted several issues with Genera's management of maintenance projects and funding strategies. Pertinent to this Motion, the Energy Bureau ordered Genera to submit to the Energy Bureau for review and approval, as part of the referenced case[10], within thirty (30) days of the notification of the October 28th Resolution, the required Scopes of Work ("SOW") for each of the NME projects to which Genera attributes Federal Funding.

10. In partial compliance with the October 28th Resolution, and to facilitate the review process by the Energy Bureau, Genera hereby submits, as Exhibit A to this Motion, seven (7) SOWs covering fifteen (15) NME projects to which Genera attributes Federal Funding. The remaining projects will be submitted within the deadline provided in the October 28th Resolution.

**WHEREFORE**, Genera respectfully requests that the Energy Bureau **take notice** of the above for all purposes and **deem** Genera to be in partial compliance to October 28th Resolution, as it pertains to the submittal of NME projects SOWs.

**RESPECTFULLY SUBMITTED.**

In San Juan, Puerto Rico, this 4th day of November 2024.

**ECIJA SBGB**
PO Box 363068
San Juan, Puerto Rico 00920
Tel. (787) 300.3200
Fax (787) 300.3208

*/s/ Jorge Fernández-Reboredo*
Jorge Fernández-Reboredo
jfr@sbgblaw.com
TSPR 9,669

*/s/ Alejandro López-Rodríguez*

[10] *In Re: Review of the Puerto Rico Electric Power Authority's 10 Year Infrastructure Plan - December 2020*, Case No. NEPR-MI-2021-0002

Alejandro López-Rodríguez
alopez@sbgblaw.com
TSPR 22,996

**CERTIFICATE OF SERVICE**

**I HEREBY CERTIFY** that a true and accurate copy of this motion was filed with the Office of the Clerk of the Energy Bureau using its Electronic Filing System and that I will send an electronic copy of this motion to the PREPA's counsel, Mirelis Valle Cancel, at mvalle@gmlex.net, and Alexis Rivera, at arivera@gmlex.net; and to LUMA's counsel, Margarita Mercado, at margarita.mercado@us.dlapiper.com, and Yahaira De La Rosa, at yahaira.delarosa@us.dlapiper.com.

In San Juan, Puerto Rico, this 4th day of November 2024.

*/s/ Alejandro López-Rodríguez*
Alejandro López-Rodríguez

**Exhibit A**

Version 0

**In Re: 4339 DR-PR Initial Scope of Work**

Project # 669498

## I. Overview

Project Name: 1. ASP Nautilus Rehabilitation Project

2. Improvements to the Pier and Replacement of Sections of Fuel Oil Pipelines

Project Type: 428 Detailed SOW

Project Location : Central Aguirre, Puerto Rico 00704

Latitude/Longitude : 17.95111, -66.23554

Version : 2

## II. Introduction

PREPA is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns the power plants for electric generation, transmission, and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 3.4 million people. Genera-PR is the operator authorized under a Public-Private Partnership agreement of the thermal generation facilities of Puerto Rico. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvement. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements.

On September 6, 2017, Puerto Rico's northern coastline was struck by Hurricane Irma, a Category 4 storm. Two weeks later, on September 17, Hurricane Maria tore through the island of Puerto Rico as a Category 5 storm. Subjected to 150+ mph winds and more than 25 inches of rain, 3.4 million residents lost power and

a great deal of infrastructure, including critical facilities, was damaged. In particular, the electrical infrastructure suffered catastrophic impacts. In the aftermath, diligent recovery and reconstruction have been going on, not only to restore the electrical infrastructure to pre-storm function and capacity, but to take this opportunity to bring it in line with current standards and technology. With the recovery funding available, "*Everyone can be sure that we are working responsibly to achieve efficiencies, reduce costs, decommission inefficient and polluting plants, and continue to transform our electrical system for the benefit of our economy and our people*" as Governor Pedro Pierluisi said, this being an opportunity to not just to rebuild the system but to transform it into a smarter, more resilient, and cleaner one. Puerto Rico's generation system must meet customer demand and have adequate additional capacity to comply with the reserve required by the standard operating procedures of the T&D system operator (LUMA). In terms of service continuity, the system must be reliable so that service interruptions are within the margins established in the electrical industry standards.

In 2020 the situation became more complicated when earthquakes events 4473DR-PR provoked more damages to Costa Sur Power Plant. Later, in September 2022, Hurricane Fiona 4671DR-PR also impacted Puerto Rico, destroying even more the already fragile generation assets. Unfortunately, the generation system presents critical performance metrics with a deficiency in capacity to meet the energy demand and the minimum reserve requirements. The forced outage percentage of the units is increasing while the generation capacity decreases. This combination of factors puts the continuity of the service at high risk, adversely affecting the quality of life of those who live in PR.

Genera is responsible for operating and maintaining PREPA's legacy asset generation fleet pursuant to the Generation O&M Agreement. The current fleet condition presents poor performance due to the impact of hurricanes María and Fiona. Generation capacity has been reduced to 46% of installed capacity. In addition, of the generation units in operation, about 32% or 640 MW, are disconnected monthly, causing thousands of customers to suffer interruptions in their service.

The Puerto Rico Electric Power Authority ("PREPA") is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns and operates electric generation, transmission and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 1.5 million customers. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvements. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements. On January 2023, PREPA and the Puerto Rico Public-Private Partnership Authority ("P3 Authority") selected Genera PR, LLC ("Genera") to operate, maintain and modernize the Generation system of PREPA for ten years through a public-private partnership.

To enhance the system's reliability, Genera proposes to submit for approval the Detailed Scope of Work (SOW) to COR3 and FEMA for the project 669498 under DR-4339-PR Public Assistance. The document provides a description of the project including scope, schedule, and cost estimates as well as Environmental & Historical Preservation ("EHP") requirements.

## III. Facility Description

PREPA's Generation System Maintenance Program was developed and is being executed using the industry standards, following the equipment's manufacturer maintenance recommendations and PREPA policies. Periodical inspections, tests are performed to identify critical component repairs/replacement in equipment such as boilers, turbines, generators, power transformers, circuit breakers, protection and control relays, grounding mats, and auxiliary equipment.

Genera PR proposes to perform necessary repair and/or replacement of critical generation components pursuant to the Generation O&M Agreement between PREPA, the P3 Authority, and Genera PR.

Aguirre is located on the south coast of Puerto Rico in the Salinas municipality and is owned and operated by PREPA. The Plant has two 450-MW thermal steam power generation units, two 296-MW combined cycle (CC) power generation units that can also operate in simple-cycle mode, and two 21-MW black-start capable gas turbines (GTs). The nameplate capacity of the Plant is 1534 MW (gross), including the units that are currently out of service for repairs

The two 450-MW thermal units, referred to as Units 1 and 2, were commissioned in 1971 and 1972, respectively. A 1991 upgrade to 500 MW on their General Electric (GE) (formerly ABB) steam turbines (STs) is based on 3430-kilopound/hour main steam flow at 2400 psig and 1000°F and hot reheat conditions of 594 psig and 1000°F. Boiler restrictions on steam flow have limited the units to their original 450 MW. The boilers burn heavy fuel oil (HFO) and are tangentially fired models by Combustion Engineering, now GE Power.


*Figure 1: Facility Location*

## IV. Codes and Standards

The following will be referenced when applying specific codes, specifications, and standards to the project design:

- Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, February 2020.
- Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
- FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
- Rus 1730B - The referenced standards, as defined and as per their requirements, state every system is required to have an Emergency Restoration Plan (ERP) in the event of a major failure or storm event.

## V. Project Description - ASP Nautilus Rehabilitation Project

This project aims to ensure the structural integrity and operational efficiency of the Nautilus Tanks through comprehensive rehabilitation and protective measures. Tanks are located in 17.949504, -66.227227. 3 tanks are going to be rehabilitated with approximate dimensions of 48 FT diameter, 19.89 FT high and 3,000 SF of interior wall surface.

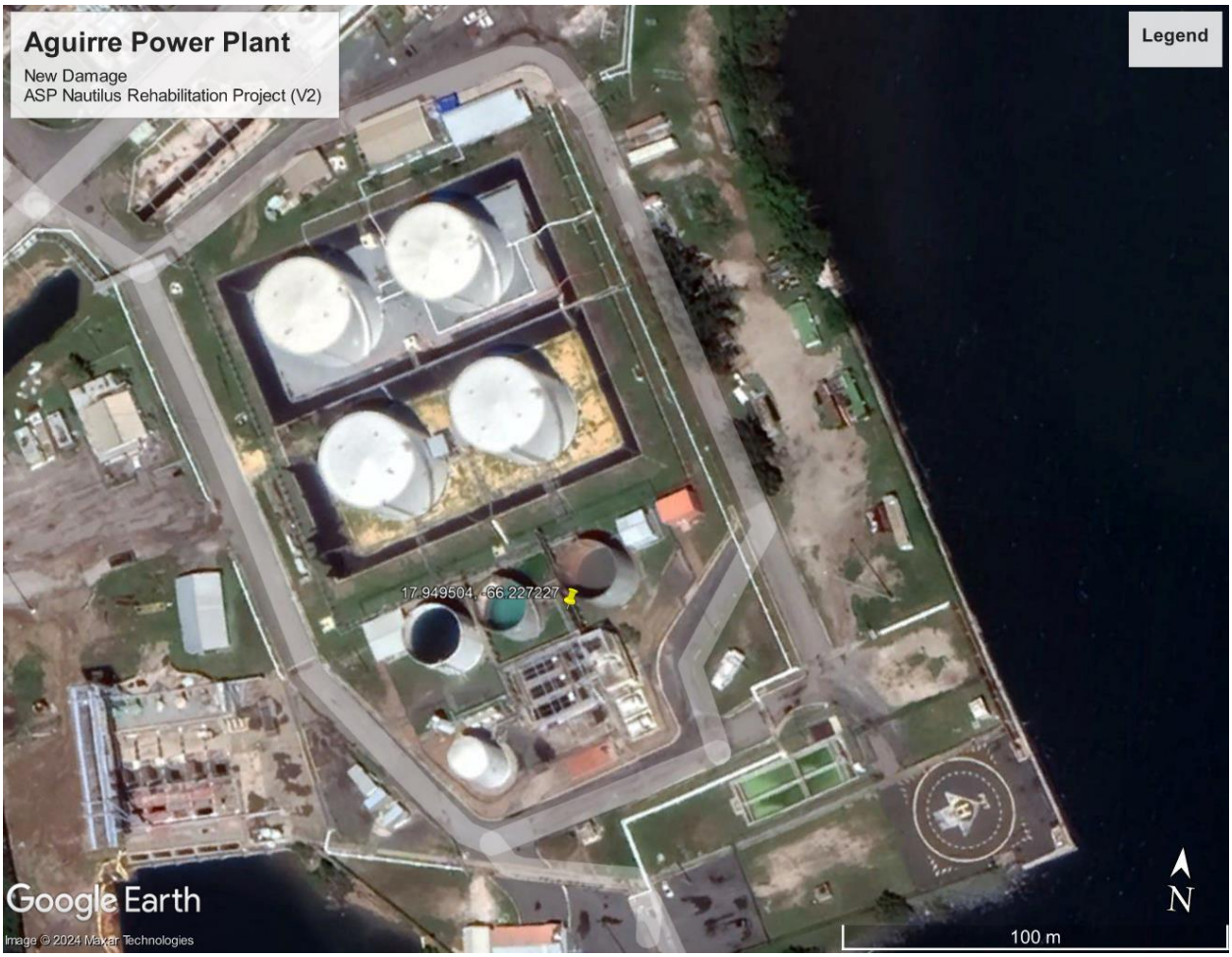



*Figure 2: Nautilus Tanks Location*

**Initial Scope of Work**

The work includes providing labor, supervision, materials, equipment, inspection and everything necessary for the installation and acceptance by Genera PR of a Coating-Ceramic Reinforced Lining system throughout the interior and anti-corrosion protection in the external part of the Nautilus Tanks that is located in the facilities of the Aguirre Power Plant, Salinas PR. Part of the work will be mechanical repair with welded steel plates to repair walls, channels and floor

of tanks where the loss of thickness exceeds 50% of the original thickness. The scope of work will also include removing and reinstalling all the existing mechanical equipment that is part of the operation of the tank, i.e., mixers, motor-transmission, sprocket and chain for the flocculation wheels, transmission of the syphon car with chain mechanism and honeycombs.

It will be the responsibility of the contractor to mechanically dismantle the tank systems in order to have adequate access to the interior of the tank and to be able to carry out the repair work by welding and interior coating. You shall store and identify the parts, equipment, and mechanical attachments of the tank operating mechanism in a safe and protected area to prevent damage. After the completion of the rehabilitation work, he will be in charge of assembling all the parts and equipment and will leave the tank mechanism operable. Any hardware required for the reinstallation of the equipment again will be the responsibility of the contractor, it is allowed to reuse the existing hardware that is in good condition and not corroded. The contractor should consider that during the re-installation of the equipment, any incidental damage to the interior cladding must be repaired at its own cost and following the manufacturer's recommendations for repair.

A. Installation of Coating-Ceramic Reinforced Lining System
    1. Apply Coating-Ceramic Reinforced Lining system throughout the interior of the Nautilus Tanks.
        a. Interior Surface Area: 3,000 sq. ft.
        b. Additional Coating Area: 250 sq. ft.
        c. Top Area Coating: 500 sq. ft.
        d. Remove new and existing weld spatter debris prior to preparation and coating application.
    2. Apply anti-corrosion protection to the external parts of the tanks.
        a. This includes the additional 250 sq. ft. area specified for anti-corrosion coating.

B. Mechanical Repairs
    1. Repair of Tank Walls, Channels, and Floor
        a. Welded Steel Plates: Repair areas where the loss of thickness exceeds 50% of the original thickness.
    2. Removal and Reinstallation of Mechanical Equipment
        a. Mixers: Dismantle, store, and reinstall.
        b. Motor-Transmission: Dismantle, store, and reinstall.
        c. Sprocket and Chain for Flocculation Wheels: Dismantle, store, and reinstall.
        d. Transmission of the Syphon Car: Dismantle, store, and reinstall.
        e. Honeycombs: Remove, pressure wash (1,800 psi), store, and reinstall.

C. Dismantling and Reassembly
    1. Mechanically dismantle the tank systems to provide adequate access for interior repairs.
    2. Store and identify all parts, equipment, and mechanical attachments safely to prevent damage.
    3. Reassemble all parts and equipment post-rehabilitation, ensuring the tank mechanism is operable.

D. Hardware and Incidental Repairs
    1. Supply any necessary hardware for reinstallation, reusing existing hardware that is in good condition and not corroded.
    2. Repair any incidental damage to the interior cladding during reinstallation at the contractor's cost, following the manufacturer's repair recommendations.

E. Structural Repairs
    1. Catwalk Railings
        a. Reinforcement: Check for damage and modify to meet OSHA codes. Strengthen the railings in areas identified as unsafe. This may involve adding additional support structures or reinforcing existing ones.
    2. Control Panel Structure

a. Frame Dimensions: The new frame for the control panels will be constructed using 4-inch channels, matching the original dimensions.
b. Roof Plates: The coated with anti-corrosion roof plates will be installed as part of the structure matching the existing structure to ensure proper fit and coverage.

**Special Considerations to be Addressed Under this Scope of Work**

A. Lead Inspection Test shall be performed prior any activities takes place.
    1. If necessary, Lead abatement of existing surfaces will be performed.
B. All repairs of weld patches on the tank wall and floor must be tested with a Penile Dye Non-Destructive Test (NDT Penetrant Tints-PT).
C. All welds shall be made in such a manner as to ensure complete fusion with the base metal, within the limits specified for each joint and strictly following the Qualified Procedure.
D. Welders must be qualified for the type of work to be performed.
E. Only procedures qualified by the company will be accepted to carry out the welding work.
F. Removal and installation of existing transmission and installation of flocculation wheels, including chain supply in non-metallic chain UHMW material. The contractor shall render the equipment operable.
G. Included is the removal, 1,800psi pressure washing, and installation of the clarifier honeycombs once the interior tank rehabilitation work is completed. The contractor will be responsible for installing them and all the materials necessary for their installation will be reused from the existing ones. Red cedar woods will also be reused, and it will be the contractor's responsibility for cleaning and safe storage during the course of the project.
H. The catwalk railings around the tanks will be reinforced, as they are unsafe on some sides and require repair. The contractor will check the guardrails for damage and modify them to meet OSHA codes.

I. The replacement of the protective structure of the control panel is contemplated, the contractor will install the new frame of the structure of the control panels of each tank, includes the installation of roof plates, the frame will be in a 4" channel as the original and of the same dimensions. It shall be coated with the anti-corrosion system specified for the outside of the tank.

J. The entire surface and all components inside and an additional area of (250pc) of the exterior shall be part of the anti-corrosion coating and preparation of the surface to the grade of NACE No.1 White Metal Blast Cleaning, this includes but is not limited to (manholes, nozzles, chime, walls(shell), internal divider walls, buffer area of all UV-exposed walls- non-immersion areas, butt gutters and their components, flanges, saddles, reinforcing plates, anchor bolts, MH covers, stairs, props, pipes, overflow, pipe supports, angles, angles, brackets of fiberglass panels, valves, posts, angles, Unistrut's, stiffener , etc.).

    1. The interior surface area for preparation to NACE No.1 grade and application of Ceramic Lining is approximately 3,000(pc) three thousand square feet. The contractor will be responsible for making its own area calculations for the coating material estimate.

K. The scope of work inside the tank included NACE No.1surface preparation and application of a system equal or with better performance than Chesterton ARC S2-Epoxy Ceramic Reinforced Lining to the entire floor, all internal walls, supports, channels, non-submerged wall stops, and all interior components to NACE No.1 / White Metal Blast Cleaning.

L. The scope of work inside the tank includes surface preparation and application of a system equal or with better performance than Chesterton ARC 858-Epoxy Ceramic Reinforced Filler Lining to an additional area of (250pcs) to the grade of NACE No.1/White Metal Blast Cleaning. Adry weight of 1/16" in: (62.0mils) DFT for the calculation of the required material. This material will be applied in areas and zones that have been lost due to corrosion not exceeding 50% of the original thickness of the steel member.

M. The scope of work inside the tank includes the application of a system equal or with better performance than PPG PSX-700 siloxane epoxy coating to the stop and top area of all tank walls and channels. This coating will be applied

over the Chesterton ARC S2 product and will have a width of (3') feet. The approximate coating area shall be approximately: 500 (pc) sq. ft. The dry thickness for the PPG PSX-700 will be: 4.0 mils (dft).

N. Maintenance will be performed on the outside of the tank where sandblasting will be performed to NACE No. 2 SSPC-SP10 Near White Metal for areas with corrosion until an anchor profile of 3 @ 5 mils is reached to apply a system equal or with better performance than ARC 858 filler material [(performance for 858 (50pc)] followed by a layer of a system equal or with better performance than Amercoat 240 product epoxy in thickness of 5 mils. For the tank area to be removed, it should be done in combination of the surface preparations to the grade SSP C-SP1, SSPC-SP2 & SSPC-SP3, and then apply 2 coats of a system equal or with better performance than the PSX700 topcoat in thickness of 5 mils. In the areas or zones where the base metal is exposed a system equal or with better performance than Amercoat 240 epoxy must be applied first at 5 mils DFT prior to the application of the topcoat. The contractor is responsible for performing the exterior area calculations for the estimation of materials and labor for this item.

O. This includes sealing on the outside of the perimeter of the tank between the steel floor plate of the tank and the concrete floor to prevent moisture from entering through the bottom of the floor plate. A groove must be made in the tie of the concrete floor and the steel tola to apply the Sika Flex 1A product. The thickness of the system will be in accordance with the manufacturer's technical data.

P. The contractor and/or sub-contractor must have no less than 5 years of experience in tank rehabilitation and must include evidence of at least three references of similar complexity work with their proposal. Proposals that do not meet this requirement will not be accepted.

Initial Scope of Work

Improvements to the Pier and Replacement of Sections of Fuel Oil Pipelines

The work includes providing labor, supervision, materials, equipment, inspection and everything necessary for Improvements to the Pier and Replacement of Sections of Fuel Oil Pipelines at. Aguirre Power Plant, located in Salinas PR

The Contractor will inspect and address everything necessary for the rehabilitation and replacement of 12- and 8-inches diameter Bunker-C and Diesel pipeline sections including multiple of the supports and structural components of this operational infrastructure facility. The scope of work includes the rehabilitation, by repair, replace and coating system on the entire exterior surface of the pipeline and related structural support elements. The utilities impacted under this scope were used for the fuel oil supply needs in Aguirre Steam Plant Units 1 & 2 respectively.

In addition, the rehabilitation of the existing pile support type foundation at the Fuel Oil Receiving Dock is required to be rehabilitated using a *Pile Encapsulation System* designed to address these issues attained to marine and industrial environment and applications. Such System shall be in accordance with technical specifications an applicable codes described on *Special Considerations to be Addressed Under this Scope of Work* described below.

Whereas necessary it will be the responsibility of the contractor to store and identify the parts, equipment, and mechanical attachments of the utility under repair in a safe and protected area to prevent damage. After the completion of the rehabilitation work, he will be in charge of assembling all the parts and equipment and will leave the mechanism operable. Any hardware required for the reinstallation of the equipment again will be the responsibility of the contractor, it is allowed to reuse the existing hardware that is in good condition and not corroded. The contractor should consider that during the re-installation of the equipment, any incidental damage to the interior cladding must be repaired at its own cost and following the manufacturer's recommendations for repair.

**Special Considerations to be Addressed Under this Scope of Work**

1. All existing coating must be removed from the entire area of the pipe to be rehabilitated, modified and/or repaired. Then, the surface preparation and application of the coating system will be carried out according to the technical specifications and special conditions. The location of the pipe sections and elements related will be identified and selected by Genera-PR in a previous NDT Inspection to be supplied as part of the contract specifications.
2. The scope of work includes the preparation of the surface with abrasive media to the grade of NACE No.2 or "Near White Wet Abrasive Blast Cleaning / SSPC-SP 10 (WAB)/NACE WAB-2" with a Flash-Rust grade no greater than NACE WAB-2 L (Light) and application of anti-corrosion coating to the entire area of the pipe impacted by the rehabilitation work, beams, columns, structural supports, saddle plates, U-bolts, all installed components, steel areas exposed to the environment, and all impacted areas.
3. All existing coating (paint) must be removed from the entire area of the pipe to be rehabilitated, modified and/or repaired.
4. Lead Inspection Test shall be performed prior any activities takes place.
    a. If necessary, Lead abatement of existing surfaces will be performed.

5. All repairs of weld patches must be tested with a Penile Dye Non-Destructive Test (*NDT Penetrant Tints-PT).*
6. All welds shall be made in such a manner as to ensure complete fusion with the base metal, within the limits specified for each joint and strictly following the Qualified Procedure.
7. Welders must be qualified for the type of work to be performed. The contractor shall submit to the project manager on behalf of Genera PR the qualification of the welder and the substance of his qualification. Only procedures qualified by the company will be accepted to carry out the welding work.
8. Whereas necessary Handling, cutting, fabrication, beveling, removal coating will be performed by the contractor.
9. Radiographic (RT) X-Rays tests shall be included at 100% of the welds in the pipe sections which will be replaced, according to ASME code B31.3 (ASME Code for Pressure Piping, B31) and B16.5 (Pipe Flanges and Flanged Fittings). Include ASNT

inspectors and perform NDT – PT Penetrant Liquid tests on all welds in the pipe, according to ASME code B31.3 Latest edition Including Inspection (VT) and Final Report of all welding work performed on the project by a CWI@ASME-AWS certified welding inspector.

10. Whereas necessary the works includes the cutting and installation of steel plates on the concrete bases:
11. All repairs in pipelines, supports and related components shall comply with current building codes (ACI-318, ASTM, ASME, AISC, ICRI, UBC-IBC) and others that apply according to their latest editions. The design and details must be submitted to Genera-PR for evaluation.
12. Whereas necessary Pipelines/Utilities Lettering will be supplied by Contractor.
13. All work described shall be performed by experienced personnel and in accordance with the best practices of:
    a. NACE "National Association of Corrosion Engineers"
    b. SSPC "The Society of Protective Coatings"
    *c.* ISO *"International Organization for Standardization"*
    d. EPA
    e. OSHA
    f. API "American Petroleum Institute"
    g. ASME "American Society of Mechanical Engineers"
    h. ASNT "The American Society for Nondestructive Testing"
    i. ASTM "American Society for Testing Materials"
    j. Agencias locales y estatales con jurisdicción
    k. ACI "American Concrete Institute"
    l. ICRI "International Concrete Repair Institute"
    m. AISC "American Institute of Steel Construction"
    n. UBC-IBC "Uniform Building Code-International Building Code"
    o. All others that apply

## VI. Cost Estimate

| Item | Description | Cost |
|---|---|---|
| | ASP Nautilus Rehabilitation Project (3 tanks) | $1,550,000.00 |
| | Improvements to the Pier and Replacement of Sections of Fuel Oil Pipelines | $3,250,000.00 |
| | | **$4,800,000.00** |

## VII. Environmental & Historic Preservation ("EHP") Requirements

A. Other than design, planning and non-destructive due diligence studies, no construction work will commence prior to the issuance of specific expressed written FEMA approval for the specific scope of work. FEMA required EHP compliance review will precede the execution of each proposed scope of work submitted by PREPA through its agent Genera PR to FEMA. PREPA through its agent Genera PR is aware of its responsibility for coordinating, notifying, obtaining permits, and complying with applicable federal, state, and local laws, regulations, and executive orders and understands that failure to comply with EHP requirements will jeopardize FEMA funding.

B. See the following for general methods of repair and list of equipment to be used:

a. Dismantle & Salvage
- Complete testing for any containments or hazardous waste.
- All contaminated materials will be delivered to the approved waste disposal as per Disposal Management Plan.
- If equipment is to be salvaged, it will be loaded and removed from the site.
- All debris will be taken to the approved waste disposal facility as per the Waste Management Plan.

C. List of Equipment to be used but it is not limited to the following:
   - Crawler Crane
   - Semi-truck with low-bed trailer
   - Man lift

D. Removal of vegetation
   - N/A.

E. List the type of debris:
   - Metal scrap, domestic waste, wood.
   - The debris will be separated and taken to an approved waste disposal facility. Location permits and supporting documentation will be provided at closeout.

F. Description of Staging Area:
   - N/A – only minor equipment staging near the existing equipment to be dismantled and installed.

G. Hazardous Material:

a. Describe the activity and the hazardous material involved. Calculate the quantity to be generated or disposed and include the management and disposal plan.
   - The identified hazardous materials that can be found in the Generation Plant are asbestos, PCBs, Lead, SF6 gas, oil from the transformer & breakers. These hazardous materials, will be handled, and disposed of as per Federal and State Laws.
   - GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations
   - These products and their residues will be stored in special covered areas for disposal by an authorized company and provided with temporary spill controls until collected. All paint

containers and curing compounds will be tightly sealed and stored when in use. Excess paint will not be discharged to the storm system, but properly disposed of, according to the manufacturer's instructions.

- Material amounts will be provided by a certified management contractor performing a site evaluation calculation for asbestos and lead paint.
- Prior to the start of any equipment dismantling activities, inspections for the presence of asbestos will be conducted by a trained and certified contractor.
- All asbestos waste found at the Generation Plant will be disposed of at an approved landfill designated by the Department of Environmental Health & Safety. All asbestos waste generated will be bagged and transported in accordance with all applicable State and Federal regulations. There will be no exceptions.
- Any asbestos spills will be cleaned up immediately to prevent the dispersal of fibers. Prudence will be exercised to avoid contamination of laboratory facilities or exposure of personnel to asbestos. Asbestos spills will be cleaned up with wet methods and/or a High-Efficiency Particulate-Air (HEPA) filtered vacuum.

b. If the project includes building demolition with asbestos, provide a copy of the EQB approved plan or evidence of plan submission.

- Not Applicable.

c. If the project includes disposal of damaged transformers or wood poles with creosote, include the management and disposal plan. The plan must include the final disposition site.

- Transformers and pole disposal will be handled as per the Waste Disposal Management Plan. GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.
- The removal of the transformer will require testing of the existing oil for PCB's levels, drain oil, and delivery to the approved waste disposal site as per Environmental Regulations.

- Removal of wood poles with creosote treatment will be handled according to the Federal and State Laws.

H. Water Crossings:

a. Specify if the project will affect a waterway or body of water.

- Not Applicable

b. Modification of a body of water or wetland: Does the project require dredging, excavation, disposal of material, adding fill material that might result in any modification of a body of water or wetland designated as "waters of the U.S."?

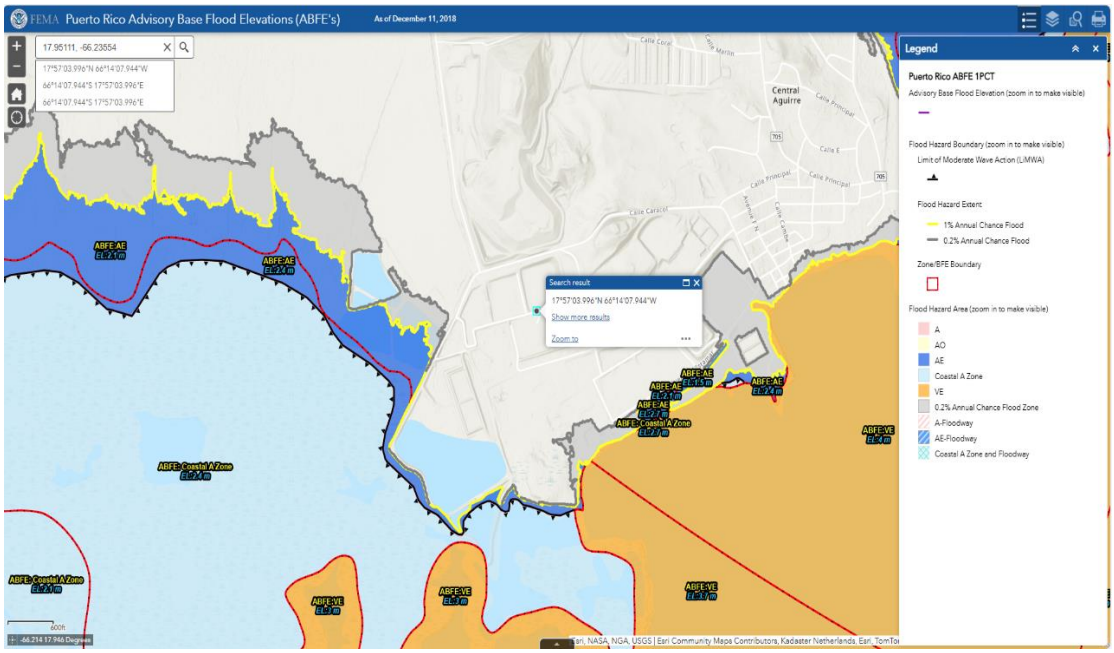
- Not Applicable

c. Does the project alter a watercourse, water flow patterns, or a drainage way, regardless of its floodplain designation?

- Not Applicable

d. Flood zone: Is the project located in a flood zone, floodway or will it have a negative impact on the flood zone?

- The Generation Plant is in Flood Zone A (SFHA per ABFE). Equipment replacement only. No negative impact.
- In accordance with the updated version of FEMA Region II Memorandum, dated October 10, 2017, Guidance for the use of Available Flood Hazard Information for the Government of Puerto Rico in complying with FEMA Policy 104-008-2, 44 CFR Part 9, and Executive Order 11988 (Floodplain Management). All hazard mitigation proposals under alternative procedures must be designed using the best available flood hazard data and in compliance with applicable regulations and policy.


I. Structure Age:

a. Provide the construction date of any buildings or structures within the project. Include those near the project.

- Not Applicable.

American International Plaza
250 Av. Luis Muñoz Rivera, Suite 1200
San Juan, PR 00918

b. Provide date and information of any prior repairs, remodeling and/or rehabilitation of the property. Include current and previous use of building or structure.
    - Not Applicable.
c. If a building includes both older and newer sections, confirm which section of the building the work is being done.
    - Not Applicable
d. Include plans, drawings, blueprints, any architectural documentation available for new construction or substantial improvements regardless of the age of the building or structure.
    - Not Applicable
e. Provide at least five color pictures of every structure or building, showing the four facades and the contextual view. Include additional pictures of architectural details. Also provide pictures of buildings (45 years old or older) on the proximities.
    - Not Applicable.

J. Ground Disturbance
a. Provide a description of the new ground disturbance by giving the dimensions (area, depth, volume, etc.), if any. Include an aerial photo map showing the extent of the disturbance with coordinates.
    - Not Applicable.

*Figure 7 – Add photos of equipment*

b. The project SOW will not affect water or sewer utility services.
c. Indicate the prior/current use of the area to be impacted.
    - Not Applicable. Area is an existing Generation Plant. 100% of the work to be completed will be within the existing and already impacted Generation Plant perimeter.

d. Explain how materials will be stockpiled and disposed of.

- Not Applicable.
- GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.

e. Specify final disposition site.
- The disposal of materials will be handled as per the Waste Management Plan.

K. Soil Stabilization measures:

a. Does the project involve any soil stabilization measures?
- No

L. Required Permits

List of the permits needed for Costa Sur Site:

- Environmental Compliance Determination in Oficina de Gerencia de Permisos
- General Consolidate Permit – OGPe
- Genera Will provided proof of all permits as a Condition of FEMA Record of Environmental Considerations (REC).

## VIII. Overview

| | |
|---|---|
| Project Name: | 1. Hot Gas Path Inspection Unit 1-4<br>2. Gas Turbine 2-3 Major Repair ACC<br>3. Gas Turbine Rotor Inspection & Repair<br>4. ASP CC Condensate Tank 2 - LELM |
| Project Type: | 428 ISOW |
| Project Location : | Central Aguirre, Puerto Rico 00704 |
| Latitude/Longitude : | 17.95111, -66.23554 |
| Version : 0 | |

## IX. Introduction

PREPA is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns the power plants for electric generation, transmission, and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 3.4 million people. Genera-PR is the operator authorized under a Public-Private Partnership agreement of the thermal generation facilities of Puerto Rico. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvement. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements.

On September 6, 2017, Puerto Rico's northern coastline was struck by Hurricane Irma, a Category 4 storm. Two weeks later, on September 17, Hurricane Maria tore through the island of Puerto Rico as a Category 5 storm. Subjected to 150+ mph winds and more than 25 inches of rain, 3.4 million residents lost power and

a great deal of infrastructure, including critical facilities, was damaged. In particular, the electrical infrastructure suffered catastrophic impacts. In the aftermath, diligent recovery and reconstruction have been going on, not only to restore the electrical infrastructure to pre-storm function and capacity, but to take this opportunity to bring it in line with current standards and technology. With the recovery funding available, "*Everyone can be sure that we are working responsibly to achieve efficiencies, reduce costs, decommission inefficient and polluting plants, and continue to transform our electrical system for the benefit of our economy and our people*" as Governor Pedro Pierluisi said, this being an opportunity to not just to rebuild the system but to transform it into a smarter, more resilient, and cleaner one. Puerto Rico's generation system must meet customer demand and have adequate additional capacity to comply with the reserve required by the standard operating procedures of the T&D system operator (LUMA). In terms of service continuity, the system must be reliable so that service interruptions are within the margins established in the electrical industry standards.

In 2020 the situation became more complicated when earthquakes events 4473DR-PR provoked more damages to Costa Sur Power Plant. Later, in September 2022, Hurricane Fiona 4671DR-PR also impacted Puerto Rico, destroying even more the already fragile generation assets. Unfortunately, the generation system presents critical performance metrics with a deficiency in capacity to meet the energy demand and the minimum reserve requirements. The forced outage percentage of the units is increasing while the generation capacity decreases. This combination of factors puts the continuity of the service at high risk, adversely affecting the quality of life of those who live in PR.

Genera is responsible for operating and maintaining PREPA's legacy asset generation fleet pursuant to the Generation O&M Agreement. The current fleet condition presents poor performance due to the impact of hurricanes María and Fiona. Generation capacity has been reduced to 46% of installed capacity. In addition, of the generation units in operation, about 32% or 640 MW, are disconnected monthly, causing thousands of customers to suffer interruptions in their service.

The Puerto Rico Electric Power Authority (“PREPA”) is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns and operates electric generation, transmission and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 1.5 million customers. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvements. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements. On January 2023, PREPA and the Puerto Rico Public-Private Partnership Authority (“P3 Authority”) selected Genera PR, LLC (“Genera”) to operate, maintain and modernize the Generation system of PREPA for ten years through a public-private partnership.

To improve the system's reliability, Genera proposes to submit for approval the Detailed Scope of Work (SOW) to COR3 and FEMA for the project 669815 under DR-4339-PR Public Assistance. The document provides a description of the project including scope, schedule, and cost estimates as well as Environmental & Historical Preservation ("EHP") requirements.

The project location can be seen in Figure 1.

*Figure 3: Project Location*


## X. Project Description

PREPA's Generation System Program was developed and is being executed using the industry standards, following the equipment's manufacturer recommendations and PREPA policies. Periodical inspections, tests are performed to identify critical component repairs/replacement in equipment such as boilers, turbines, generators, power transformers, circuit breakers, protection and control relays, grounding mats, and auxiliary equipment.

Genera PR proposes to perform necessary repair and/or replacement of critical generation components pursuant to the Generation O&M Agreement between PREPA, the P3A, and Genera PR.

A detailed SOW version will be submitted to FEMA per facility.

Aguirre is located on the south coast of Puerto Rico in the Salinas municipality and is owned and operated by PREPA. The Plant has two 450-MW thermal steam

power generation units, two 296-MW combined cycle (CC) power generation units that can also operate in simple-cycle mode, and two 21-MW black-start capable gas turbines (GTs). The nameplate capacity of the Plant is 1534 MW (gross), including the units that are currently out of service for repairs

The two 450-MW thermal units, referred to as Units 1 and 2, were commissioned in 1971 and 1972, respectively. A 1991 upgrade to 500 MW on their General Electric (GE) (formerly ABB) steam turbines (STs) is based on 3430-kilopound/hour main steam flow at 2400 psig and 1000°F and hot reheat conditions of 594 psig and 1000°F. Boiler restrictions on steam flow have limited the units to their original 450 MW. The boilers burn heavy fuel oil (HFO) and are tangentially fired models by Combustion Engineering, now GE Power.

## XI. Codes and Standards

The following will be referenced when applying specific codes, specifications, and standards to the project design:

- Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, February 2020.
- Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
- FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
- Rus 1730B - The referenced standards, as defined and as per their requirements, state every system is required to have an Emergency Restoration Plan (ERP) in the event of a major failure or storm event.
- LUMA Operation Reserve Standard - LUMA, as the T&D System Operator, is responsible for ensuring that the system has enough generation resources to function properly. This is also known as resource adequacy. To fulfill this

responsibility, LUMA has set a standard for Operational Reserve Capacity. The formula used to determine this capacity is detailed below, with Genera's input in the second column. LUMA may choose to modify the formula or inputs used, such as averages, without input from Genera.

## XII. Initial Scope of Work (work to be complete and/or % work completed)

### *A) Hot Gas Path Inspection Unit 1-4*

The purpose of the project is to complete the Hot Gas Path Inspection (HGPI) and Generator Rotor Installation for the Unit GT 1-4, performing various inspections and repair works and reassembling the generator's rotor.

The HGPI includes the removal of the complete combustion system and a detailed inspection of the turbine nozzles and turbine buckets. To perform the HGPI, Contractor shall supply the TA, supervision and resources to lift up the upper half of the Turbine Casing and the Stage 1 Turbine Nozzle. The nozzles, shrouds and rotor buckets will be inspected visually by the TA while still in place in the unit. In no mayor concerns are detected in the visual inspection, Contractor shall reassemble the unit, including the replacement of major components.

**GAS TURBINE - Work to be completed:**

- General Electric, 50MW capacity. Output voltage 13.8KV.
- OEM: GE Energy Power
- Model: MS7001B modified to EA by GE Power
- SN: 238023
- Fired hours: 21,080 on Distillate #2 fuel

**Mechanical Works**

1. Perform disassembly of 1ea gas turbine, including generator rotor for repair, inspection, clearances work.
2. Perform assembly of 1ea gas turbine and generator rotor.
3. Perform final report on all the specific work performed, including tests reports, submittals, progress reports.

***B) Gas Turbine 2-3 Major Repair ACC***

This project consists of a repair and Inspection of the Frame 7000 Combustion Turbine Unit 2-3, located at Aguirre Combined Cycle power plant.

**TURBINE GENERATOR - Work to be completed:**

**Mechanical Works**

1. Perform disassembly of 1ea turbine rotor for repair, inspection, and refurbishment work.
2. Perform assembly of 1ea turbine rotor.
3. Perform final report on all the specific work performed, including tests reports, submittals, progress reports.

***C) Gas Turbine Rotor Inspection & Repair***

This project consists of repair and Inspection to Gas turbine rotor.

**TURBINE ROTOR - Work to be completed:**

**Mechanical Works**

1. Perform disassembly of 1ea turbine rotor for repair, inspection, balance and refurbishment work, as per OEM specifications.
2. Perform assembly of 1ea turbine rotor.
3. Perform final report on all the specific works performed, including tests reports, submittals, progress reports.

***D) ASP CC Condensate Tank 2***

Tank #2 at Aguirre Combined Cycle Plant, this scope includes, but is not limited to, the remotion of the existing tank, design and build of a new tank, new valves, and tank concrete base rehabilitation. The dimensions of the new tank shall be D=26 ft. H=32 ft., with a nominal capacity of 127,092. The new tank shall be fitted with a spiral stairway, self-supported umbrella roof, top platform (6 ft. x 6 ft.), level indication, level transmitter, grounding, tank identification, stainless steel isolation valves, etc. Tank design shall be based on the latest revision of API-650 and ASCE 7-16 code. A complete internal and external coating system shall be applied as per specifications. The contractor shall be responsible for all required rigging, safety, permits and the appropriate store of the coatings, grit blast material, and equipment.

All pipes, valves, and pumps adjacent and related to the New Condensate Tank #2 at Aguirre Combined Cycle Plant shall be replaced due to unreliable conditions caused by an aggressive corrosion. Condensate Make-Up Pumps (2) and Deaerator Emergency Make-Up Pumps (2) shall be replaced. Partial demolition and reconstruction of pumps concrete bases shall also be included. All piping headers shall be replaced.

**SITE: Work to be completed**

1. Remove and replace 3ea of luminaries Eaton Champ FMVA FMVA20L

**CONDENSATE TANK #2: Work to be completed**

**Existing Condensate Tank**

1. Remove and properly dispose 1ea existing steel tank
   - Fabricated in place 1ea new 26ft[dia.] x 32ft[height]steel tank. Capacity 127,092 gals
   - As per codes API-650 & ASCE 7-16
2. Perform demolition 1ea concrete pad
3. Perform construction for 1ea reinforced concrete pad

**Piping System:**

1. Remove and replace 10 dia. sch 40 seamless carbon steel pipe deaerator dump headers, including insulation.
2. Remove and replace 12 dia. sch 40 seamless carbon steel pipe deaerator emergency make-up pumps suction header, including insulation.
3. Remove and replace 8 dia. sch 40 seamless carbon steel pipe deaerator emergency make-up pumps discharge header, including insulation.
4. Remove and replace 4 dia. sch 40 seamless carbon steel pipe deaerator emergency make-up pumps recirculation, including" insulation.
5. Remove and replace 4 dia. sch 40 seamless carbon steel pipe condenser make-up pumps suction header, including insulation.
6. Remove and replace 6 dia. sch 40 seamless carbon steel pipe condenser make-up pumps suction header, including insulation.
7. Remove and replace 4 dia. sch 40 seamless carbon steel pipe condenser make-up pumps discharge header, including insulation.
8. Remove and replace 1-1/2 dia. sch 40 seamless carbon steel pipe condenser make-up pumps recirculation, including insulation.
9. Remove and replace 2 dia. sch 40 seamless carbon steel pipe condensate return, including insulation.
10. Remove and replace 3ea of 12 dia. Carbon steel 150psi flanged gate valves.
11. Remove and replace 2ea of 8 dia. Carbon steel 150psi flanged gate valves.

12. Remove and replace 3ea of 6 dia. Carbon steel 150psi flanged gate valves.
13. Remove and replace 7ea of 4 dia. Carbon steel 150psi flanged gate valves.
14. Remove and replace 2ea of 8 dia. Carbon steel 150psi flanged swing check valves.
15. Remove and replace 4ea of 4 dia. Carbon steel 150psi flanged swing check valves.
16. Remove and replace 2ea of 1-1/2 dia. Carbon steel 150psi flanged swing check valves.
17. Remove and replace 2ea of 4 dia. Carbon steel 150psi flanged globe valves.
18. Remove and replace 2ea of 1-1/2 dia. Carbon steel 150psi flanged globe valves.
19. Remove and replace 12ea of 1 dia. Carbon steel 150psi ball valves.

**Pumps:**

20. Remove and replace 2ea of condensate pumps.
21. Perform demolition 2ea concrete pad for condensate pumps.
22. Perform construction for 2ea concrete pad for condensate pumps
23. Remove and replace 2ea of deaerator emergency pumps.
24. Perform demolition 2ea concrete pad for deaerator emergency pumps.
25. Perform construction for 2ea concrete pad for condensate pumps

**XIII.** Estimate Cost:

A) Hot Gas Path Inspection (HGPI) and Generator Rotor Installation for the Unit GT 1-4: $ 2,200,000.00

B) Major Inspection Aguirre Combined Cycle Unit 2-3: $ 9,500,000.00

C) Gas Turbine Rotor Inspection & Repair: $ 2,100,000.00

D) ASP CC Condensate Tank 2: Cost $2,000,000.00

Estimated cost for Project: $ 15,800,000.00

## XIV. Environmental & Historic Preservation ("EHP") Requirements

B. Other than design, planning and non-destructive due diligence studies, no construction work will commence prior to the issuance of specific expressed written FEMA approval for the specific scope of work. FEMA required EHP compliance review will precede the execution of each proposed scope of work submitted by PREPA through its agent Genera PR to FEMA. PREPA through its agent

Genera PR is aware of its responsibility for coordinating, notifying, obtaining permits, and complying with applicable federal, state, and local laws, regulations, and executive orders and understands that failure to comply with EHP requirements will jeopardize FEMA funding.

C. See the following for general methods of repair and list of equipment to be used:

b. Dismantle & Salvage
- Complete testing for any containments or hazardous waste.
- All contaminated materials will be delivered to the approved waste disposal as per Disposal Management Plan.
- If equipment is to be salvaged, it will be loaded and removed from the site.
- All debris will be taken to the approved waste disposal facility as per the Waste Management Plan.

D. List of Equipment to be used but it is not limited to the following:
- Crawler Crane
- Semi-truck with low-bed trailer
- Man lift
- Forklift

E. Removal of vegetation
- N/A.

F. List the type of debris:
- Metal scrap, domestic waste, wood.
- The debris will be separated and taken to an approved waste disposal facility. Location permits and supporting documentation will be provided at closeout.

G. Description of Staging Area:

- N/A – only minor equipment staging near the existing equipment to be dismantled and installed.

H. Hazardous Material:

b. Describe the activity and the hazardous material involved. Calculate the quantity to be generated or disposed and include the management and disposal plan.

- The identified hazardous materials that can be found in the Generation Plant are asbestos, PCBs, Lead, SF6 gas, oil from the transformer & breakers. These hazardous materials will be handled, and disposed of as per Federal and State Laws.
- GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations
- These products and their residues will be stored in special covered areas for disposal by an authorized company and provided with temporary spill controls until collected. All paint containers and curing compounds will be tightly sealed and stored when in use. Excess paint will not be discharged to the storm system, but properly disposed of, according to the manufacturer's instructions.
- Material amounts will be provided by a certified management contractor performing a site evaluation calculation for asbestos and lead paint.
- Prior to the start of any equipment dismantling activities, inspections for the presence of asbestos will be conducted by a trained and certified contractor.
- All asbestos waste found at the Generation Plant will be disposed of at an approved landfill designated by the Department of Environmental Health & Safety. All asbestos waste generated will be bagged and transported in accordance with all applicable State and Federal regulations. There will be no exceptions.

- Any asbestos spills will be cleaned up immediately to prevent the dispersal of fibers. Prudence will be exercised to avoid contamination of laboratory facilities or exposure of personnel to asbestos. Asbestos spills will be cleaned up with wet methods and/or a High-Efficiency Particulate-Air (HEPA) filtered vacuum.

c. If the project includes building demolition with asbestos, provide a copy of the EQB approved plan or evidence of plan submission.

- Not Applicable.

d. If the project includes disposal of damaged transformers or wood poles with creosote, include the management and disposal plan. The plan must include the final disposition site.

- Transformers and pole disposal will be handled as per the Waste Disposal Management Plan. GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.
- The removal of the transformer will require testing of the existing oil for PCB's levels, drain oil, and delivery to the approved waste disposal site as per Environmental Regulations.
- Removal of wood poles with creosote treatment will be handled according to the Federal and State Laws.

l. Water Crossings:

b. Specify if the project will affect a waterway or body of water.

- Not Applicable

c. Modification of a body of water or wetland: Does the project require dredging, excavation, disposal of material, adding fill material that might result in any modification of a body of water or wetland designated as "waters of the U.S."?

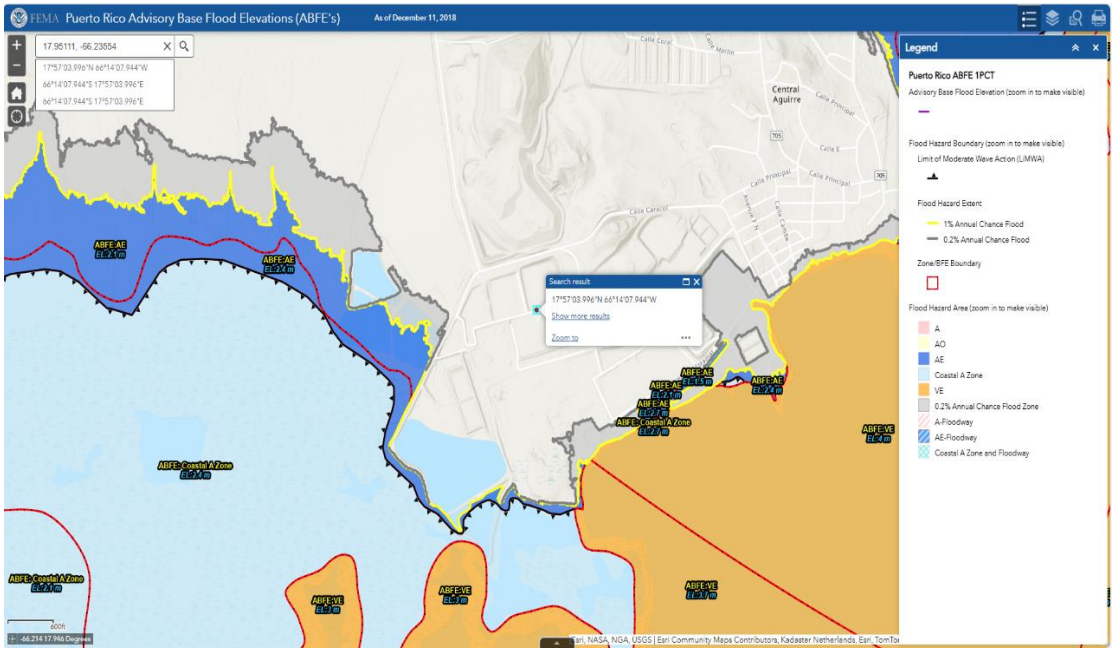
- Not Applicable

d. Does the project alter a watercourse, water flow patterns, or a drainage way, regardless of its floodplain designation?

- Not Applicable

e. Flood zone: Is the project located in a flood zone, floodway or will it have a negative impact on the flood zone?

- The Generation Plant is in Flood Zone A (SFHA per ABFE). Equipment replacement only. No negative impact.
- In accordance with the updated version of FEMA Region II Memorandum, dated October 10, 2017, Guidance for the use of Available Flood Hazard Information for the Government of Puerto Rico in complying with FEMA Policy 104-008-2, 44 CFR Part 9, and Executive Order 11988 (Floodplain Management). All hazard mitigation proposals under alternative procedures must be designed using the best available flood hazard data and in compliance with applicable regulations and policy.




J. Structure Age:

b. Provide the construction date of any buildings or structures within the project. Include those near the project.

- Not Applicable.

c. Provide date and information of any prior repairs, remodeling and/or re-habilitation of the property. Include current and previous use of building or structure.

- Not Applicable.

d. If a building includes both older and newer sections, confirm which section of the building the work is being done.

- Not Applicable

e. Include plans, drawings, blueprints, any architectural documentation available for new construction or substantial improvements regardless of the age of the building or structure.

- Not Applicable

f. Provide at least five color pictures of every structure or building, showing the four facades and the contextual view. Include additional pictures of architectural details. Also provide pictures of buildings (45 years old or older) on the proximities.

- Not Applicable.

f. Provide an aerial photo map with the GPS coordinates of each structure.
   - Refer to Figure 1

K. Ground Disturbance

b. Provide a description of the new ground disturbance by giving the dimensions (area, depth, volume, etc.), if any. Include an aerial photo map showing the extent of the disturbance with coordinates.
   - Not Applicable.

*Figure 7 – Add photos of equipment – Pending*

c. The project SOW will not affect water or sewer utility services.

d. Indicate the prior/current use of the area to be impacted.
   - Not Applicable. Area is an existing Generation Plant. 100% of the work to be completed will be within the existing and already impacted Generation Plant perimeter.

e. Explain how materials will be stockpiled and disposed of.
   - Not Applicable.
   - GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.

f. Specify final disposition site.
   - The disposal of materials will be handled as per the Waste Management Plan.

L. Soil Stabilization measures:

b. Does the project involve any soil stabilization measures?
   - No

M. Required Permits

List of the permits needed for Aguirre Site:

- Environmental Compliance Determination in Oficina de Gerencia de Permisos (OGPe)
- General Consolidate Permit - OGPe

Genera will provide proof of all permits as a Condition of FEMA Record of Environmental Considerations.

## XV. Overview

| | |
|---|---|
| Project Name: | DR4339 663383-Repair of Diesel Tank No. 2 Cambalache Power Plant |
| Project Type: | 428 Detailed Scope of Works |
| Project Location : | Carretera 681 Cambalache Arecibo, PR 00612 |
| Latitude/Longitude : | 18.47101, -66.69963 |
| Version : 0 | |

## XVI. Introduction

PREPA is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns the power plants for electric generation, transmission, and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 3.4 million people. Genera-PR is the operator authorized under a Public-Private Partnership agreement of the thermal generation facilities of Puerto Rico. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvement. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements.

On September 17, Hurricane Maria tore through the island of Puerto Rico as a Category 5 storm. Subjected to 150+ mph winds and more than 25 inches of rain, 3.4 million residents lost power and a great deal of infrastructure, including critical facilities, was damaged. In particular, the electrical infrastructure suffered catastrophic impacts. In the aftermath, diligent recovery and reconstruction have been going on, not only to restore the electrical infrastructure to pre-

storm function and capacity, but to take this opportunity to bring it in line with current standards and technology. With the recovery funding available, "*Everyone can be sure that we are working responsibly to achieve efficiencies, reduce costs, decommission inefficient and polluting plants, and continue to transform our electrical system for the benefit of our economy and our people*" as Governor Pedro Pierluisi said, this being an opportunity to not just to rebuild the system but to transform it into a smarter, more resilient, and cleaner one. Puerto Rico's generation system must meet customer demand and have adequate additional capacity to comply with the reserve required by the standard operating procedures of the T&D system operator (LUMA). In terms of service continuity, the system must be reliable so that service interruptions are within the margins established in the electrical industry standards.

Unfortunately, the generation system presents critical performance metrics with a deficiency in capacity to meet the energy demand and the minimum reserve requirements. The forced outage percentage of the units is increasing while the generation capacity decreases. This combination of factors puts the continuity of the service at high risk, adversely affecting the quality of life of those who live in PR.

Genera is responsible for operating and maintaining PREPA's legacy asset generation fleet pursuant to the Generation O&M Agreement. The current fleet condition presents poor performance due to the impact of hurricanes María and Fiona. Generation capacity has been reduced to 46% of installed capacity. In addition, of the generation units in operation, about 32% or 640 MW, are disconnected monthly, causing thousands of customers to suffer interruptions in their service.

The Puerto Rico Electric Power Authority ("PREPA") is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns and operates electric generation, transmission and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 1.5 million customers. Since 2017, PREPA has performed damage assessments, studies, and evaluations to

identify areas of repair and improvements. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements. On January 2023, PREPA and the Puerto Rico Public-Private Partnership Authority (“P3 Authority”) selected Genera PR, LLC (“Genera”) to operate, maintain and modernize the Generation system of PREPA for ten years through a public-private partnership.

To improve the system's reliability, Genera proposes submitting for approval the Detailed Scope of Work (SOW) to COR3 and FEMA for Diesel Tank No. 2 under DR-4339-PR 428 Public Assistance. The document provides a description of the project including scope, schedule, and cost estimates as well as Environmental & Historical Preservation ("EHP") requirements.

The project location can be seen in Figure 1.

Figure 4: Project Location


## XVII. Project Description

PREPA's Generation System Rehabilitation Program was developed and is being executed using the industry standards, following the equipment's manufacturer recommendations and PREPA policies. Periodical inspections and tests are performed to identify critical component repairs/replacement in equipment such as boilers, turbines, generators, power transformers, circuit breakers, protection and control relays, grounding mats, and auxiliary equipment.

Genera PR proposes to perform necessary repair and/or replacement of critical generation components pursuant to the Generation O&M Agreement between PREPA, P3A, and Genera PR.

A detailed SOW version will be submitted to FEMA per facility.

Cambalache Power Plant is in the northern part of Puerto Rico in the Arecibo municipality and is owned and operated by PREPA and location is 21.2 acres. The Plant consists of three simple-cycle Alstom (now General Electric [GE] Power) gas turbines (GT), each with a nameplate capacity of 82.5 MW; it began operation between 1997 and 1998.

Cambalache Power Plant is arranged in parallel simple cycle units. Each turbine is coupled to a dedicated generator and is rated at 82.5 MW when firing low sulfur distillate oil No. 2. The units were commissioned in 1997–1998 to improve the quality and reliability of PREPA's electrical system and can operate base loaded or with up to 60% rapid spinning reserve. The GT equipment and facilities are dedicated to support the operation of the simple-cycle plant with redundancy and unit-specific systems for independent operation as required.

Genera PR, on behalf of Puerto Rico Power Authority respectfully requests COR3 and FEMA a project for the rehabilitation of the Diesel Tank No. 2.

## XVIII. Codes and Standards

The following will be referenced when applying specific codes, specifications, and standards to the project design:

- Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, February 2020.
- Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
- FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
- Rus 1730B - The referenced standards, as defined and as per their requirements, state every system is required to have an Emergency Restoration Plan (ERP) in the event of a major failure or storm event.

- LUMA Operation Reserve Standard - LUMA, as the T&D System Operator, is responsible for ensuring that the system has enough generation resources to function properly. This is also known as resource adequacy. To fulfill this responsibility, LUMA has set a standard for Operational Reserve Capacity. The formula used to determine this capacity is detailed below, with Genera's input in the second column. LUMA may choose to modify the formula or inputs used, such as averages, without input from Genera.

## XIX. Scope of Work

All the proposed work will be conducted within the mentioned plot area, which is demarcated in the provided site Map. Cambalache Power Plant is surrounded by a dike. This doesn't allow storm water to flow to a natural body of water. The ground works that will be conducted at this facility include clearing and grubbing, demolition, excavation, cleaning, and disposition of the surplus material among others. Actual excavation depths will be defined further in the design process, however, by current standard and codes, the typical depth range shall vary between 1 to 5 FT depending on the groundwork to be performed.

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 design drawings and technical specifications progress.

The scope of works covers the rehabilitation work of the Diesel Fuel Tank D-2 at the Cambalache Generation Plant. The scope includes but is not limited to the (D=122'; H=50') tank's interior and exterior mechanical works, interior and exterior surface preparation and coating application, rehabilitation of tank's dike HDPE Liner, and final technical report.

Project includes the tank's interior and exterior surface preparation and anticorrosive coating system application on the entire exterior and part of the interior of the tank. The interior application includes columns, rafters, shells, tank bottom and roof. The exterior application includes shells, roofs, manholes, stairs, nozzles, wind-girders, piping and piping supports, etc.

The lead inspection shall be conducted prior to any activities taking place. If necessary, lead abatement of existing surfaces will be performed.

Gases removal before construction activities ie. welding, cleaning, painting, etc. will be performed.

1. Perform 14 SY. of DEMOLITION of 12 IN DIA Pipe supports
   **Location:** Start 18.470884, -66.700406 End 18.470804, -66.700498
   **Material**: Reinforced concrete
   **Ground Area:** 4 ea. x 10 FT long x 2 FT wide = 80 SF (0.001836 acres)
   **Waste volume**: 4 ea. x 3 FT high x 2 FT wide x 10 FT long = 240 cubic feet = 9 CM
2. Repair of 190 LF connection welds inside the 12 IN DIA pipes

**Existing Tank Specs:**
**Location Coordinates:** 18.470800, -66.700892
**Tank Material:** Steel Metal
**Tank Dimensions:** 122 FT DIA x 50 FT (H)

**Tank Exterior**

3. Remove and replace 1 EA of 24 IN DIA manhole flange 1/4" in thick C.S ASTM A36. **See included drawing from the company CBI (24 Dia. API 650 / ROOF MANHOLE) DWG. No.25, for specific details. The connections will be made by welding.**
4. Remove and replace 2 EA. of Fire Arresters Flanges See included drawing of the company CBI (10 Day ROOF NOZZLE) DWG. No.26, for specific details. The connections will be made by welding.
5. Remove and replace 1 EA of Spotlights system
6. Repair of 384 LF of connection welds between the roof and the circumferential stop angle of the tank envelope and between the overlapping roof plates
7. Install 384 LF of polyurethane seal between the tank bottom chine and the concrete base
8. Remove and replace 384 LF of railings

9. Remove and replace 6 EA of railings supports connection plates
10. Remove and replace 384 LF of handrails
11. Remove and replace 384 LF of safety platform
12. Remove and replace 384 LF of FRP polymer gratings
13. Remove and replace 25 LF of 4 IN DIA Sch 40 riser pipe (screws, nuts and/or studs)
14. Remove and replace 1 EA Flange 150#
15. Install 24 IN of 8 IN DIA Sch. 40 tube wind girder casings
16. Install 3 EA of 20 IN wide x 36 IN long Lap-welded patch plates in the Wind-Girder area
17. Remove and replace 10 EA of 18 In wide x 12 FT long x ¼ IN thick lap-welded patch plates in the wind girder area
18. Remove and replace a section of 60 LF x 3 IN wide of the wind girder
19. Remove and replace 12 EA of wind girder brackets
20. Remove and replace 10 EA of wind girder back up bars
21. Remove and replace 10 EA of welded patch plates 8 IN wide x 3/16 IN thick
22. Install 3 EA of 20 IN x 36 IN x 1/4 IN thick lap-welded patch plates in the wind girder area
23. Install 760 SF of ¼ IN thick lap-welded patch plates in the roof area. All connections will be by welding
24. Install 1 EA. of 12 IN x 48 IN lap-welded patch plates.
25. Install 1 EA. of 12 IN x 32 IN lap-welded patch plates.
26. Install 1 EA. of 12 IN x 96 IN lap-welded patch plates.
27. Install 2 EA. of 12 IN x 48 IN lap-welded patch plates.
28. Prepare/Paint 50 LF of Fire Suppression Piping. 12 in Diameter
29. with SIKAFlex-1a / White color coating
30. Prepare/Paint 19,163 SF of Tank Shell with SIKAFlex-1a / White color coating
31. Prepare/Paint 4,000 SF of Accessories (Manholes, Nozzles, Stairs, Vents, Valves, Etc)
32. Install 4 EA. of lettering

**Tank Interior**

33. Repair 150 LF of 5/16 IN fillet weld in the overlapping floor plates, connection between floor and walls, and in the annular plates

34. Repair 4 EA clip bars at the base of the central column
35. Install 5 EA of 24 IN long x 12 IN wide x ¼ IN thick patch plates in the interior floor
36. Install 33 EA of 12 IN long x 12 IN wide x ¼ IN thick patch plates in the interior floor
37. Repair 35 LF of welding in the tank floor pitted area
38. Repair 75 IN of welding in the 24 IN DIA manhole
39. Install 30 EA of 6 IN DIA and ¼ IN thick lap-welded patch plates in the ceiling area. All connections will be by welding
40. Install 5 EA. of 12 IN x 12 IN lap-welded patch plates in the ceiling area. All connections will be by welding
41. Remove and replace the level system See included drawing of the company CBI (TANK LEVEL GAUGE)
42. Prepare/Paint 11,689 SF of Tank Bottom
43. Prepare/Paint 3,833 SF of Tank Interior Walls
44. Prepare/Paint 11,689 SF of Tank Ceiling
45. Prepare/Paint 4,270 SF of Tank Ceiling Rafters
46. Prepare/Paint 33.2 SF of Column
47. Perform 1 EA of non-destructive testing in compliance with API-653 for the tank repair

Project Cost Estimate: $ 2,000,000.00

## XX. Environmental & Historic Preservation ("EHP") Requirements

A. Other than design, planning and non-destructive due diligence studies, no construction work will commence prior to the issuance of specific expressed written FEMA approval for the specific scope of work. FEMA requested EHP compliance review will precede the execution of each proposed scope of work submitted by PREPA through its agent Genera PR to FEMA. PREPA through its agent Genera PR is aware of its responsibility for coordinating, notifying, obtaining permits, and complying with applicable federal, state, and local laws, regulations, and executive orders and understands that failure to comply with EHP requirements will jeopardize FEMA funding.

B. See the following for general methods of repair and list of equipment to be used:

c. Dismantle & Salvage

- Complete testing for any containments or hazardous waste.
- All contaminated materials will be delivered at the approved waste disposal as per the Disposal Management Plan.
- If the equipment is to be salvaged, it will be loaded and removed from the site.
- All debris will be taken to the approved waste disposal facility as per the Waste Management Plan.

E. List of Equipment to be used but it is not limited to the following:

- Crawler Crane
- Semi-truck with low-bed trailer
- Man lift

F. Removal of vegetation

- Construction will be done on the same pre-existing tank location

G. List the type of debris:

- Metal scrap, domestic waste, wood, concrete
- The debris will be separated and taken to an approved waste disposal facility. Location permits and support documentation will be provided close-out.

H. Description of Staging Area:

- The staging area will be located near the existing equipment to be dismantled and installed.

I. Hazardous Material:

a. Describe the activity and the hazardous material involved. Calculate the quantity to be generated or disposed and include the management and disposal plan.

- The identified hazardous materials that can be found in the Generation Plant are asbestos, PCBs, Lead, SF6 gas, oil from the transformer & breakers. These hazardous materials will be handled and disposed of as per Federal and State Laws.
- GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations
- These products and their residues will be stored in special covered areas for disposal by an authorized company and provided with temporary spill controls until collected. All paint containers and curing compounds will be tightly sealed and stored when in use. Excess paint will not be discharged to the storm system, but properly disposed of, according to the manufacturer's instructions.
- Material amounts will be provided by a certified management contractor performing a site evaluation calculation for asbestos and lead paint.
- Prior to the start of any equipment dismantling activities, inspections for the presence of asbestos will be conducted by a trained and certified contractor.
- All asbestos waste found at the Generation Plant will be disposed of at an approved landfill designated by the Department of Environmental Health & Safety. All asbestos waste generated will be bagged and transported in accordance with all applicable State and Federal regulations. There will be no exceptions.
- Any asbestos spills will be cleaned up immediately to prevent the dispersal of fibers. Prudence will be exercised to avoid contamination of laboratory facilities or exposure of

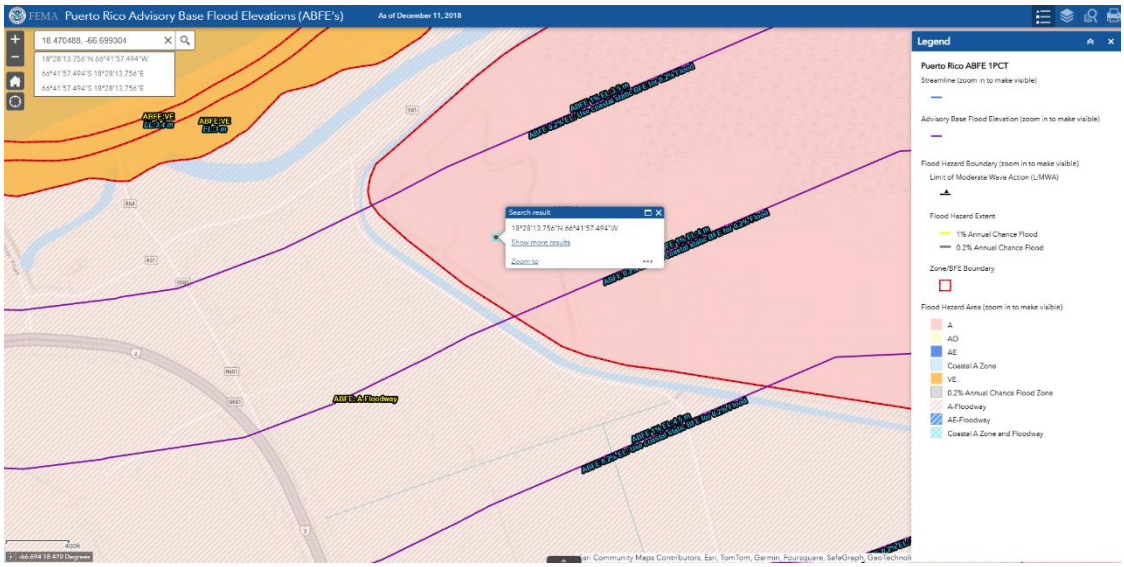
personnel to asbestos. Asbestos spills will be cleaned up with wet methods and/or a High-Efficiency Particulate-Air (HEPA) filtered vacuum.

b. If the project includes building demolition with asbestos, provide a copy of the EQB approved plan or evidence of plan submission.
    - To be provided. If applies
c. If the project includes disposal of damaged transformers or wood poles with creosote, include the management and disposal plan. The plan must include the final disposition site.
    - Transformers and pole disposal will be handled as per the Waste Disposal Management Plan. GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.
    - The removal of the transformer will require testing of the existing oil for PCB's levels, drain oil, and delivery to the approved waste disposal site as per Environmental Regulations.
    - Removal of wood poles with creosote treatment will be handled according to the Federal and State Laws.

J. Water Crossings:
a. Specify if the project will affect a waterway or body of water.
    - Generation Plant site is surrounded by an existing dike. PLANCES will be provided
b. Modification of a body of water or wetland: Does the project require dredging, excavation, disposal of material, adding fill material that might result in any modification of a body of water or wetland designated as "waters of the U.S."?
    - Generation Plant site is surrounded by an existing dike. PLANCES will be provided
c. Does the project alter a watercourse, water flow patterns, or a drainage way, regardless of its floodplain designation?

- Generation Plant site is surrounded by an existing dike. PLAN CES will be provided

d. Flood zone: Is the project located in a flood zone, floodway or will it have a negative impact on the flood zone?
    - The Generation Plant is in Flood Zone A (SFHA per ABFE). No negative impact.
    - In accordance with the updated version of FEMA Region II Memorandum, dated October 10, 2017, Guidance for the use of Available Flood Hazard Information for the Government of Puerto Rico in complying with FEMA Policy 104-008-2, 44 CFR Part 9, and Executive Order 11988 (Floodplain Management). All hazard mitigation proposals under alternative procedures must be designed using the best available flood hazard data and in compliance with applicable regulations and policy.




K. Structure Age:
   a. Provide the construction date of any buildings or structures within the project. Include those near the project.
      - Not Applicable.

d. Provide date and information of any prior repairs, remodeling and/or rehabilitation of the property. Include current and previous use of building or structure.
   - Not Applicable.

e. If a building includes both older and newer sections, confirm which section of the building the work is being done.
   - Not Applicable

f. Include plans, drawings, blueprints, any architectural documentation available for new construction or substantial improvements regardless of the age of the building or structure.
   - To be provided

g. Provide at least five color pictures of every structure or building, showing the four facades and the contextual view. Include additional pictures of architectural details. Also provide pictures of buildings (45 years old or older) in proximity.

- Not Applicable.

g. Provide an aerial photo map with the GPS coordinates of each structure.
   - Provided in Figure 1

L. Ground Disturbance

c. Provide a description of the new ground disturbance by giving the dimensions (area, depth, volume, etc.), if any. Include an aerial photo map showing the extent of the disturbance with coordinates.
   - Provided in the Scope of Work

d. The project SOW will not affect water or sewer utility services.

e. Indicate the prior/current use of the area to be impacted.
   - The area is an existing Generation Plant. 100% of the work to be completed will be within the existing and already impacted Generation Plant perimeter.

f. Explain how materials will be stockpiled and disposed of.
   - GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.

g. Specify final disposition site.
   - The disposal of materials will be handled as per the Waste Management Plan.

M. Soil Stabilization measures:

c. Does the project involve any soil stabilization measures?
   - No

N. Required Permits

List of the permits needed for Camabalache Site: Permits may include but are not limited to:

- Environmental Compliance Determination in Oficina de Gerencia de Permisos
- General Consolidate Permit – OGPe

- Genera Will provided proof of all permits as a Condition of FEMA Record of Environmental Considerations (REC).

## XXI. Overview

New Damage: FAASt Costa Sur Power Plant Permanent Unit 5 Cooling Towers Repairs

Damage: #1229685; FAASt Costa Sur Power Plant Permanent Repairs Inner Barrel Bundle]

Project Location: PR-127 Km 15.7, Tallaboa Ward, Guayanilla, Puerto Rico 00656

Latitude/Longitude: 18.001478, -66.751438

## XXII. Objective

The primary purpose of this amendment is to submit changes in the Intended Scope of Work in accordance with FEMA requirements and guidance for Section 428. This initiative aims to provide comprehensive details of the work to be performed to restore the Costa Sur Steam Plant facility to its pre-disaster conditions. The amendment outlines the specific modifications needed to align the project with FEMA's regulatory framework, ensuring compliance with all relevant standards and protocols. It includes a detailed breakdown of the tasks required, such as structural repairs, equipment replacement, and system upgrades, all designed to enhance the plant's resilience and operational efficiency. Additionally, the amendment addresses the financial aspects, providing a revised budget that reflects the necessary adjustments to meet FEMA's funding criteria. By adhering to these guidelines, the project aims to secure the necessary support and resources to effectively rehabilitate the Costa Sur Steam Plant, thereby restoring its full functionality and service capacity.

## XXIII. Introduction

PREPA is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns the power plants for electric generation, transmission, and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 3.4 million people. Genera-PR is the operator authorized under a Public-Private Partnership agreement of the thermal generation facilities of Puerto Rico. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair, replacement and improvement. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements.

On September 6, 2017, Puerto Rico's northern coastline was struck by Hurricane Irma, a Category 4 storm. Two weeks later, on September 17, Hurricane Maria tore through the island of Puerto Rico as a Category 5 storm. Subjected to 150+ mph winds and more than 25 inches of rain, 3.4 million residents lost power and a great deal of infrastructure, including critical facilities, was damaged. In particular, the electrical infrastructure suffered catastrophic impacts. In the aftermath, diligent recovery and reconstruction have been going on, not only to restore the electrical infrastructure to pre-storm function and capacity, but to take this opportunity to bring it in line with current standards and technology. With the recovery funding available, "*Everyone can be sure that we are working responsibly to achieve efficiencies, reduce costs, decommission inefficient and polluting plants, and continue to transform our electrical system for the benefit of our economy and our people*" as Governor Pedro Pierluisi said, this being an opportunity to not just to rebuild the system but to transform it into a smarter, more resilient, and cleaner one. Puerto Rico's generation system must meet customer demand and have adequate additional capacity to comply with the reserve required by the standard operating procedures of the T&D system operator (LUMA). In terms of service continuity, the system must be reliable so that service interruptions are within the margins established in the electrical industry standards.

In 2020 the situation became more complicated when earthquakes events 4473DR-PR provoked more damages to Costa Sur Power Plant. Later, in September 2022, Hurricane Fiona 4671DR-PR also impacted Puerto Rico, destroying even more the already fragile generation assets. Unfortunately, the generation system presents critical performance metrics with a deficiency in capacity to meet the energy demand and the minimum reserve requirements. The forced outage percentage of the units is increasing while the generation capacity decreases. This combination of factors puts the continuity of the service at high risk, adversely affecting the quality of life of those who live in PR.

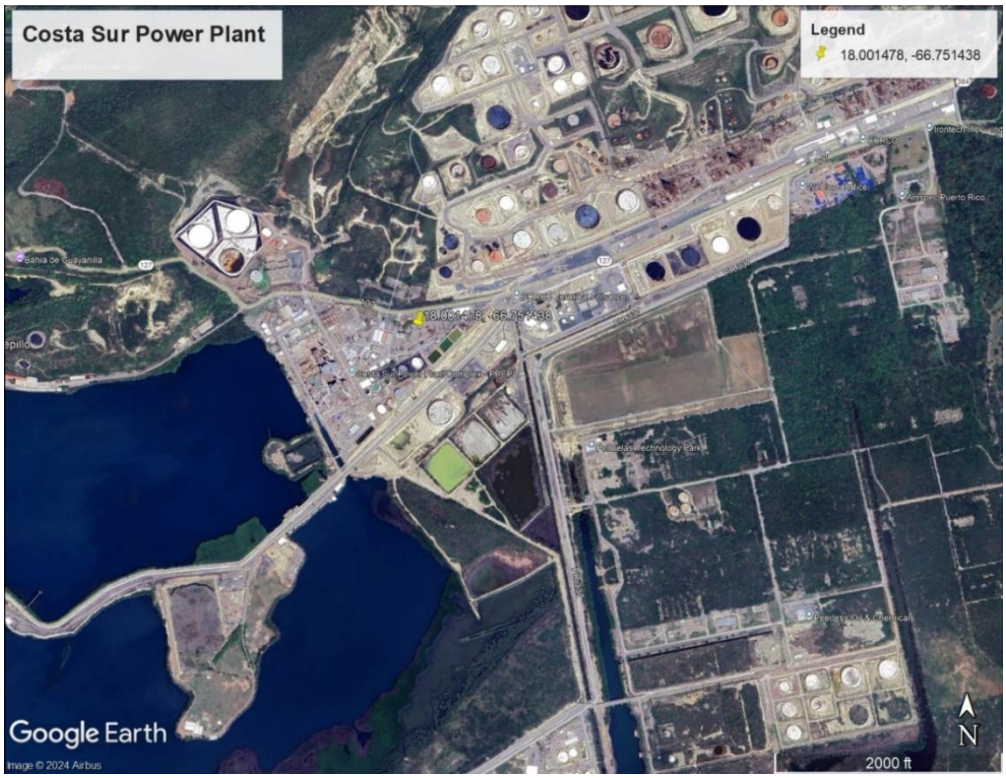
Genera is responsible for operating and maintaining PREPA's legacy asset generation fleet pursuant to the Generation O&M Agreement. The current fleet condition presents poor performance due to the impact of hurricanes María and Fiona. Generation capacity has been reduced to 46% of installed capacity. In addition, of the generation units in operation, about 32% or 640 MW, are disconnected monthly, causing thousands of customers to suffer interruptions in their service.

The Puerto Rico Electric Power Authority ("PREPA") is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns and operates electric generation, transmission and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 1.5 million customers. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvements. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements. On January 2023, PREPA and the Puerto Rico Public-Private Partnership Authority ("P3 Authority") selected Genera PR, LLC ("Genera") to operate, maintain and modernize the Generation system of PREPA for ten years through a public-private partnership.

To enhance the system's reliability, Genera proposes to submit for approval the detailed Intended Scope of Work (SOW) to COR3 and FEMA for the Project 672950 under DR-4339-PR Public Assistance. The document provides a

description of the project including scope, schedule, and cost estimates as well as Environmental & Historical Preservation ("EHP") requirements.

*Figure 5: Facility Location*




## XXIV. Facility Description

PREPA's Generation System Maintenance Program was developed and is being executed using the industry standards, following the equipment's manufacturer maintenance recommendations and PREPA policies. Periodical inspections, tests are performed to identify critical component repairs/replacement in equipment such as boilers, turbines, generators, power transformers, cooling towers, circuit breakers, protection and control relays, grounding mats, and auxiliary equipment.

Genera PR proposes to perform necessary repair and/or replacement of critical generation components pursuant to the Generation O&M Agreement between PREPA, the P3 Authority, and Genera PR.

Costa Sur, located on the southern coast of Puerto Rico in Guayanilla, is owned by PREPA and operated by Genera. The site encompasses approximately 990 acres, with the project itself covering 0.26 acres (76,423 square feet). The plant features two operational steam power generation units with a combined nameplate capacity of 820 megawatts (MW). The site also includes two 21-MW black start capable gas turbine generators, designated as GT #1.1 and GT #1.2.

## XXV. Codes and Standards

The following will be referenced when applying specific codes, specifications, and standards to the project design:

- Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, February 2020.
- Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
- FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
- Rus 1730B - The referenced standards, as defined and as per their requirements, state every system is required to have an Emergency Restoration Plan (ERP) in the event of a major failure or storm event.

## XXVI. Project Description - Cooling Towers Repair Works

The Steam Plant Unit 5 and 6 Cooling Towers are part of the cooling system for a steam power plant, specifically designed to dissipate excess heat generated

during the power production process is located in 18.000004, -66.7545. These cooling towers use a combination of evaporation and air convection to remove heat from the plant's condenser water, which has absorbed heat from the steam used to drive the turbines. This process helps maintain the efficiency and safety of the power plant by ensuring that the equipment does not overheat.

Steam Units 5 and 6, each rated at 410 MW, began commercial operation in 1972 and 1973, respectively. Their tangentially fired CE boilers were retrofitted in 2011 to burn natural gas, while retaining the flexibility to burn either a combination of natural gas and heavy fuel oil (HFO) or HFO only, as originally designed. When fired with natural gas, these units can achieve their original maximum continuous rating (MCR) design conditions: 2,970 kilo pounds per hour (klb/hr) main steam flow, with outlet steam conditions of 2,620 psig and 1,005°F. The boilers also feature a reheat circuit designed to provide 2,371 klb/hr steam flow at 451 psig and 1,000°F to the intermediate pressure (IP) section of the GE turbines, maintaining the rated output of 410 MW. For more details regarding location, please refer to Figure 2 below.

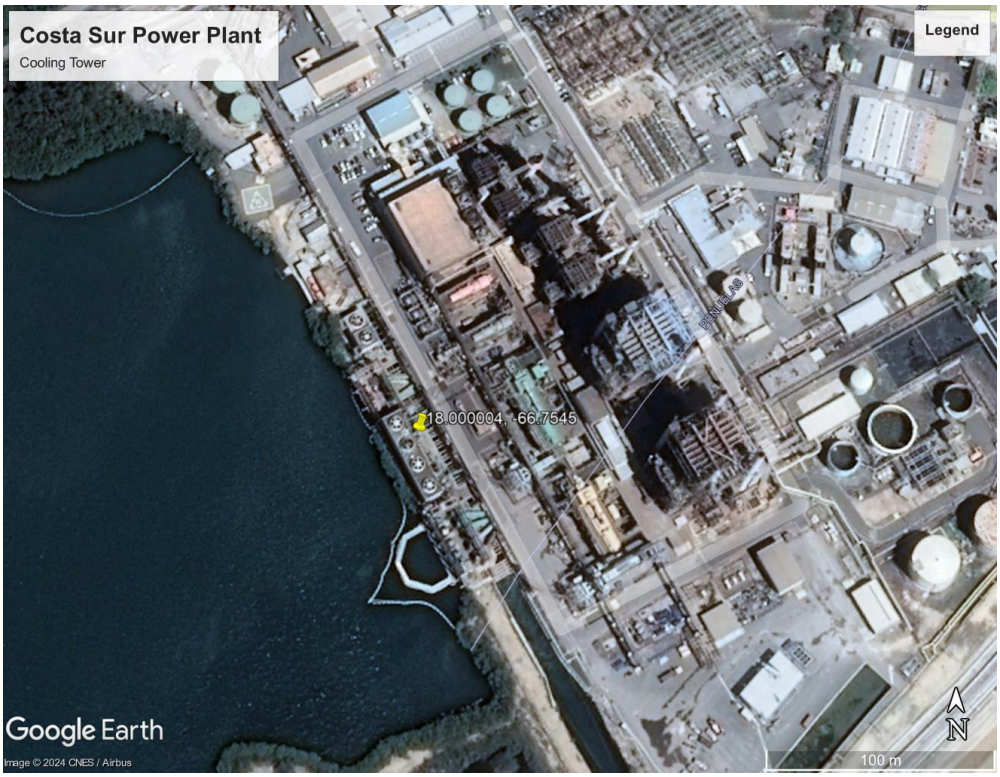



*Figure 6: Cooling Tower of Unit 5 Location*

**Initial Scope of Work**

Genera on behalf of PREPA is proposing the rehabilitation of Costa Sur Steam Plant Unit 5 and 6 Cooling Towers involves a comprehensive Intended Scope of Work, including the replacement of drift eliminators, fill material, PVC lateral piping and nozzles, air inlet louvers, damaged exterior casing panels, corner rolls perimeter seals, and structural support elements. The contractor must complete and commission one cell at a time, ensuring all work is done in strict accordance with the specifications. Additionally, all contacts between dissimilar metals must be isolated to prevent galvanic corrosion. Genera will verify the completeness of the work, and the contractor must keep Genera representative informed of progress and any immediate corrective actions required.

**General Requirements**

A. All work shall be carried out and complete on a continuous schedule of one hundred (100) days. The Contractor shall consider more than one working period to execute the project 24 hours-7 days a week.

B. The Contractor shall submit to Genera project Management weekly summary reports for the works stating the actual status, rate of progress, estimated time of completion and cause of delays, if any, including the schedule update.

C. Throughout the project, a written report detailing the conditions as found, the work performed, clearances, and recorded test data should be submitted. A final report must be provided within seven (7) days after all work is completed.

D. The Contractor is responsible to open and close all necessary accesses to perform the works detailed in the Intended Scope of Work, including removal and sidings.

E. The contractor shall implement the Foreign Material Entry (FME) Prevention Program. The requirements for this program are the following:

a. Access Control - The requirements for ingress and egress from the designed area. At this point, the people are requiring removing jewelry and all contents of pockets and leaving these things with the designed FME clerk or at the assigned area.

b. Tool Control- The method used to assure that tools are individually marked from other like items, identified to the user or worker and storage location, and inventoried at the beginning and end of each task or shift.

c. Clean As You Go - The practice of cleaning assigned tools, parts equipment, work site, etc., during and at end of assigned task or shift, to promote work safety.

These specifications cover the work required under the Contract for the rehabilitation of Costa Sur Steam Plant Unit 5 Cooling Towers. The contractor shall complete and commission one cell at a time. The extent and general scope of the works in strict accordance with these specifications are as follows:

A. Replacement of all drift eliminators on the two cells:
    1. Removal and disposal of the existing drift eliminators.
    2. Install the new drift eliminators as specified by the manufacturer.
    3. Install perimeter new seals tower.
    4. Install new structural dry seal.
    5. Install new 316 stainless steel hardware.
        a. Bolts, nuts, and screws
        b. Washers
        c. Anchors and brace straps
        d. Structural support
        e. Louvers and rods
    6. Re-use all existing drift eliminators supports.

B. Replacement of all the fill material on the two cells:
    1. Removal and disposal of the existing fill material.
    2. Install new fill material.
    3. Install perimeter seals.
    4. Re-use existing fill material supports.

C. Replacement of the existing 4" diam. PVC lateral piping and nozzles on the two cells:
    1. Removal and disposal of the existing pvc laterals and nozzles.
    2. Install new laterals piping and down spray nozzles.

D. Replacement of all the existing air inlet louvers:
    1. Removal and disposal of the existing air inlet louvers.
    2. Install new air inlet louvers.

E. Replacement of damaged exterior casing panels:
    1. Removal and disposal of casing panels.
    2. Install new corrugated, fire retardant, FRP casing panels.
    3. For the installation, use 316 stainless steel hardware and caulking.
        a. Bolts, nuts, and screws
        b. Washers
        c. Anchors and brace straps
        d. Structural support
        e. Louvers and rods

F. Replacement of Corner Rolls Perimeter Seals:
    1. Removal and disposal of corner rolls.
    2. Install new FRP corner rolls perimeter seals.

G. Replacement of structural support elements of the cooling tower.
    1. Removal of existing structural elements. Contractor shall dispose the existing elements in PREPA's containers.
    2. Installation of new structural elements.

H. Every contact between dissimilar metals shall be isolated to avoid galvanic corrosion.

I. PREPA will verify completeness of the work required. After the site work is concluded and before authorizing demobilization of the contractor, a

meeting to report all findings and results of the project shall be performed by the contractor with Genera representative.

J. While on site, the contractor must keep Genera representative informed, regarding the progress of work. Furthermore, Genera shall be notified immediately by the contractor about any finding that requires immediate corrective action.

**Contract Provisions**

**To be Furnished by Contractor**

A. All applicable municipal and state taxes, bonds and insurances.
B. COVID-19 Protocol and evidence of self-certification filled to the government agency with jurisdiction.
C. The Contractor shall also furnish all accessories, services and appurtenances as called for on the specifications or which he deems necessary to make a complete and well-integrated installation within the scope of this specification.
D. Scaffolding
E. Demolishing and cleaning equipment for the existing fill-membranes impregnated with hardened calcium material. Also, trucks and permitting for the disposal of material in an Industrial Landfill accepted by PREPA.
F. Dumpsters for the materials product of the repairs and its disposal.
G. Any lifting equipment needed for the job (forklift, crane, etc.)
H. Field office facilities for Contractor's personnel.
I. Sanitary and first aid facilities for his personnel.
J. Personal Protection Equipment, such as helmets, welders' jackets, goggles, gloves, etc.
K. Adequate and proper identification of Contractor's personnel.

L. The Contractor shall furnish materials and accessories, and expendable materials like cleaning agents, solvents, thread and gasket compounds, greases, wiping cloths, blasting materials, welding rod, drinking cups, ice, paper towels, toilet paper, etc.
M. Adequate field facilities and vigilance to keep all materials, tools, equipment and spares safe.
N. Changing facilities for the personnel.
O. Adequate and proper identification of Contractor's personnel.
P. All other resources or activities needed for performing the job, not furnished by PREPA, according to the Intended Scope of Work.

**To be Furnished by Genera**

A. All parts and materials required for the refurbishment of both cooling towers.
B. Water and electric power 120- and 220-volts single phase facilities for tools and construction work.
C. A supervisor for local inspection and management of project.
D. Container and disposal of metal scrap material.

--------END OF TECHNICAL SPECIFICATIONS AND INTENDED SCOPE OF WORK----------

**XXVII. Cost Estimate: $850,000.00**

**XXVIII. Damage: 1229685**

**Project Description - Inner Barrel Assembly Boiler Feed Water Pumps**

The Intended Scope of Work is provided as guidelines to establish the minimum requirements for the manufacture and delivery of a new inner barrel assembly for Unit 5 of the Costa Sur Steam Plant located in 18.00031, -66.75376.

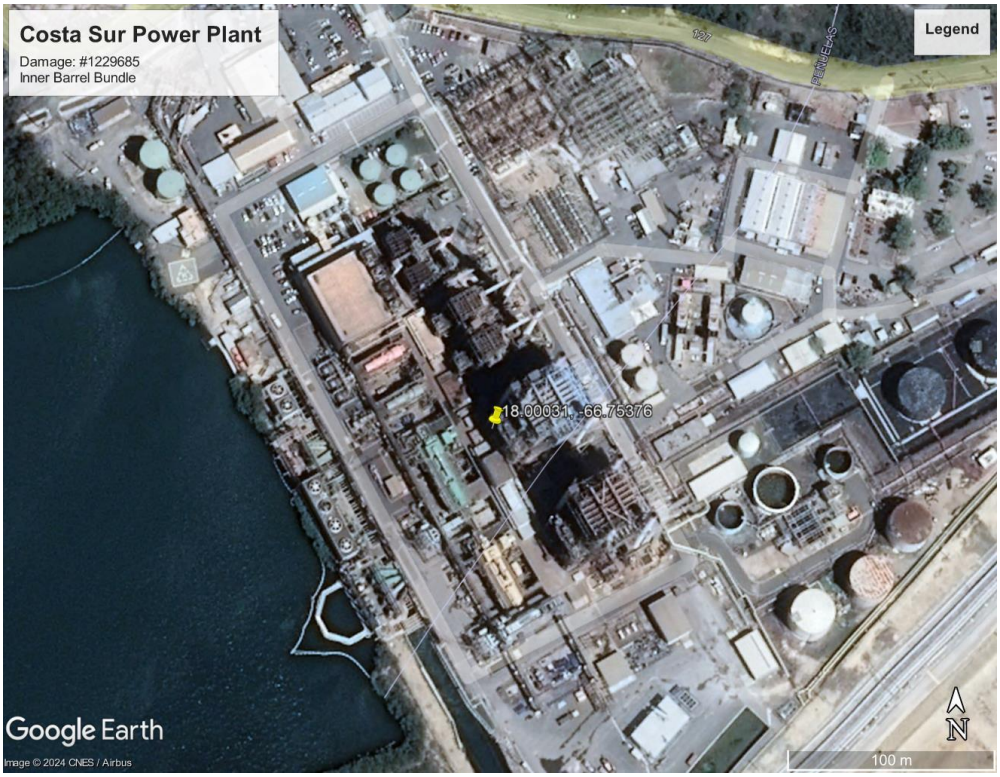



*Figure 7: Inner Barrel Location*

**Initial Scope of Work**

These guidelines establish the minimum requirements for the manufacture and delivery of a new inner barrel assembly for Unit 5 of the Costa Sur Steam Plant for DI 1229673. This document outlines the critical specifications and standards that must be adhered to, ensuring that the new inner barrel assemblies meet the operational and safety requirements of the steam plant. The scope includes detailed engineering design, material selection, fabrication processes, quality control measures, and testing protocols. It also covers the logistics of delivery, including packaging, transportation, and handling to ensure the assemblies arrive in optimal condition. Furthermore, the guidelines emphasize the importance of compliance with industry standards and regulatory requirements, as well as the need for thorough documentation and certification of all manufacturing and delivery processes. By providing these detailed requirements, the guidelines aim to facilitate a seamless integration of the new inner barrel assemblies into the existing infrastructure, thereby enhancing the reliability and efficiency of the steam plants' operations.

1. Manufacture of One Set of Bifurcate Tubes: Contractor shall comply with the following technical requirements:
    i. Lower Drum Tubes with Side Wall Bifurcates
    ii. Tubes to be supplied 1" longer at the original drum nipple weld up to 25'-8" at the center, 20 tubes on the side wall and 22'-7" on the remaining 40.
    iii. Tubes being supplied are the first 15 tubes of the side counting from center of the wall, this will be 30 tubes toward the front and 30 tubes tower the rear from the centerline on both side wall.
    iv. Provide 30 bifurcated tubes per sidewall.
    v. Third leg on the bifurcates is 2.250-240-210A1, bifurcated legs to be 2.000-240-210A1 tube ends to be prepped for field welding tube ends will be coated with DEOX, capped and taped. Bifurcate welds will be 100% MT or PT'D.
    vi. 10% of the shop butt welds will be x-rayed bifurcates to be shop Hydro' D.

vii. Mark Numbers Provided as 2 Each: LS-40L/R, 41L/R, 42L/R, 43L/R, 44L/R, 45, L/R, 46L/R, 47L/R, 48L/R, 49L/R, 50L/R, 51L/R, 52L/R, 53L/R AND 54L/R.

2. Transportation
    i. Contractor shall provide the transportation and any required permits and taxes to deliver the bifurcate tubes from the workshop to the Costa Sur Steam Plant site.

3. Documentation and Certifications
    i. Certificate of Compliance: Contractor shall present the following documentation:
        1. Stamp S
        2. Drawings
        3. Mill Test Reports
        4. Hydrostatic Pressure Test
    ii. Schedule

    Before beginning any work on any of the components, Contractor shall develop a schedule of activities in connection with the work of the Contract and submit it for the approval of the PREPA. All work shall be carried out on a continuous schedule following the date established by PREPA and Contractor.

--------END OF TECHNICAL SPECIFICATIONS AND INTENDED SCOPE OF WORK----------

**XXIX. Cost Estimate: $455,000.00**

**XXX. Environmental & Historic Preservation ("EHP") Requirements**

Other than design, planning and non-destructive due diligence studies, no construction work will commence prior to the issuance of specific expressed written FEMA approval for the specific Intended Scope of Work. FEMA required EHP compliance review will precede the execution of each proposed Intended Scope of Work submitted by PREPA through its agent Genera PR to FEMA. PREPA through its agent Genera PR is aware of its responsibility for coordinating, notifying, obtaining permits, and complying with applicable federal, state, and local laws, regulations, and executive orders and understands that failure to comply with EHP requirements will jeopardize FEMA funding.

A. See the following for general methods of repair and list of equipment to be used:

    d. Dismantle & Salvage
        - Complete testing for any containments or hazardous waste.
        - All contaminated materials will be delivered to the approved waste disposal as per the Federal and state laws ~~Disposal Management Plan~~.
        - If the equipment is going to be salvaged, it will be loaded and removed from the site.
        - All debris will be taken to the approved waste disposal facility as per the Federal and state laws ~~Waste Management Plan~~.

B. List of Equipment to be used but it is not limited to the following:
    - Crawler Crane
    - Semi-truck with low-bed trailer
    - Articulated Boom Lifts
    - Man Lift

C. Removal of vegetation
    - N/A.

D. List the type of debris:

i. Metal scrap, domestic waste, wood.

ii. The debris will be separated and taken to an approved waste disposal facility. Location permits and supporting documentation will be provided at closeout.

E. Description of Staging Area:

- N/A – only minor equipment staging near the existing equipment to be dismantled and installed.

F. Hazardous Material:

c. Describe the activity and the hazardous material involved. Calculate the quantity to be generated or disposed and include the management and disposal plan.

- The identified hazardous materials that can be found in the Generation Plant are asbestos, PCBs, Lead, SF6 gas, oil from the transformer & breakers. These hazardous materials will be handled, and disposed of as per Federal and State Laws.
- GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.
- These products and their residues will be stored in special covered areas for disposal by an authorized company and provided with temporary spill controls until collected. All paint containers and curing compounds will be tightly sealed and stored when in use. Excess paint will not be discharged to the storm system, but properly disposed of, according to the manufacturer's instructions.
- Material amounts will be provided by a certified management contractor performing a site evaluation calculation for asbestos and lead paint.

- Prior to the start of any equipment dismantling activities, inspections for the presence of asbestos will be conducted by a trained and certified contractor.
- All asbestos waste found at the Generation Plant will be disposed of at an approved landfill designated by the Department of Environmental Health & Safety. All asbestos waste generated will be bagged and transported in accordance with all applicable State and Federal regulations. There will be no exceptions.
- Any asbestos spills will be cleaned up immediately to prevent the dispersal of fibers. Prudence will be exercised to avoid contamination of laboratory facilities or exposure of personnel to asbestos. Asbestos spills will be cleaned up with wet methods and/or a High-Efficiency Particulate-Air (HEPA) filtered vacuum.

d. If the project includes building demolition with asbestos, provide a copy of the EQB approved plan or evidence of plan submission.

- Not Applicable.

e. If the project includes disposal of damaged transformers or wood poles with creosote, include the management and disposal plan. The plan must include the final disposition site.

- Transformers and pole disposal will be handled as per the Waste Disposal Management Plan. GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.
- The removal of the transformer will require testing of the existing oil for PCB's levels, drain oil, and delivery to the approved waste disposal site as per Environmental Regulations.
- Removal of wood poles with creosote treatment will be handled according to the Federal and State Laws.

G. Water Crossings:

c. Specify if the project will affect a waterway or body of water.

- Applicable – DI XXXXX, Cooling Tower is located in the shore of the bay.

d. Modification of a body of water or wetland: Does the project require dredging, excavation, disposal of material, adding fill material that might result in any modification of a body of water or wetland designated as "waters of the U.S."?

- Not Applicable

e. Does the project alter a watercourse, water flow patterns, or a drainage way, regardless of its floodplain designation?

- Not Applicable

f. Flood zone: Is the project located in a flood zone, floodway or will it have a negative impact on the flood zone?

- The Generation Plant is in Flood Zone A (SFHA per ABFE). Equipment replacement only. No negative impact.
- In accordance with the updated version of FEMA Region II Memorandum, dated October 10, 2017, Guidance for the use of Available Flood Hazard Information for the Government of Puerto Rico in complying with FEMA Policy 104-008-2, 44 CFR Part 9, and Executive Order 11988 (Floodplain Management). All hazard mitigation proposals under alternative procedures must be designed using the best available flood hazard data and in compliance with applicable regulations and policy.

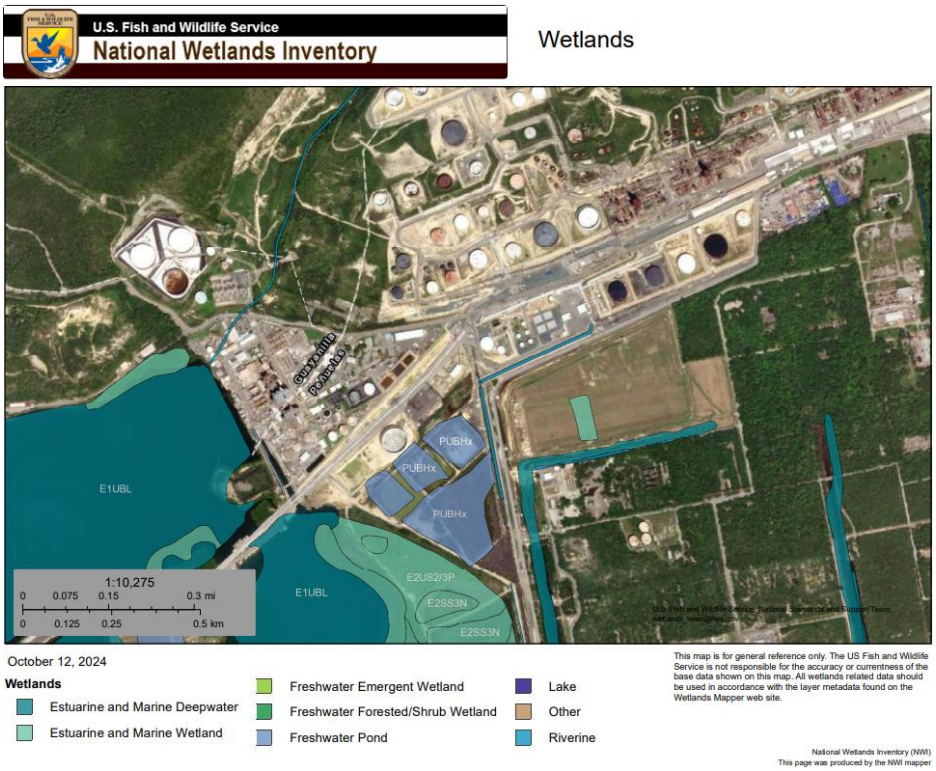



*Figure 8: US Fish and Wildlife, Wetlands Map*

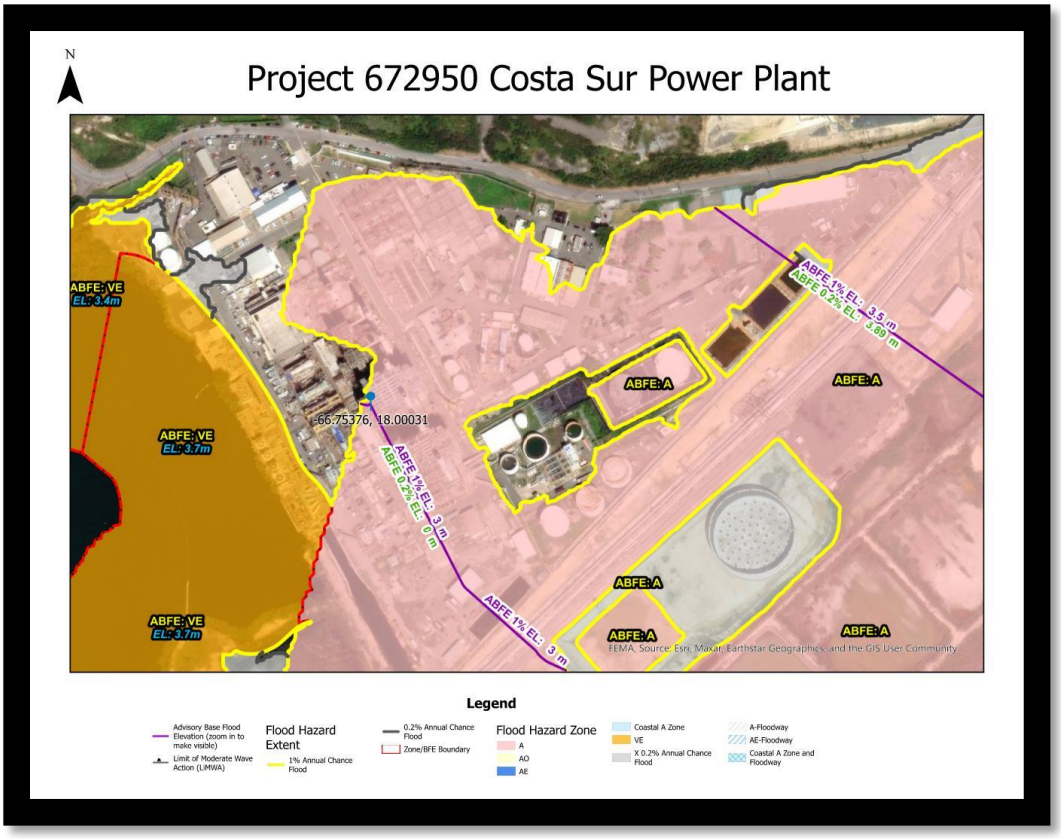



*Figure 9: ABFE Flood Map*

H. Structure Age:

c. Provide the construction date of any buildings or structures within the project. Include those near the project.

- Not Applicable.

e. Provide date and information of any prior repairs, remodeling and/or rehabilitation of the property. Include current and previous use of building or structure.

- Not Applicable.

f. If a building includes both older and newer sections, confirm which section of the building the work is being done.

- Not Applicable

g. Include plans, drawings, blueprints, any architectural documentation available for new construction or substantial improvements regardless of the age of the building or structure.
    - Not Applicable

h. Provide at least five color pictures of every structure or building, showing the four facades and the contextual view. Include additional pictures of architectural details. Also provide pictures of buildings (45 years old or older) on the proximities.
    - Not Applicable.

h. Provide an aerial photo map with the GPS coordinates of each structure.
    - If it Apply, Refer to Maps if not apply Not Applicable

I. Ground Disturbance

d. Provide a description of the new ground disturbance by giving the dimensions (area, depth, volume, etc.), if any. Include an aerial photo map showing the extent of the disturbance with coordinates.
    - Not Applicable.

*Figure 7 – Add photos of equipment*

e. The project SOW will not affect water or sewer utility services.

f. Indicate the prior/current use of the area to be impacted.
    - Not Applicable. Area is an existing Generation Plant. 100% of the work to be completed will be within the existing and already impacted Generation Plant perimeter.

g. Explain how materials will be stockpiled and disposed of.

- Not Applicable.
- GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.

h. Specify final disposition site.
- The disposal of materials will be handled according to Federal and State Laws.

J. Soil Stabilization measures:

d. Does the project involve any soil stabilization measures?
- No

K. Required Permits

List of the permits needed for Costa Sur Site:

- Environmental Compliance Determination in Oficina de Gerencia de Permisos (OGPe)
- General Consolidate Permit - OGPe
- Genera will provide proof of all permits as a Condition of FEMA Record of Environmental Considerations.

## XXXI. Overview

| | |
|---|---|
| Project Name: | Inspection and Reparation of 4 Generators, In-Field Replacement of UNIT 2B 743067 and NGV Replacement, Hot Inspection 4a in Mayaguez Generation Plant, |
| Project Type: | 428 Detailed Initial Scope of Works |
| Project Location : | Carretera #2 interior 3341 Bo. Maní Mayagüez PR 00682 |
| Latitude/Longitude : | 18.219464, -67.160675 |
| Version : 0 | |

## XXXII. Introduction

PREPA is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns the power plants for electric generation, transmission, and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 3.4 million people. Genera-PR is the operator authorized under a Public-Private Partnership agreement of the thermal generation facilities of Puerto Rico. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvement. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements.

On September 17, Hurricane Maria tore through the island of Puerto Rico as a Category 5 storm. Subjected to 150+ mph winds and more than 25 inches of rain, 3.4 million residents lost power and a great deal of infrastructure, including critical facilities, was damaged. In particular, the electrical infrastructure suffered catastrophic impacts. In the aftermath, diligent recovery and reconstruction have been going on, not only to restore the electrical infrastructure to pre-storm function and capacity, but to take this opportunity to bring it in line with current standards and technology. With the recovery funding available, "*Everyone can be sure that we are working responsibly to achieve efficiencies, reduce costs, decommission inefficient and polluting plants, and continue to transform our electrical system for the benefit of our economy and our people*" as Governor Pedro Pierluisi said, this being an opportunity to not just to rebuild the system but to transform it into a smarter, more resilient, and cleaner one. Puerto Rico's generation system must meet customer demand and have adequate additional capacity to comply with the reserve required by the standard operating procedures of the T&D system operator (LUMA). In terms of service continuity, the system must be reliable so that service interruptions are within the margins established in the electrical industry standards.

Unfortunately, the generation system presents critical performance metrics with a deficiency in capacity to meet the energy demand and the minimum reserve requirements. The forced outage percentage of the units is increasing while the generation capacity decreases. This combination of factors puts the continuity of the service at high risk, adversely affecting the quality of life of those who live in PR.

Genera is responsible for operating and maintaining PREPA's legacy asset generation fleet pursuant to the Generation O&M Agreement. The current fleet condition presents poor performance due to the impact of hurricanes María and Fiona. Generation capacity has been reduced to 46% of installed capacity. In addition, of the generation units in operation, about 32% or 640 MW, are disconnected monthly, causing thousands of customers to suffer interruptions in their service.

American International Plaza
250 Av. Luis Muñoz Rivera, Suite 1200
San Juan, PR 00918

The Puerto Rico Electric Power Authority (“PREPA”) is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns and operates electric generation, transmission and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 1.5 million customers. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvements. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements. On January 2023, PREPA and the Puerto Rico Public-Private Partnership Authority (“P3 Authority”) selected Genera PR, LLC (“Genera”) to operate, maintain and modernize the Generation system of PREPA for ten years through a public-private partnership.

To improve the system's reliability, Genera proposes submitting for approval the Detailed Scope of Work (SOW) to COR3 and FEMA for the Inspection and Reparation of 4 Generator Mayaguez Generation Plant under DR-4339-PR 428 Public Assistance. The document provides a description of the project including scope, schedule, and cost estimates as well as Environmental & Historical Preservation ("EHP") requirements.

The project location can be seen in Figure 1.

*Figure 10: Project Location*


## XXXIII. Project Description

PREPA's Generation System Maintenance Program was developed and is being executed using the industry standards, following the equipment's manufacturer maintenance recommendations and PREPA policies. Periodical inspections, tests are performed to identify critical component repairs/replacement in equipment such as boilers, turbines, generators, power transformers, circuit breakers, protection and control relays, grounding mats, and auxiliary equipment.

Genera PR proposes to perform necessary repair and/or replacement of critical generation components pursuant to the Generation O&M Agreement between PREPA, P3A, and Genera PR.

A detailed SOW version will be submitted to FEMA per facility.

Mayagüez is located in the El Seco section, Mayagüez, on the western coast of Puerto Rico. At Mayagüez, eight Pratt & Whitney® (P&W) FT8-3 aero-derivative simple-cycle gas turbines went into service between 2008 and 2009 (in Fiscal Year 2009). The gas turbines (GTs) are configured in sets of two driving electrical generator unit. The four electrical generating units in total have a nameplate capacity of 220 MW. As of April 25, 2021, Units 1A and 1B were out of service and in a forced outage. Additionally, Unit 4A was out of service due to cracks in the combustor area. Their return to service date was pending. The aeroderivative turbines at Mayagüez are part of PREPA's Central Hidro Gas organization.

Genera PR on behalf of Puerto Rico Power Authority respectfully requests COR3 and FEMA a project for the Inspection and Reparation of 4 Generator Mayaguez Generation Plant

## XXXIV. Codes and Standards

The following will be referenced when applying specific codes, specifications, and standards to the project design:

- Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, February 2020.
- Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.

- FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
- Rus 1730B - The referenced standards, as defined and as per their requirements, state every system is required to have an Emergency Restoration Plan (ERP) in the event of a major failure or storm event.
- LUMA Operation Reserve Standard - LUMA, as the T&D System Operator, is responsible for ensuring that the system has enough generation resources to function properly. This is also known as resource adequacy. To fulfill this responsibility, LUMA has set a standard for Operational Reserve Capacity. The formula used to determine this capacity is detailed below, with Genera's input in the second column. LUMA may choose to modify the formula or inputs used, such as averages, without input from Genera.

## XXXV. Initial Scope of Work

All the proposed work will be conducted within the mentioned plot area, which is demarcated in the provided site Map.

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 design drawings and technical specifications progress.

### Inspection and Reparation of 4 Generators

Scope of works covers the rehabilitation and inspection of 4 Generators in Brush Mayaguez. The work includes providing Labor, supervision, materials, equipment, and all necessary required to perform a major inspection and rehabilitation works of four Brush Generators located at the Mayaguez Gas Plant. A final report with photos including test results and description of the work will be performed.

**Work to be Completed:**

**Generator #1**

1. Remove and replace 1 EA of generator rotor
   **Method of Repair:**
   Remove the generator Assembly. Remove the GG and PT from the turbine compartment and extract the rotor from the stator and into appropriate turbine compartment.

2. Remove and replace 2 EA. Bearing. Each bearing will be inspected, and clearances checked against OEM specs and findings reported with recommendations.
3. Remove and replace 4 EA. seals Each seal will be inspected, and clearances checked against OEM specs and findings reported with recommendations.
4. Remove and replace 1 EA of flux probe. The flux probe will be wired to a termination box
5. Perform an EI-CID test
6. Perform electrical testing on the Insulation resistance/polarization index
7. Perform electrical testing on the Winding resistance
8. Perform electrical testing on the Pole balance
9. Perform electrical testing on the Impedance
10. Perform electrical testing on the Winding impedance
11. Perform electrical testing on the resistance and insulation resistance of RTDs
    **Generator Stator:**
12. Perform an inspection of the stator components
    **Method of Inspection:**
    Engineer will conduct a detail inspection of all stator components including end winding blocking, ties, and core tightness. Perform stator wedge tightness testing and provide mapping for review. Finally, will clean the generator stator. Perform electrical testing on the generator stator. Perform electrical testing on the Insulation resistance\polarization index. Perform electrical testing on the Winding resistance. Perform DC Step Voltage tests per GeneraPR procedures

**Generator Rotor:**

13. Perform an inspection of the rotor components

    **Method of Inspection:**

    Complete full visual Inspection of the Rotor components. Check rotor surface for evidence of overheating and/or arcing. Check the rotor wedges. Inspect the OD of the retaining rings. Via a borescope inspect under the retaining rings for Rotor blocking movement, Coil movement, Migrating slot insulation and filler, Damaged end turns, Damaged retaining ring insulation

    **Generator Exciters:**

14. Perform an inspection of the excitation components

    **Method of Inspection:**

    Complete full visual Inspection of the PMG, Exciter Field, Exciter Armature, and Diode Wheel. Perform electrical testing of excitation components including Insulation resistance\polarization index, Winding resistance of PMG Stator, Exciter Field, Exciter Armature. Complete Insulation resistance testing, fuse testing, and diode testing of diode wheel.

15. Repair damaged components. A list of damaged components will be provided.
16. Remove and replace damaged beyond repair components. A list of damaged components will be provided.

**Generator #2**

1. Remove and replace 1 EA of generator rotor

    **Method of Repair:**

    Remove the generator Assembly. Remove the GG and PT from the turbine compartment and extract the rotor from the stator and into appropriate turbine compartment.

2. Remove and replace 2 EA. Bearing. Each bearing will be inspected, and clearances checked against OEM specs and findings reported with recommendations.
3. Remove and replace 4 EA. seals Each seal will be inspected, and clearances checked against OEM specs and findings reported with recommendations.
4. Remove and replace 1 EA of flux probe. The flux probe will be wired to a termination box
5. Perform an EI-CID test
6. Perform electrical testing on the Insulation resistance/polarization index
7. Perform electrical testing on the Winding resistance
8. Perform electrical testing on the Pole balance
9. Perform electrical testing on the Impedance
10. Perform electrical testing on the Winding impedance
11. Perform electrical testing on the resistance and insulation resistance of RTDs

    **Generator Stator:**
12. Perform an inspection of the stator components

    **Method of Inspection:**

    Engineer will conduct a detail inspection of all stator components including end winding blocking, ties, and core tightness. Perform stator wedge tightness testing and provide mapping for review. Finally, will clean the generator stator. Perform electrical testing on the generator stator. Perform electrical testing on the Insulation resistance\polarization index. Perform electrical testing on the Winding resistance. Perform DC Step Voltage tests per GeneraPR procedures

    **Generator Rotor:**
13. Perform an inspection of the rotor components

    **Method of Inspection:**

    Complete full visual Inspection of the Rotor components. Check rotor surface for evidence of overheating and/or arcing. Check the rotor wedges. Inspect the OD of the retaining rings. Via a borescope inspect under the retaining rings for Rotor blocking movement, Coil movement, Migrating slot insulation and filler, Damaged end turns, Damaged retaining ring insulation

**Generator Exciters:**

14. Perform an inspection of the excitation components

    **Method of Inspection:**

    Complete full visual Inspection of the PMG, Exciter Field, Exciter Armature, and Diode Wheel. Perform electrical testing of excitation components including Insulation resistance\polarization index, Winding resistance of PMG Stator, Exciter Field, Exciter Armature. Complete Insulation resistance testing, fuse testing, and diode testing of diode wheel.
15. Repair damaged components. A list of damaged components will be provided.
16. Remove and replace damaged beyond repair components. A list of damaged components will be provided.

**Generator # - 3**

1. Remove and replace 1 EA of generator rotor

   **Method of Repair:**

   Remove the generator Assembly. Remove the GG and PT from the turbine compartment and extract the rotor from the stator and into appropriate turbine compartment.

2. Remove and replace 2 EA. Bearing. Each bearing will be inspected, and clearances checked against OEM specs and findings reported with recommendations.
3. Remove and replace 4 EA. seals Each seal will be inspected, and clearances checked against OEM specs and findings reported with recommendations.
4. Remove and replace 1 EA of flux probe. The flux probe will be wired to a termination box
5. Perform an EI-CID test
6. Perform electrical testing on the Insulation resistance/polarization index
7. Perform electrical testing on the Winding resistance

8. Perform electrical testing on the Pole balance
9. Perform electrical testing on the Impedance
10. Perform electrical testing on the Winding impedance
11. Perform electrical testing on the resistance and insulation resistance of RTDs

**Generator Stator:**

12. Perform an inspection of the stator components

**Method of Inspection:**

Engineer will conduct a detail inspection of all stator components including end winding blocking, ties, and core tightness. Perform stator wedge tightness testing and provide mapping for review. Finally, will clean the generator stator. Perform electrical testing on the generator stator. Perform electrical testing on the Insulation resistance\polarization index. Perform electrical testing on the Winding resistance. Perform DC Step Voltage tests per GeneraPR procedures

**Generator Rotor:**

13. Perform an inspection of the rotor components

**Method of Inspection:**

Complete full visual Inspection of the Rotor components. Check rotor surface for evidence of overheating and/or arcing. Check the rotor wedges. Inspect the OD of the retaining rings. Via a borescope inspect under the retaining rings for Rotor blocking movement, Coil movement, Migrating slot insulation and filler, Damaged end turns, Damaged retaining ring insulation

**Generator Exciters:**

14. Perform an inspection of the excitation components

**Method of Inspection:**

Complete full visual Inspection of the PMG, Exciter Field, Exciter Armature, and Diode Wheel. Perform electrical testing of excitation components including Insulation resistance\polarization index, Winding resistance of PMG Stator, Exciter Field, Exciter Armature. Complete Insulation resistance testing, fuse testing, and diode testing of diode wheel.

15. Repair damaged components. A list of damaged components will be provided.

16. Remove and replace damaged beyond repair components. A list of damaged components will be provided.

**Generator # - 4**

1. Remove and replace 1 EA of generator rotor

   **Method of Repair:**

   Remove the generator Assembly. Remove the GG and PT from the turbine compartment and extract the rotor from the stator and into appropriate turbine compartment.
2. Remove and replace 2 EA. Bearing. Each bearing will be inspected, and clearances checked against OEM specs and findings reported with recommendations.
3. Remove and replace 4 EA. seals Each seal will be inspected, and clearances checked against OEM specs and findings reported with recommendations.
4. Remove and replace 1 EA of flux probe. The flux probe will be wired to a termination box
5. Perform an EI-CID test
6. Perform electrical testing on the Insulation resistance/polarization index
7. Perform electrical testing on the Winding resistance
8. Perform electrical testing on the Pole balance
9. Perform electrical testing on the Impedance
10. Perform electrical testing on the Winding impedance
11. Perform electrical testing on the resistance and insulation resistance of RTDs

    **Generator Stator:**
12. Perform an inspection of the stator components

    **Method of Inspection:**

    Engineer will conduct a detail inspection of all stator components including end winding blocking, ties, and core tightness. Perform stator wedge tightness testing and provide mapping for review. Finally, will clean the generator stator. Perform electrical testing on the generator stator. Perform electrical testing on

the Insulation resistance\polarization index. Perform electrical testing on the Winding resistance. Perform DC Step Voltage tests per GeneraPR procedures

**Generator Rotor:**

13. Perform an inspection of the rotor components

    **Method of Inspection:**

    Complete full visual Inspection of the Rotor components. Check rotor surface for evidence of overheating and/or arcing. Check the rotor wedges. Inspect the OD of the retaining rings. Via a borescope inspect under the retaining rings for Rotor blocking movement, Coil movement, Migrating slot insulation and filler, Damaged end turns, Damaged retaining ring insulation

    **Generator Exciters:**

14. Perform an inspection of the excitation components

    **Method of Inspection:**

    Complete full visual Inspection of the PMG, Exciter Field, Exciter Armature, and Diode Wheel. Perform electrical testing of excitation components including Insulation resistance\polarization index, Winding resistance of PMG Stator, Exciter Field, Exciter Armature. Complete Insulation resistance testing, fuse testing, and diode testing of diode wheel.

15. Repair damaged components. A list of damaged components will be provided.
16. Remove and replace damaged beyond repair components. A list of damaged components will be provided.

**In-Field Replacement of UNIT 2B 743067 and NGV Replacement**

This project involves the replacement of gas turbine Unit 2B 743067 components as described in Table 1 below at the Mayagüez Power Plant. The work includes the purchase, delivery, removal of existing components, and installation of new ones, following the Manufacturer's recommended procedures and Genera PR's instructions. The Contractors will adhere to Genera PR safety Provisions and regulations.

**Objectives:**

- Ensure the seamless replacement of Unit 2B 743067 components.
- Minimize downtime and ensure the plant's operational efficiency.
- Comply with all safety and environmental regulations.

**Work to be Completed:**

1. Remove existing components from Unit 2B 743067 (See components description and quantities in Table 1 below)
    a. Transport removed components to the designated storage area within the plant
    b. Dispose of existing components in accordance with local and federal environmental regulations
2. Install and connect new components following the Manufacturer's recommended procedures and practices. (See components description and quantities in Table 1 below)
3. Perform start-up and set up to ensure successful service of Unit 2B 743067

*Table 1: Components Description*

| PART No. | DECSRIPTION | QTY. |
|---|---|---|
| VQ668803 | TUBE-CC INTERCONNECTOR | 9 |
| VQ1083620 | WASHER-KEY, DOUBLE, .1975X.625X.031 | 9 |
| VQAS3303-06 | (U) BOLT PART SUBS LIST IT | 6 |
| VQST5074-09 | (C) NUT OPTION (IC) | 6 |
| VQ1081992 | (U) PIN-COMBUSTION CHAMBER | 9 |
| VQ1083619 | (U) WASHER-KEY, DOUBLE, .3225X.660X.031 | 9 |
| VQST1883-11 | (U) BOLT-MACHINE, .3125X24X.938, HEX | 6 |
| VQ1081905-01 | (U) GUIDE-COMBUSTION CHAMBER, ASSY | 9 |
| VQMS9081-08 | (C) BOLT-MA, DH EWSH DR,.250-28X.625 | 6 |
| VQAS3214-02 | WIRE SAFETY, .031 | 1 |
| VQST1508-14 | BOLT-MACHINE, .250-28X1.000, HEX | 38 |
| VQ1086183 | SPACER-SLEEVE, .254X.355X.530, FLANGED | 38 |
| VQ1082270 | SPRING-COMPRESSION, .550X.015X6 COIL | 38 |
| VQ1082272 | WASHER-FLAT, .386X.625X.143 | 38 |
| VQ1083903-01CL1 | SEAL ASSY OF-C | 2 |
| VQ1082275 | SPACER-PLATE, CC DUCT SUPPORT | 5 |

| | | |
|---|---|---|
| VQ1082276 | SPACER-PLATE, CC DUCT SUPPORT | 1 |
| VQM9557-19 | BOLT-MA, DH EXT WASHER HEAD | 2 |
| VQ776441 | NUT OPTION (IC) | 2 |
| VQ1083902-01CL1 | SEAL ASSY OF-C | 2 |
| VQ4023466 | NUT OPTION (IC) | 38 |
| VQST1087-030 | BOLT MACHINE, .250-28, SLAB | 2 |
| VQ4023466 | NUT OPTION (IC) | 2 |
| VQ1084826 | SPACER-SLEEVE, .2535X.355X.312, FLGD | 38 |
| VQ1082270 | SPRING-COMPRESSION, .550X.015X6 COIL | 38 |
| VQ51K208CL5 | SPACER-PLATE, C | 2 |
| VQ51K208CL6 | SPACER-PLATE, C | 2 |
| VQ51K208CL7 | SPACER-PLATE, C | 2 |
| VQ51K208CL8 | SPACER-PLATE, C | 2 |
| VQ51K208CL9 | SPACER-PLATE, C | 2 |
| VQ51K208CL10 | SPACER-PLATE, C | 2 |
| VQMS9697-13 | BOLT, MACH-DBL HEX, EXT WASH, CORR/HT RES | 38 |
| VQ1082272 | WASHER-FLAT, .386X.625X.043 | 38 |
| VQ1086180 | SPACER-PLATE, COMB CHAMBER DUCT SUPPORT | 5 |
| VQ1088181 | SPACER-PLATE, COMB CHAMBER DUCT SUPPORT | 1 |
| VQ1082274 | WASHER-KEY, DOUBLE, .281IDX2.462 | 19 |
| VQ1088171 | VANE ASSY OF HIGH PRESSURE TURB, 1STAG | 10 |
| VQ1080993-01 | SEAL-HPT VANE, 1STG, ASSY OF | 34 |
| VQ1063602-01 | SEAL AASYOF-HPT VANE, 1STAGE | 34 |
| VQ648762 | BOLT-MACHINE, .250-28X1.000, DH | 4 |
| VQ702703 | BOLT-MACHINE, .190-32X1.000, DOUBLE HEX | 1 |
| VQ1088150 | BOLT-MECHINE, .250-32X.625, HEX | 38 |
| VQ1088153 | WASHER-KEY, DOUBLE, .281IDX1.688 | 19 |
| VQST1142-069 | (U) GASKET OPTION (IC) | 2 |
| VQST1141-41 | (U) GASKET OPTION (IC) | 4 |
| VQST1141-25 | (U) GASKET OPTION (IC) | 4 |
| VQMS9586-10 | (C) BOLT-MACHINE DBL HEX EXT WASHER HEAD | 6 |
| VQST1748-18 | (U) BOLT-MACHINE, .375-24X1.500, DRILLEDDBL | 5 |
| VQST1258-12 | (C) NUT OPTION (IC) | 5 |
| VQ786376 | (C) NUT OPTION (IC) | 5 |
| VQ182888 | GASKET-.945X1.185X.0505 | 4 |
| VQCT117088-1 | WASHER, (PARTS GG8 INIT. LEADS) | 2 |

HOT INSPECTION 4A, MAYAGUEZ GAS PLANT

Initial SCOPE OF WORK

The work includes providing labor, supervision, materials, equipment, inspection and all necessary required to perform a hot section inspection. The scope of work includes but not limited to examining the condition of a number of key engine parts, including turbine blades, the combustion chamber, the stators, the vane rings, the compressor turbine disk and the segments. Including the repair or replacement of necessary parts and the performance necessary services.

**XXXVI.** Cost Estimate

| Item | Description | Cost |
|---|---|---|
| 1 | Inspection and Reparation of 4 Generators | $2,000,000.00 |
| 2 | In-Field Replacement of UNIT 2B 743067 and NGV Replacement | $550,000.00 |
| 3 | Hot Inspection 4a | $675,000.00 |
| | Total | $3,225,000.00 |

**XXXVII. Environmental & Historic Preservation ("EHP") Requirements**

C. Other than design, planning and non-destructive due diligence studies, no construction work will commence prior to the issuance of specific expressed written FEMA approval for the specific scope of work. FEMA requested EHP

compliance review will precede the execution of each proposed scope of work submitted by PREPA through its agent Genera PR to FEMA. PREPA through its agent Genera PR is aware of its responsibility for coordinating, notifying, obtaining permits, and complying with applicable federal, state, and local laws, regulations, and executive orders and understands that failure to comply with EHP requirements will jeopardize FEMA funding.

D. See the following for general methods of repair and list of equipment to be used:

e. Dismantle & Salvage

- Complete testing for any containments or hazardous waste.
- All contaminated materials will be delivered at the approved waste disposal as per the Disposal Management Plan.
- If the equipment is to be salvaged, it will be loaded and removed from the site.
- All debris will be taken to the approved waste disposal facility as per the Waste Management Plan.

E. List of Equipment to be used but it is not limited to the following:

- Crawler Crane
- Semi-truck with low-bed trailer
- Man lift

F. Removal of vegetation

- N/A

G. List the type of debris:

- Metal scrap, domestic waste, wood.
- The debris will be separated and taken to an approved waste disposal facility. Location permits and support documentation will be provided close-out.

H. Description of Staging Area:
    - Staging area will be provided. A Plan CES will be implemented.

I. Hazardous Material:
    a. Describe the activity and the hazardous material involved. Calculate the quantity to be generated or disposed and include the management and disposal plan.
        - The identified hazardous materials that can be found in the Generation Plant are asbestos, PCBs, Lead, SF6 gas, oil from the transformer & breakers. These hazardous materials will be handled and disposed of as per Federal and State Laws.
        - GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations
        - These products and their residues will be stored in special covered areas for disposal by an authorized company and provided with temporary spill controls until collected. All paint containers and curing compounds will be tightly sealed and stored when in use. Excess paint will not be discharged to the storm system, but properly disposed of, according to the manufacturer's instructions.
        - Material amounts will be provided by a certified management contractor performing a site evaluation calculation for asbestos and lead paint.
        - Prior to the start of any equipment dismantling activities, inspections for the presence of asbestos will be conducted by a trained and certified contractor.
        - All asbestos waste found at the Generation Plant will be disposed of at an approved landfill designated by the Department of Environmental Health & Safety. All asbestos waste generated will be bagged and transported in accordance

with all applicable State and Federal regulations. There will be no exceptions.

- Any asbestos spills will be cleaned up immediately to prevent the dispersal of fibers. Prudence will be exercised to avoid contamination of laboratory facilities or exposure of personnel to asbestos. Asbestos spills will be cleaned up with wet methods and/or a High-Efficiency Particulate-Air (HEPA) filtered vacuum.

b. If the project includes building demolition with asbestos, provide a copy of the EQB approved plan or evidence of plan submission.
    - Not Applicable.

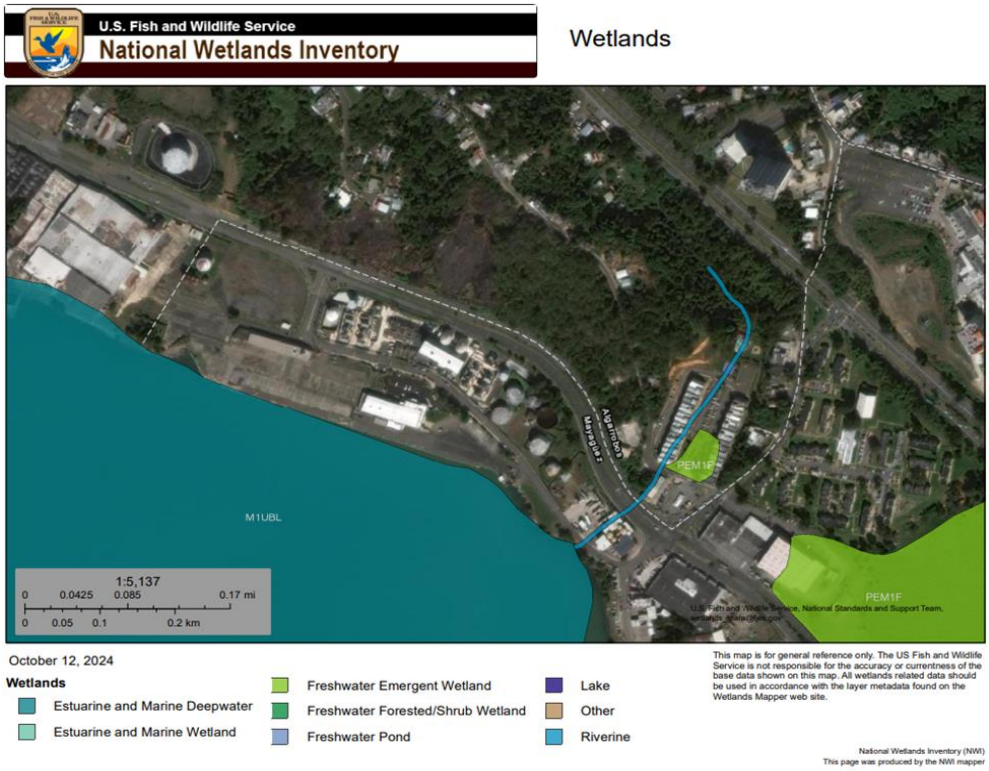
c. If the project includes disposal of damaged transformers or wood poles with creosote, include the management and disposal plan. The plan must include the final disposition site.
    - Transformers and pole disposal will be handled as per the Waste Disposal Management Plan. GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.
    - The removal of the transformer will require testing of the existing oil for PCB's levels, drain oil, and delivery to the approved waste disposal site as per Environmental Regulations.
    - Removal of wood poles with creosote treatment will be handled according to the Federal and State Laws.

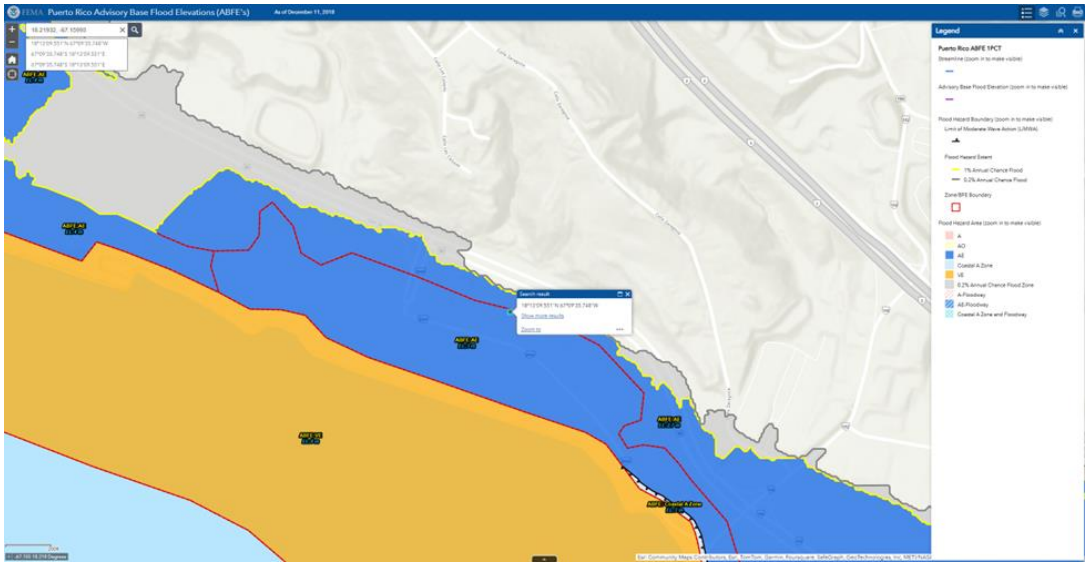
J. Water Crossings:

a. Specify if the project will affect a waterway or body of water.
    - Generation plant is delimited by an existing dike.

b. Modification of a body of water or wetland: Does the project require dredging, excavation, disposal of material, adding fill material that might result in any modification of a body of water or wetland designated as "waters of the U.S."?
    - Not Applicable

c. Does the project alter a watercourse, water flow patterns, or a drainage way, regardless of its floodplain designation?
    - Not Applicable
d. Flood zone: Is the project located in a flood zone, floodway or will it have a negative impact on the flood zone?
    - The Generation Plant is in Flood Zone A (SFHA per ABFE). The proposed inspection and repairs will not have a negative impact.
    - In accordance with the updated version of FEMA Region II Memorandum, dated October 10, 2017, Guidance for the use of Available Flood Hazard Information for the Government of Puerto Rico in complying with FEMA Policy 104-008-2, 44 CFR Part 9, and Executive Order 11988 (Floodplain Management). All hazard mitigation proposals under alternative procedures must be designed using the best available flood hazard data and in compliance with applicable regulations and policy.




L. Structure Age:

a. Provide the construction date of any buildings or structures within the project. Include those near the project.
    - Not Applicable.
b. Provide date and information of any prior repairs, remodeling and/or rehabilitation of the property. Include current and previous use of building or structure.
    - Not Applicable.
c. If a building includes both older and newer sections, confirm which section of the building the work is being done.
    - Not Applicable
d. Include plans, drawings, blueprints, any architectural documentation available for new construction or substantial improvements regardless of the age of the building or structure.
    - Not Applicable
e. Provide at least five color pictures of every structure or building, showing the four facades and the contextual view. Include additional pictures of architectural details. Also provide pictures of buildings (45 years old or older) on the proximity.
    - Not Applicable.
f. Provide an aerial photo map with the GPS coordinates of each structure.
    - Refer to Figure 1

M. Ground Disturbance

e. Provide a description of the new ground disturbance by giving the dimensions (area, depth, volume, etc.), if any. Include an aerial photo map showing the extent of the disturbance with coordinates.
    - Refer to Scope of Work

f. The project SOW will not affect water or sewer utility services.
g. Indicate the prior/current use of the area to be impacted.

- The area is an existing Generation Plant. 100% of the work to be completed will be within the existing and already impacted Generation Plant perimeter.

h. Explain how materials will be stockpiled and disposed of.
   - GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.

i. Specify final disposition site.
   - The disposal of materials will be handled as per the Waste Management Plan.

N. Soil Stabilization measures:

e. Does the project involve any soil stabilization measures?
   - Not Applicable

O. Required Permits

List of the permits needed for Mayaguez Generation Site:

- Environmental Compliance Determination in Oficina de Gerencia de Permisos (OGPe)
- General Consolidate Permit - OGPe
- Genera will provide proof of all permits as a Condition of FEMA Record of Environmental Considerations.

## XXXVIII. Overview

| | |
|---|---|
| Project Name: | 1. PSSP Demineralized Tank 2<br>2. PSSP WTP Multimedia Filters |
| Project Type: | 428 ISOW |
| Project Location : | **Ruta del Encanto, Toa Baja, PR 00949** |
| Latitude/Longitude : | 18.219464, -67.160675 |
| Version : 0 | |

## XXXIX. Introduction

PREPA is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns the power plants for electric generation, transmission, and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 3.4 million people. Genera-PR is the operator authorized under a Public-Private Partnership agreement of the thermal generation facilities of Puerto Rico. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvement. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements.

On September 6, 2017, Puerto Rico's northern coastline was struck by Hurricane Irma, a Category 4 storm. Two weeks later, on September 17, Hurricane Maria

tore through the island of Puerto Rico as a Category 5 storm. Subjected to 150+ mph winds and more than 25 inches of rain, 3.4 million residents lost power and a great deal of infrastructure, including critical facilities, was damaged. In particular, the electrical infrastructure suffered catastrophic impacts. In the aftermath, diligent recovery and reconstruction have been going on, not only to restore the electrical infrastructure to pre-storm function and capacity, but to take this opportunity to bring it in line with current standards and technology. With the recovery funding available, "*Everyone can be sure that we are working responsibly to achieve efficiencies, reduce costs, decommission inefficient and polluting plants, and continue to transform our electrical system for the benefit of our economy and our people*" as Governor Pedro Pierluisi said, this being an opportunity to not just to rebuild the system but to transform it into a smarter, more resilient, and cleaner one. Puerto Rico's generation system must meet customer demand and have adequate additional capacity to comply with the reserve required by the standard operating procedures of the T&D system operator (LUMA). In terms of service continuity, the system must be reliable so that service interruptions are within the margins established in the electrical industry standards.

In 2020 the situation became more complicated when earthquakes events 4473DR-PR provoked more damages to Costa Sur Power Plant. Later, in September 2022, Hurricane Fiona 4671DR-PR also impacted Puerto Rico, destroying even more the already fragile generation assets. Unfortunately, the generation system presents critical performance metrics with a deficiency in capacity to meet the energy demand and the minimum reserve requirements. The forced outage percentage of the units is increasing while the generation capacity decreases. This combination of factors puts the continuity of the service at high risk, adversely affecting the quality of life of those who live in PR.

Genera is responsible for operating and maintaining PREPA's legacy asset generation fleet pursuant to the Generation O&M Agreement. The current fleet condition presents poor performance due to the impact of hurricanes María and

Fiona. Generation capacity has been reduced to 46% of installed capacity. In addition, of the generation units in operation, about 32% or 640 MW, are disconnected monthly, causing thousands of customers to suffer interruptions in their service.

The Puerto Rico Electric Power Authority ("PREPA") is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns and operates electric generation, transmission and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 1.5 million customers. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvements. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements. On January 2023, PREPA and the Puerto Rico Public-Private Partnership Authority ("P3 Authority") selected Genera PR, LLC ("Genera") to operate, maintain and modernize the Generation system of PREPA for ten years through a public-private partnership.

To improve the system's reliability, Genera proposes to submit for approval the Detailed Scope of Work (SOW) to COR3 and FEMA for the 662957 under DR-4339-PR Public Assistance. The document provides a description of the project including scope, schedule, and cost estimates as well as Environmental & Historical Preservation ("EHP") requirements.

The project location can be seen in Figure 1.

*Figure 11: Project Location*


## XL. Project Description

PREPA's Generation System Program was developed and is being executed using the industry standards, following the equipment's manufacturer recommendations and PREPA policies. Periodical inspections, tests are performed to identify critical component repairs/replacement in equipment such as boilers, turbines, generators, power transformers, circuit breakers, protection and control relays, grounding mats, and auxiliary equipment.

Genera PR proposes to perform necessary repair and/or replacement of critical generation components pursuant to the Generation O&M Agreement between PREPA, the P3A, and Genera PR.

A detailed SOW version will be submitted to FEMA per facility.

Palo Seco is located on the northern coast of Puerto Rico in the Cataño municipality near San Juan and a location with approx. 36 acres lot, and project is approx. 2.5 acres lot (131,912 ft²). The Plant consists of four thermal steam units, six Hitachi-GE gas turbines (GTs), and three Pratt & Whitney Power Systems (PWPS) FT8 MOBILEPAC GTs with a total nameplate capacity of 809 MW. Palo Seco has been a major generator in the PREPA fleet and continues to serve on a limited basis as current power distribution challenges face the island.

Palo Seco Steam Plant Units 1 and 2 are tangentially fired Combustion Engineering ("CE," now GE Power), heavy fuel oil-fired (HFO-fired) boilers with reheat and a nameplate capacity of 85 MW each. The units are rated 1450 psi, 1000°F, and the boilers are 857.7 MMBtu/h. Unit 1 began commercial operation in 1960, and Unit 2 began commercial operation in 1961.

Palo Seco Steam Plant Units 3 and 4 are tangentially fired CE HFO-fired boilers with a nameplate capacity of 216 MW each. The steam turbines are rated 1800 psi, and the boilers are 1971 MMBtu/h. Additional details about the boilers and turbines were not provided for review. The units began commercial operation between 1967 and 1968.

## XLI. Codes and Standards

The following will be referenced when applying specific codes, specifications, and standards to the project design:

- Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, February 2020.

- Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
- FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
- Rus 1730B - The referenced standards, as defined and as per their requirements, state every system is required to have an Emergency Restoration Plan (ERP) in the event of a major failure or storm event.
- LUMA Operation Reserve Standard - LUMA, as the T&D System Operator, is responsible for ensuring that the system has enough generation resources to function properly. This is also known as resource adequacy. To fulfill this responsibility, LUMA has set a standard for Operational Reserve Capacity. The formula used to determine this capacity is detailed below, with Genera's input in the second column. LUMA may choose to modify the formula or inputs used, such as averages, without input from Genera.

## XLII. General Initial Scope of Work

***A) PSSP WTP Multimedia Filters***

The required work will be based on the global cost of the project. This will be coordinated and integrated to obtain a uniform job stream. The work required the design, fabrication and installation of three (3) Multimedia Filters (MMF), including but not limited to pressure vessels, valves, pumps, pressure and flow transmitters, pressure gauges, piping and structural frames. These filters are located at the Southwest corner of the Wastewater Treatment Plant (WWTP). The scope will also include the removal of the existing MMF system. The new system operation shall be identical to the existing one. The contractor shall provide a system with a similar arrangement of vessels, valves, instruments, pumps and piping. Nevertheless, PREPA has revised the material of fabrication to stainless steel 304L for all vessels. The system shall include three (3) vessels with a normal filtration capacity of 150 GPM (200 GPM intermittent) for each vessel. The total capacity of the system should be 450 GPM for normal service (600 GPM intermittent). The system shall include in the arrangement three semiautomatic bypasses: filter inlet to waste header, filter inlet to outlet

header and filter backwash to waste header. The existing Foxboro DCS will control the system.

**MULTIMEDIA FILTERS [MMF]: Work to be completed**

**Mechanical System:**

**Pumps:**

2. Remove and replace 3ea of 72in [dia.] x 72in [high] Stainless steel 304L Pressure vessels, including filter media.
3. Remove and replace 2ea Backwash pumps, including accessories.
4. Remove and replace 2ea Surface wash pumps, including accessories.

**Piping & Specialties:**

26. Remove and replace 4 dia. sch 40 seamless carbon steel piping
27. Remove and replace 6 dia. sch 40 seamless carbon steel piping
28. Remove and replace 2 dia. sch 40 seamless carbon steel piping
29. Remove and replace 3ea of 4in [dia] Automatic Flow Control Ductile Iron Epoxy Coated 150# Lug Style Butterfly Valves.
30. Remove and replace 6ea of 6in [dia] Automatic On/Off Ductile Iron Epoxy Coated 150# Lug Style Butterfly Valves.
31. Remove and replace 9ea of 4in [dia] Automatic On/Off Ductile Iron Epoxy Coated 150# Lug Style Butterfly Valves.
32. Remove and replace 3ea of 6in [dia] Manual Ductile Iron Epoxy Coated 150# Lug Style Butterfly Valves.
33. Remove and replace 3ea of 2in [dia] Manual Stainless Steel FNTP Ball Valves.
34. Remove and replace 3ea of 1in [dia] Combination Air Valves.
35. Remove and replace 3ea of Differential Pressure Type Indicator Flow Transmitters for 4in [dia] piping.
36. Remove and replace 3ea of Differential Pressure Type Indicator Transmitters.
37.

**Electrical System:**

38. Remove and replace 1ea of NEMA 4X 316L Electrical Enclosure.
39. Remove and replace PVC Coated Rigid Electrical Conduits

***B) PSSP Demineralized Tank 2***

Build a New Demineralized Water Tank #2 at Palo Seco Steam Plant. The scope includes, but is not limited to, demolition of the existing base, demolition of the existing tank, design and build of new reinforced concrete base, design and build of new tank, replacements of valves and new tanks levels control manifolds. The dimension of the new tank shall be like the existing (D=35 ft. H=24 ft.). The new tank shall be fitted with a spiral stairway, self-supported umbrella roof, top platform (10 ft. x 6 ft.), level indication, level transmitter, grounding, tank identification, stainless steel isolation valves, etc. Tank design shall be based on the latest revision of API-650 and ASCE 7-16 code. A complete internal and external coating system shall be applied as per specifications. The contractor shall be responsible for all required rigging, safety, permits and the appropriate store of the coatings, grit blast material, and equipment. The scope includes the procurement, fabrication, and installation of three (3) tank level control valve manifolds for Demineralized Water Tank #2, Demineralized Water Tank #4, and Condensate Tank 1-2.

**Work to be completed**

**SITE:**

1. Remove and replace 3ea of luminaries Eaton Champ FMVA FMVA20L

**TANK:**

1. Remove and properly dispose 1ea of 35ft [dia] x 24ft [height] existing steel tank
2. Fabricate in place 1ea 35ft [dia] x 24ft [height] steel tank.
3. Perform demolition 1ea concrete pad
4. Perform construction for 1ea

**Piping & Specialties:**

1. Remove and replace 2ea of 12 dia. Isolation 316L Stainless steel gate valves.
2. Remove and replace 9ea of 6 dia. Isolation 316L Stainless steel gate valves.
3. Remove and replace 3ea of 6 dia. Bypass 316L Stainless steel gate valves.

4. Remove and replace 3ea of 6 dia. Level Control 316L Stainless steel ball valves.
5. Remove and replace 3ea of 4 dia. Isolation 316L Stainless steel gate valves.
6. Remove and replace 2ea of 12 dia. Isolation 316L Stainless steel gate valves.
7. Remove and replace 1ea of 8 dia. 316L Stainless steel valve at Demi Header #1 to Demi Header #2 Interconnection
8. Remove and replace 1ea of 4 dia. 316L Stainless steel valve at East Equalization Spool
9. Remove and replace 1ea of 4 dia. 316L Stainless steel valve at North Equalization Spool
10. Remove and replace 1ea of 4 dia. 316L Stainless steel valve at North Equalization Header

**Controls Instrument:**
**Demi Water Tank #2**

11. Remove and replace 1ea of 6 dia. Level Control Manifold 316L Stainless steel, including wiring.

**Condensate Tank #2**

12. Remove and replace 1ea of 6 dia. Level Control Manifold 316L Stainless steel, including wiring.

**Condensate Tank 1-2**

13. Remove and replace 1ea of 6 dia. Level Control Manifold 316L Stainless steel, including wiring.

**XLIII. Cost Estimate**:

A) PSSP WTP Multimedia Filters: $ 1,000,000.00
B) PSSP Demineralized Tank 2: $ 2,450,000.00

Estimated cost for Project: $ 3,450,000.00

## XLIV. Environmental & Historic Preservation ("EHP") Requirements

K. Other than design, planning and non-destructive due diligence studies, no construction work will commence prior to the issuance of specific expressed written FEMA approval for the specific scope of work. FEMA required EHP compliance review will precede the execution of each proposed scope of work submitted by PREPA through its agent Genera PR to FEMA. PREPA through its agent Genera PR is aware of its responsibility for coordinating, notifying, obtaining permits, and complying with applicable federal, state, and local laws, regulations, and executive orders and understands that failure to comply with EHP requirements will jeopardize FEMA funding.

D. See the following for general methods of repair and list of equipment to be used:

f. Dismantle & Salvage

- Complete testing for any containments or hazardous waste.
- All contaminated materials will be delivered to the approved waste disposal as per Disposal Management Plan.
- If equipment is to be salvaged, it will be loaded and removed from the site.
- All debris will be taken to the approved waste disposal facility as per the Waste Management Plan.

F. List of Equipment to be used but it is not limited to the following:

- Crawler Crane
- Semi-truck with low-bed trailer
- Man lift

H. Removal of vegetation

- N/A.

G. List the type of debris:

- Metal scrap, domestic waste, wood.

- The debris will be separated and taken to an approved waste disposal facility. Location permits and supporting documentation will be provided at closeout.

J. Description of Staging Area:
    - N/A – only minor equipment staging near the existing equipment to be dismantled and installed.

I. Hazardous Material:

d. Describe the activity and the hazardous material involved. Calculate the quantity to be generated or disposed and include the management and disposal plan.
    - The identified hazardous materials that can be found in the Generation Plant are asbestos, PCBs, Lead, SF6 gas, oil from the transformer & breakers. These hazardous materials, will be handled, and disposed of as per Federal and State Laws.
    - GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations
    - These products and their residues will be stored in special covered areas for disposal by an authorized company and provided with temporary spill controls until collected. All paint containers and curing compounds will be tightly sealed and stored when in use. Excess paint will not be discharged to the storm system, but properly disposed of, according to the manufacturer's instructions.
    - Material amounts will be provided by a certified management contractor performing a site evaluation calculation for asbestos and lead paint.
    - Prior to the start of any equipment dismantling activities, inspections for the presence of asbestos will be conducted by a trained and certified contractor.
    - All asbestos waste found at the Generation Plant will be disposed of at an approved landfill designated by the Department of

Environmental Health & Safety. All asbestos waste generated will be bagged and transported in accordance with all applicable State and Federal regulations. There will be no exceptions.

- Any asbestos spills will be cleaned up immediately to prevent the dispersal of fibers. Prudence will be exercised to avoid contamination of laboratory facilities or exposure of personnel to asbestos. Asbestos spills will be cleaned up with wet methods and/or a High-Efficiency Particulate-Air (HEPA) filtered vacuum.

e. If the project includes building demolition with asbestos, provide a copy of the EQB approved plan or evidence of plan submission.

- Not Applicable.

f. If the project includes disposal of damaged transformers or wood poles with creosote, include the management and disposal plan. The plan must include the final disposition site.

- Transformers and pole disposal will be handled as per the Waste Disposal Management Plan. GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.
- The removal of the transformer will require testing of the existing oil for PCB's levels, drain oil, and delivery to the approved waste disposal site as per Environmental Regulations.
- Removal of wood poles with creosote treatment will be handled according to the Federal and State Laws.

K. Water Crossings:

d. Specify if the project will affect a waterway or body of water.

- Not Applicable

e. Modification of a body of water or wetland: Does the project require dredging, excavation, disposal of material, adding fill material that might result in any modification of a body of water or wetland designated as "waters of the U.S."?

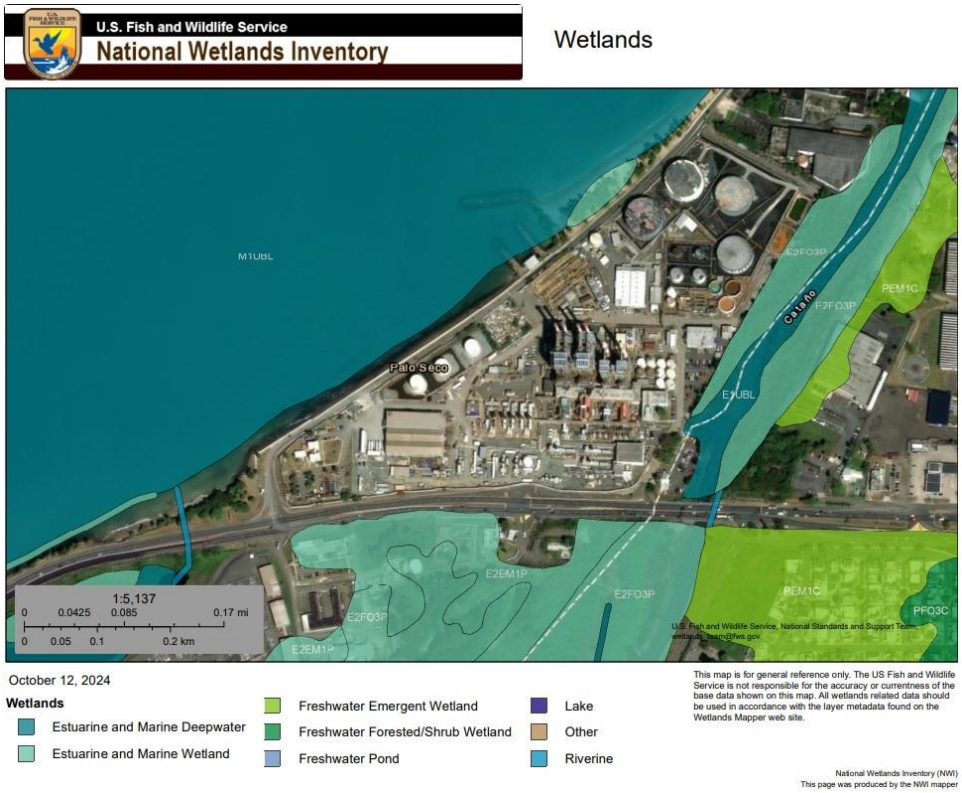
- Not Applicable

f. Does the project alter a watercourse, water flow patterns, or a drainage way, regardless of its floodplain designation?

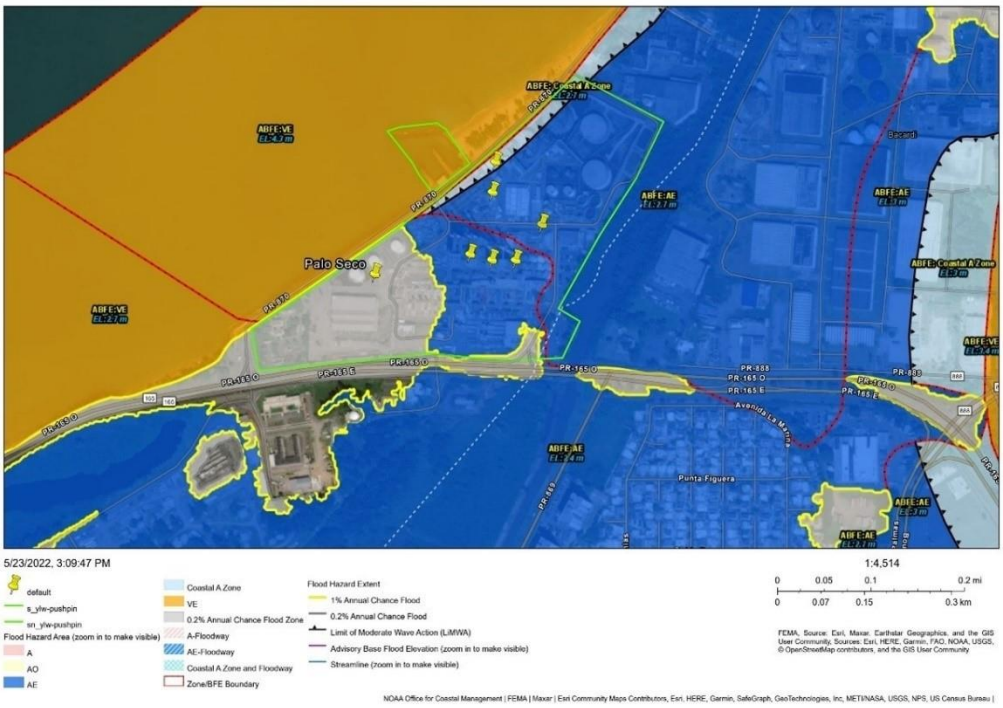
- Not Applicable

g. Flood zone: Is the project located in a flood zone, floodway or will it have a negative impact on the flood zone?

- The Generation Plant is in Flood Zone A (SFHA per ABFE). Equipment replacement only. No negative impact.
- In accordance with the updated version of FEMA Region II Memorandum, dated October 10, 2017, Guidance for the use of Available Flood Hazard Information for the Government of Puerto Rico in complying with FEMA Policy 104-008-2, 44 CFR Part 9, and Executive Order 11988 (Floodplain Management). All hazard mitigation proposals under alternative procedures must be designed using the best available flood hazard data and in compliance with applicable regulations and policy.



Floodplains




M. Structure Age:

d. Provide the construction date of any buildings or structures within the project. Include those near the project.

- Not Applicable.

f. Provide date and information of any prior repairs, remodeling and/or rehabilitation of the property. Include current and previous use of building or structure.

- Not Applicable.

g. If a building includes both older and newer sections, confirm which section of the building the work is being done.

- Not Applicable

h. Include plans, drawings, blueprints, any architectural documentation available for new construction or substantial improvements regardless of the age of the building or structure.

- Not Applicable

i. Provide at least five color pictures of every structure or building, showing the four facades and the contextual view. Include additional pictures of architectural details. Also provide pictures of buildings (45 years old or older) on the proximities.
   - Not Applicable.

i. Provide an aerial photo map with the GPS coordinates of each structure.
   - If it Apply, Refer to Attachment xxxxx - Maps if not apply Not Applicable

N. Ground Disturbance

f. Provide a description of the new ground disturbance by giving the dimensions (area, depth, volume, etc.), if any. Include an aerial photo map showing the extent of the disturbance with coordinates.
   - Not Applicable.

*Figure 7 – Add photos of equipment*

g. The project SOW will not affect water or sewer utility services.

h. Indicate the prior/current use of the area to be impacted.
   - Not Applicable. Area is an existing Generation Plant. 100% of the work to be completed will be within the existing and already impacted Generation Plant perimeter.

i. Explain how materials will be stockpiled and disposed of.
   - Not Applicable.
   - GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.

j. Specify final disposition site.
   - The disposal of materials will be handled as per the Waste Management Plan.

O. Soil Stabilization measures:

f. Does the project involve any soil stabilization measures?
   - No

P. Required Permits

List of the permits needed for Costa Sur Site:

- Environmental Compliance Determination in Oficina de Gerencia de Permisos (OGPe)
- General Consolidate Permit - OGPe
- Genera will provide proof of all permits as a Condition of FEMA Record of Environmental Considerations.

## XLV. Overview

| | |
|---|---|
| Project Name: | ASP Nautilus Clarifier Rehabilitation and Retention Tank #1 New Construction, |
| Project Type: | 428 Detailed Scope of Work |
| Project Location : | Mercado Central Avenue, Zona Portuaria Road PR-28, Puerto Nuevo PR 00920 |
| Latitude/Longitude : | 18.427720, -66.105067 |
| Version : 0 | |

## XLVI. Introduction

PREPA is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns the power plants for electric generation, transmission, and distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 3.4 million people. Genera-PR is the operator authorized under a Public-Private Partnership agreement of the thermal generation facilities of Puerto Rico. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvement. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements.

On September 17, Hurricane Maria tore through the island of Puerto Rico as a Category 5 storm. Subjected to 150+ mph winds and more than 25 inches of rain, 3.4 million residents lost power and a great deal of infrastructure, including

critical facilities, was damaged. In particular, the electrical infrastructure suffered catastrophic impacts. In the aftermath, diligent recovery and reconstruction have been going on, not only to restore the electrical infrastructure to pre-storm function and capacity, but to take this opportunity to bring it in line with current standards and technology. With the recovery funding available, "*Everyone can be sure that we are working responsibly to achieve efficiencies, reduce costs, decommission inefficient and polluting plants, and continue to transform our electrical system for the benefit of our economy and our people*" as Governor Pedro Pierluisi said, this being an opportunity to not just to rebuild the system but to transform it into a smarter, more resilient, and cleaner one. Puerto Rico's generation system must meet customer demand and have adequate additional capacity to comply with the reserve required by the standard operating procedures of the T&D system operator (LUMA). In terms of service continuity, the system must be reliable so that service interruptions are within the margins established in the electrical industry standards.

Unfortunately, the generation system presents critical performance metrics with a deficiency in capacity to meet the energy demand and the minimum reserve requirements. The forced outage percentage of the units is increasing while the generation capacity decreases. This combination of factors puts the continuity of the service at high risk, adversely affecting the quality of life of those who live in PR.

Genera is responsible for operating and maintaining PREPA's legacy asset generation fleet pursuant to the Generation O&M Agreement. The current fleet condition presents poor performance due to the impact of hurricanes María and Fiona. Generation capacity has been reduced to 46% of installed capacity. In addition, of the generation units in operation, about 32% or 640 MW, are disconnected monthly, causing thousands of customers to suffer interruptions in their service.

The Puerto Rico Electric Power Authority ("PREPA") is a public corporation of the Government of Puerto Rico created pursuant to Act No. 83 of May 2, 1941, as amended. PREPA owns and operates electric generation, transmission and

distribution facilities serving all of Puerto Rico. As the sole electric utility in Puerto Rico, PREPA provides electricity to approximately 1.5 million customers. Since 2017, PREPA has performed damage assessments, studies, and evaluations to identify areas of repair and improvements. These include transmission and distribution lines, electrical substations, generation plants, mitigation, and other improvements. On January 2023, PREPA and the Puerto Rico Public-Private Partnership Authority ("P3 Authority") selected Genera PR, LLC ("Genera") to operate, maintain and modernize the Generation system of PREPA for ten years through a public-private partnership.

To improve the system's reliability, Genera proposes submitting for approval the Detailed Scope of Work (SOW) to COR3 and FEMA for the ASP Nautilus Clarifier Tank Rehabilitation under DR-4339-PR Public Assistance. The document provides a description of the project including scope, schedule, and cost estimates as well as Environmental & Historical Preservation ("EHP") requirements.

The project location can be seen in Figure 1.

*Figure 12: Project Location*


## XLVII. Project Description

PREPA's Generation System Rehabilitation Program was developed and is being executed using the industry standards, following the equipment's manufacturer recommendations and PREPA policies. Periodical inspections, tests are performed to identify critical component repairs/replacement in equipment such as boilers, turbines, generators, power transformers, circuit breakers, protection and control relays, grounding mats, and auxiliary equipment.

Genera PR proposes to perform necessary repair and/or replacement of critical generation components pursuant to the Generation O&M Agreement between PREPA, P3A, and Genera PR.

A detailed SOW version will be submitted to FEMA per facility.

The San Juan Power Plant is located on the northern coast of Puerto Rico in San Juan. It consists of four thermal steam units and two combined-cycle units with a total nameplate capacity of 864 MW. The Plant has two main types of power generation units: conventional steam plants (Units 7, 8, 9, and 10) and combined-cycle power blocks (Units 5 and 6). The four conventional steam plants are fired using heavy fuel oil (HFO) and consist of a Combustion Engineering (now GE Power) natural circulation boiler, a General Electric condensing steam turbine (ST) generator and supporting auxiliary equipment. Each generator is rated for 133,689 kVA, and each unit (Units 7, 8, 9, and 10) is rated at 100 MW. Construction of the Plant began in the early 1950s and continued with Unit 7 going into commercial service in 1965 and the last thermal unit, Unit 10, beginning commercial service in 1968.

Genera PR on behalf of Puerto Rico Power Authority respectfully requests to COR3 and FEMA a project for ASP Nautilus Clarifier Tank Rehabilitation and Retention Tank #1 New Construction.

## XLVIII. Codes and Standards

The following will be referenced when applying specific codes, specifications, and standards to the project design:

- Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, February 2020.

- Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
- FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
- Rus 1730B - The referenced standards, as defined and as per their requirements, state every system is required to have an Emergency Restoration Plan (ERP) in the event of a major failure or storm event.
- LUMA Operation Reserve Standard - LUMA, as the T&D System Operator, is responsible for ensuring that the system has enough generation resources to function properly. This is also known as resource adequacy. To fulfill this responsibility, LUMA has set a standard for Operational Reserve Capacity. The formula used to determine this capacity is detailed below, with Genera's input in the second column. LUMA may choose to modify the formula or inputs used, such as averages, without input from Genera.

## XLIX. General Initial Scope of Work

All the proposed work will be conducted within the mentioned plot area, which is demarcated in the provided site Map. The ground works that will be conducted at this facility include clearing and grubbing, demolition, excavation, cleaning, and disposition of the surplus material among others. Actual excavation depths will be defined further in the design process, however, by current standard and codes, the typical depth range shall vary between 1 to 5 FT depending on the groundwork to be performed.

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 design drawings and technical specifications progress.

**ASP Nautilus Clarifier Rehabilitation**

Scope of works covers the rehabilitation work, the installation of a Coating-Ceramic Reinforced Lining system throughout the interior and anti-corrosion protection in the external part of the Nautilus Tanks that is in the facilities of the San Juan Power Plant, Salinas PR. Part of the work will be mechanical repair with welded steel plates to repair walls, channels and floor of tanks where the loss of thickness exceeds 50% of the original thickness. The scope of work will also include removing and reinstalling all the existing mechanical equipment that is part of the operation of the tank, i.e., mixers, motor-transmission, sprocket and chain for the flocculation wheels, transmission of the syphon car with chain mechanism and honeycombs.

The lead inspection shall be conducted prior to any activities taking place. If necessary, lead abatement of existing surfaces will be performed.

**Site**

48. Repair X SF of foundation cement plaster:
49. Remove and replace Gutters system
50. Remove and replace Flange
51. Install Sika Flex 1A product between the tank bottom chine and the concrete base
52. Remove and replace catwalk railings
53. Remove and replace catwalk railings supports connection plates
54. Remove and replace handrails
55. Remove and replace safety platform
56. Remove and replace FRP polymer gratings
57. Apply Seal SIKAFlex-1a / White color
58. Prepare/Paint 500 SF of Tank Shell with Anti-corrosion coating (Amercoat 240 product epoxy in thickness of 5 mils and 2 coats of a system equal or with better performance than the PSX700 topcoat in thickness of 5 mils.) Preparation of the surface to the grade of NACE No. 2 SSPC-SP10 Near White Metal
59. Prepare/Paint 250 SF of Accessories (Manholes, Nozzles, Stairs, Vents, Valves, Etc) with Anti-corrosion coating (Amercoat 240 product epoxy in thickness of 5 mils and 2 coats of a system equal or with better performance than the PSX700 topcoat in thickness of 5 mils.) Preparation of the surface to the grade of NACE No. 2 SSPC-SP10 Near White Metal

60. Remove and replace metal structure that covers the control panel.
61. Remove and replace metal roof (control panel structure)
62. Remove and replace 4 IN metal channels
63. Prepare/Paint metal control panel structure

**Tank Interior**

**Note:** Remove and reinstall the existing mechanical equipment that is part of the operation of the tank, i.e., mixers, motor-transmission, sprocket and chain for the flocculation wheels, transmission of the syphon car with chain mechanism and honeycombs.

64. Repair welding in the tank floor area
65. Install 250 SF of ¼ IN thick steel plates. Note: Use API code 653 for repair sizes and outlines.
66. Perform 1 EA of non-destructive testing in compliance with API-653 for the tank repair
67. Prepare 3,833 SF of tank floor to NACE No.1 grade
68. Install 3,833 SF of Coating-Ceramic Reinforced Lining system (Chesterton ARC S2-Epoxy Ceramic Reinforced Lining)
69. Install 3,833 SF of Chesterton ARC 858-Epoxy Ceramic Reinforced Filler Lining to an additional area of (250pcs) to the grade of NACE No.1/White Metal Blast Cleaning. Adry weight of 1/16" in: (62.0mils)
70. Prepare/Paint 500 SF of Tank Roof with Anti-corrosion coating (PPG PSX-700 siloxane epoxy coating) and preparation of the surface to the grade of NACE No.1 White Metal Blast Cleaning
71. Prepare/Paint 250 SF of Tank Roof Rafters with Anti-corrosion coating (PPG PSX-700 siloxane epoxy coating) and preparation of the surface to the grade of NACE No.1 White Metal Blast Cleaning
72. Perform 1 EA of a test with a Non-Destructive Test

**Retention Tank #1 New Construction**

The Contractor shall furnish and provide all engineering, design, labor, equipment, materials, and supervision required to successfully build a New Retention Tank #1 at San Juan Steam Plant. The scope includes the demolition of the existing tank, the demolition of the existing tank base, design and build of a new tank base including piles for deep foundation, design and build of a new tank and new diffuser nozzle grid system. All incoming lines shall be replaced at least 25 ft upstream from their discharge location at the tank. All tie-in locations should be equipped with flange connections. The dimensions of the new tank shall be like the existing one (D=50 ft. H=16 ft. 200,000 Gallons). The new tank shall be fitted with a new air manifold, open roof, level indicator transmitter, grounding, tank identification, stainless steel isolation valves, etc. Tank design shall be based on the latest revision of API-650 and ASCE 7-16 code. A complete internal and external coating system shall be applied as per specifications. The contractor shall be responsible for all required rigging, safety, permits and the appropriate store of coatings, grit blast material, and equipment.

**New Retention Tank 1 Specs:**

**Dimensions:** 50 FT DIA x 16 FT (H)

**Material:** Reinforced concrete

**Work to be Completed:**

**Site Work**

1. Perform 1 EA of CES PLAN
2. Perform Geotechnical Survey and Report
3. Perform 500 S.Y. of Tank Demolition
   Area: 50 FT DIA = 1,962.5 SF
   Waste volume: 165 CM
   Material: Reinforced Concrete
4. Perform 218 SY of Tank Base Demolition
   Area: 50 FT DIA = 1,962.5 SF
   Waste volume: 73 CM
   Material: Reinforced Concrete

5. Remove/Replace 25 FT of 6" Ø FRP Conley Sch. 40 Extra Heavy Duty Novolac Vinyl Ester - Air Pre-Heaters Waste Effluent Spool
6. Remove/Replace 25 FT of 6" Ø FRP Conley Sch. 40 Extra Heavy Duty Novolac Vinyl Ester – Demi Plant Regeneration Waste Effluent Spool
7. Remove/Replace 25 FT of 6" Ø FRP Conley Sch. 40 Extra Heavy Duty Novolac Vinyl Ester – WTP Multimedia Filters Backwash Waste Effluent Spool
8. Remove/Replace 25 FT of 6" Ø Stainless Steel 316L Sch. 40 – Air Supply Spool
9. Remove/Replace 25 FT of 4" Ø FRP Conley Sch. 40 Extra Heavy Duty Novolac Vinyl Ester – East Side Effluent Spool
10. Remove/Replace 25 FT of 4" Ø FRP Conley Sch. 40 Extra Heavy Duty Novolac Vinyl Ester – West Side Effluent Spool
11. Remove/Replace 25 FT of 3" Ø FRP Conley Sch. 40 Extra Heavy Duty Novolac Vinyl Ester – RO CIP Effluent Spool
12. Remove/Replace 25 FT of 3" Ø FRP Conley Sch. 40 Extra Heavy Duty Novolac Vinyl Ester – Final Effluent Tank Recirculation Spool
13. Remove/Replace 25 FT of 2" Ø FRP Conley Sch. 40 Extra Heavy Duty Novolac Vinyl Ester – Effluent Transfer from Tanks #1 & #2
14. Remove/Replace 25 FT of 2" Ø FRP Conley Sch. 40 Extra Heavy Duty Novolac Vinyl Ester – Collection Station for Effluents Water Outlet Spool
15. Remove/Replace 25 FT of 2" Ø Stainless Steel 316L Sch. 40 – Caustic Soda Dosing Line
16. Remove/Replace 25 FT of 1-1/2" Ø Alloy 20 Sch. 40 – Sulfuric Acid Dosing Line
17. Remove/Replace 25 FT of 8" Ø FRP Conley Sch. 40 Extra Heavy Duty Novolac Vinyl Ester – Tank Overflow Spool
18. Perform 1 EA of SURVEY WORKS
19. Layout/Install 160 LF of BATTERBOARDS AND LAYOUT
20. Install Foundation concrete piles. Quantity will be provided after design completion.
21. Perform 1,962.5 SF of Clearing and grubbing
22. Perform 46 CM of Excavations
23. Cast in place 80 CY of reinforced concrete base

24. Install 4,500 SF of tank steel plates (ASTM A36)
25. Install 1 EA of Diffuser Nozzle Grid System
26. Install 1 EA of Bubbler Type Tank Level System (Lesman Bubbler Liquid System)
27. Perform 4,500 SF of Tank Encapsulation
28. Apply 4,500 SF of Tank Interior Coating Material
29. Apply 4,500 SF of Tank Exterior Coating Material
30. Install 3 EA of Eaton Champ FMVA FMVA20L luminaires

**Cost Estimate**

| Item | Description | Cost |
|---|---|---|
| 1 | ASP Nautilus Rehabilitation | $1,500,000.00 |
| 2 | Retention Tank #1 | $1,500,000.00 |
| | Total Estimated | **$ 3,000,000.00** |

## L. Environmental & Historic Preservation ("EHP") Requirements

E. Other than design, planning and non-destructive due diligence studies, no construction work will commence prior to the issuance of specific expressed written FEMA approval for the specific scope of work. FEMA requested EHP compliance review will precede the execution of each proposed scope of work submitted by PREPA through its agent Genera PR to FEMA. PREPA through its agent Genera PR is aware of its responsibility for coordinating, notifying, obtaining permits, and complying with applicable federal, state, and local laws, regulations, and executive orders and understands that failure to comply with EHP requirements will jeopardize FEMA funding.

F. See the following for general methods of repair and list of equipment to be used:

g. Dismantle & Salvage

- Complete testing for any containments or hazardous waste.
- All contaminated materials will be delivered at the approved waste disposal as per the Disposal Management Plan.
- If the equipment is to be salvaged, it will be loaded and removed from the site.
- All debris will be taken to the approved waste disposal facility as per the Waste Management Plan.

G. List of Equipment to be used but it is not limited to the following:

- Crane
- Semi-truck with low-bed trailer
- Man lift
- Forklift
- Skid Loader

H. Removal of vegetation

- The reparation will be performed in an existing tank

I. List the type of debris:

- Metal scrap, domestic waste, wood.
- The debris will be separated and taken to an approved waste disposal facility. Location permits and support documentation will be provided close-out.

J. Description of Staging Area:

- Will be provided (Design and Build)

K. Hazardous Material:

a. Describe the activity and the hazardous material involved. Calculate the quantity to be generated or disposed and include the management and disposal plan.

- The identified hazardous materials that can be found in the Generation Plant are asbestos, PCBs, Lead, SF6 gas, oil from the transformer & breakers. These hazardous materials will be handled and disposed of as per Federal and State Laws.
- GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations
- These products and their residues will be stored in special covered areas for disposal by an authorized company and provided with temporary spill controls until collected. All paint containers and curing compounds will be tightly sealed and stored when in use. Excess paint will not be discharged to the storm system, but properly disposed of, according to the manufacturer's instructions.
- Material amounts will be provided by a certified management contractor performing a site evaluation calculation for asbestos and lead paint.
- Prior to the start of any equipment dismantling activities, inspections for the presence of asbestos will be conducted by a trained and certified contractor.
- All asbestos waste found at the Generation Plant will be disposed of at an approved landfill designated by the Department of Environmental Health & Safety. All asbestos waste generated will be bagged and transported in accordance with all applicable State and Federal regulations. There will be no exceptions.
- Any asbestos spills will be cleaned up immediately to prevent the dispersal of fibers. Prudence will be exercised to avoid contamination of laboratory facilities or exposure of personnel to asbestos. Asbestos spills will be cleaned up with wet methods and/or a High-Efficiency Particulate-Air (HEPA) filtered vacuum.

b. If the project includes building demolition with asbestos, provide a copy of the EQB approved plan or evidence of plan submission.

- To be provided, if applies

c. If the project includes disposal of damaged transformers or wood poles with creosote, include the management and disposal plan. The plan must include the final disposition site.
    - Transformers and pole disposal will be handled as per the Waste Disposal Management Plan. GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.
    - The removal of the transformer will require testing of the existing oil for PCB's levels, drain oil, and delivery to the approved waste disposal site as per Environmental Regulations.
    - Removal of wood poles with creosote treatment will be handled according to the Federal and State Laws.

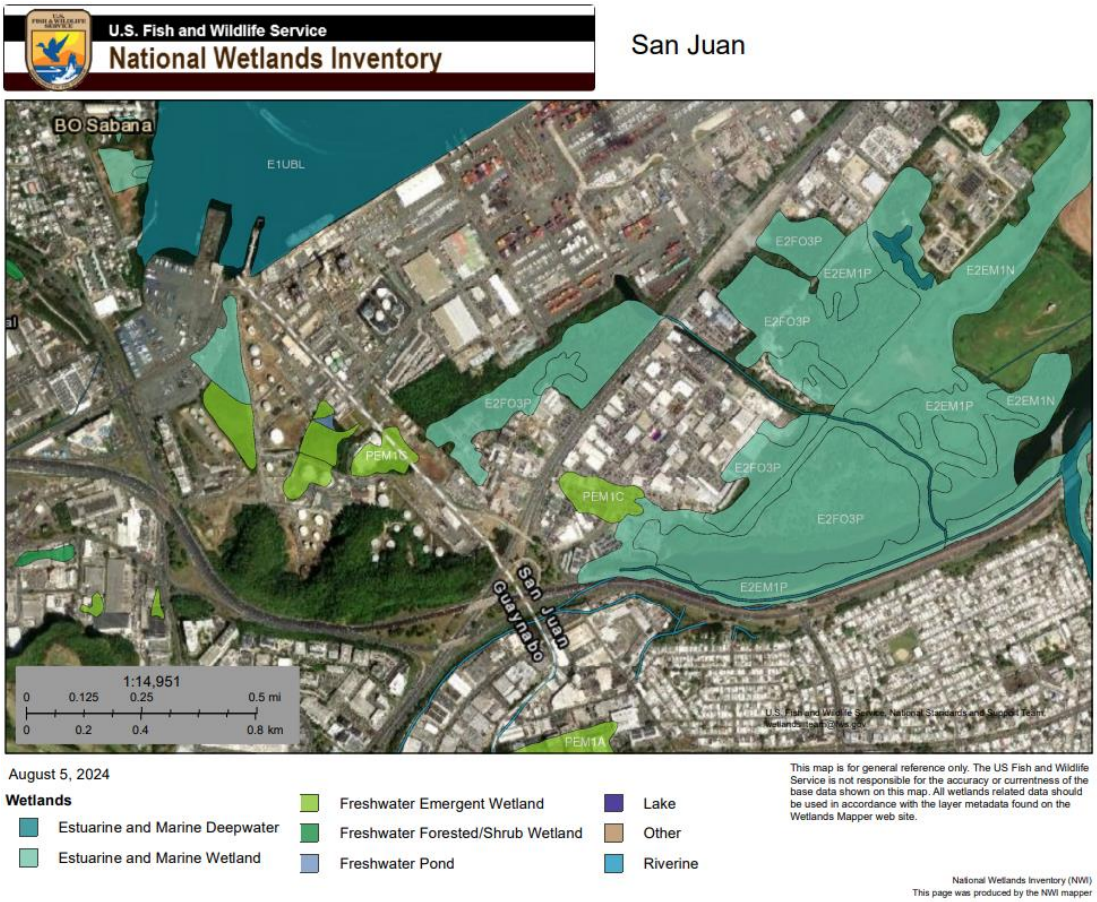
L. Water Crossings:
a. Specify if the project will affect a waterway or body of water.
    - The site is surrounded by a dike. Plan CES will be provided

b. Modification of a body of water or wetland: Does the project require dredging, excavation, disposal of material, adding fill material that might result in any modification of a body of water or wetland designated as "waters of the U.S."?
    - The site is surrounded by a dike. Plan CES will be provided

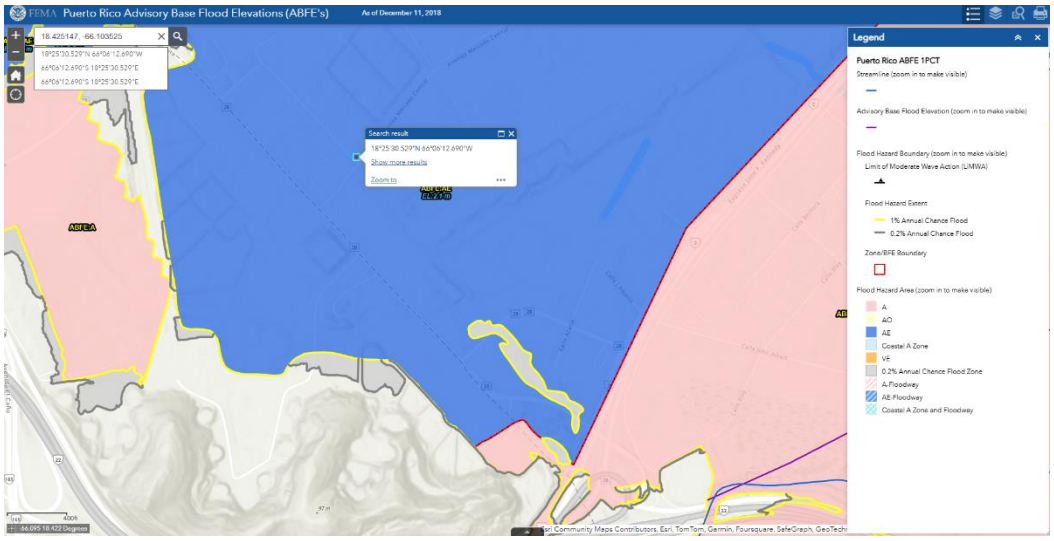
c. Does the project alter a watercourse, water flow patterns, or a drainage way, regardless of its floodplain designation?
    - Not Applicable

d. Flood zone: Is the project located in a flood zone, floodway or will it have a negative impact on the flood zone?
    - The Generation Plant is in Flood Zone A (SFHA per ABFE).

- The rehabilitation will be done in the existing tank. No negative impact.
- In accordance with the updated version of FEMA Region II Memorandum, dated October 10, 2017, Guidance for the use of Available Flood Hazard Information for the Government of Puerto Rico in complying with FEMA Policy 104-008-2, 44 CFR Part 9, and Executive Order 11988 (Floodplain Management). All hazard mitigation proposals under alternative procedures must be designed using the best available flood hazard data and in compliance with applicable regulations and policy.




American International Plaza
250 Av. Luis Muñoz Rivera, Suite 1200
San Juan, PR 00918




N. Structure Age:
   a. Provide the construction date of any buildings or structures within the project. Include those near the project.
      - Not Applicable.
   b. Provide date and information of any prior repairs, remodeling and/or rehabilitation of the property. Include current and previous use of building or structure.
      - Not Applicable.
   c. If a building includes both older and newer sections, confirm which section of the building the work is being done.
      - Not Applicable
   d. Include plans, drawings, blueprints, any architectural documentation available for new construction or substantial improvements regardless of the age of the building or structure.
      - Will be provided (Design and Build)
   e. Provide at least five color pictures of every structure or building, showing the four facades and the contextual view. Include additional pictures of architectural details. Also provide pictures of buildings (45 years old or older) on the proximity.

- Not Applicable.

O. Ground Disturbance

g. Provide a description of the new ground disturbance by giving the dimensions (area, depth, volume, etc.), if any. Include an aerial photo map showing the extent of the disturbance with coordinates.
   - Refer to Scope of Work

h. The project SOW will not affect water or sewer utility services.
   - The site is surrounded by a dike. Plan CES will be provided

i. Indicate the prior/current use of the area to be impacted.
   - The area is an existing Generation Plant. 100% of the work to be completed will be within the existing and already impacted Generation Plant perimeter.

j. Explain how materials will be stockpiled and disposed of.
   - GENERA will provide actual disposal locations and quantities as a Condition of FEMA Record of Environmental Considerations.

k. Specify final disposition site.
   - The disposal of materials will be handled as per the Waste Management Plan.

P. Soil Stabilization measures:

g. Does the project involve any soil stabilization measures?
   - Not Applicable

Q. Required Permits

List of the permits needed for San Juan Generation Site:

- Environmental Compliance Determination in Oficina de Gerencia de Permisos
- General Consolidate Permit – OGPe
- Genera Will provided proof of all permits as a Condition of FEMA Record of Environmental Considerations (REC).

GeneraPR

American International Plaza
250 Av. Luis Muñoz Rivera, Suite 1200
San Juan, PR 00918