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

IN RE: REVIEW OF THE PUERTO RICO ELECTRIC POWER AUTHORITY´S 10-YEAR INFRASTRUCTURE PLAN – DECEMBER 2020	**CASE NO**.: NEPR-MI-2021-0002 **SUBJECT**: Motion to Submit Additional Generation Projects SOWs

MOTION TO SUBMIT ADDITIONAL GENERATION PROJECTS SOWS

COMES NOW the Authority[1], through its counsel of record, and respectfully submits and requests as follows:

I. RELEVANT BACKGROUND

On November 15, 2021, PREPA filed a *Motion to Submit Fourth Group of Generation Projects* (the "November 15 Motion"), with a comprehensive list of Generation Projects which consist of repair work projects of generation assets and for which PREPA will seek reimbursement under several FEMA programs. November 15 Motion at Attachment A.

After several procedural events, PREPA was served with the January 4 Order, by which the Energy Bureau conditionally approved the projects described in Attachments A to H of the referenced order ("Conditionally Approved Projects"), pending the submittal by PREPA of the SOW of each project and deferred the approval of projects are listed in Attachment I of the January 4 Order (the "Deferred Projects") until further evaluation. The January 4 Order additionally provides directives regarding both set of projects for which PREPA was ordered to submit on January 14, 2022, the SOW for both the Conditionally Approved Projects and also the Deferred Projects for the Energy Bureau's evaluation. January 4 Order, page. 3, Sec. III. Additionally, the

[1] Capitalized terms not defined herein shall be considered with the meaning provided to them in the January 13 and 18 motions.

Energy Bureau directed PREPA to answer, on or before January 19, 2022, a set RFIs listed in the order.

On January 13, 2022, PREPA submitted a motion titled *Partial Compliance with the January 4 Order and Request for Extension of Time* (the "January 13 Motion") together with a total of 25 "Generation Projects SOWs" for the review and approval of the Energy Bureau. January 13 Motion at Attachment A. Further, PREPA requested an extension of time until February 14, 2022, to submit the Outstanding SOWs. PREPA asserted that, even though it was asking until February 14, 2022 to complete the submittal of the Outstanding SOWs, it was going to submit them on a rolling basis as they were completed and approved by PREPA.

Thereafter, on January 18, 2022, PREPA filed *Request for Extension of Time to Submit Responses to RFI Included in the January 4 Order* (the "January 18 Motion") asking the Energy Bureau to grant until February 14, 2022, to submit the responses to the RFI.

Last Friday, January 22, 2022, the Energy Bureau entered an order granting, *inter alia*, the requests for extension made by PREPA in the January 13 and January 18 motions. Therefore, the operative deadline to file the Outstanding SOWs and responses to the RFI is February 14, 2022.

II. SUBMITTAL OF ADDITIONAL GENERATION PROJECTS SOWS

In compliance with the January 4 Order, PREPA has completed a total of 10 additional Generation Projects SOWs which are submitted herein for the review and approval of the Energy Bureau. , Attachment A. Out of these Generation SOWs, 7 pertain to the Conditionally Approved Projects, while 3 pertain to the Deferred Projects.

To facilitate the evaluation of the Generation Projects SOWs submitted, PREPA hereby includes a table that details and breakdowns the SOWs as follows: project number assigned by the Energy Bureau to each Generation Project SOW (first column), the SOW number assigned by

PREPA (second column), project name (third column) and a summary of the proposed scope of work (fourth column). *See*, Attachment B.

III. REQUEST FOR APPROVAL OF THE GENERATION PROJECTS SOWS

PREPA respectfully request the Energy Bureau to approve the Generation Projects SOWs as submitted herein. As stated in the November 15, November 29, January 4 and January 18 motions, PREPA's goal to move in a direction that leads to lower costs and cleaner energy requires maintaining its system's reliability and stability during such transition. Consequently, the Generation Projects SOWs submitted for the review and approval of the Energy Bureau consist of repair works *necessary* to increase the current dependable available generation and provide the People of Puerto Rico a safe and reliable electrical service –while the integration of reliable new resources is completed– and thus prevent future major outages in compliance with the SOP and POR reliability criteria. In conclusion, the proposed Generation Projects are *crucial* for PREPA to maintain the reliability of the generation system during the process of integrating new resources and therefore, PREPA requests the Energy Bureau to approve the Generation Projects SOWs submitted herein.

Should the Energy Bureau have any concerns or questions regarding the Generation Projects SOWs herein submitted, PREPA respectfully request that a technical conference through which PREPA representatives can discuss the Generation Projects SOWs be scheduled. During the proposed conference, PREPA's personnel shall address any concerns or questions the Energy Bureau may have, so these projects are approved and PREPA can move forward and make the relevant funding requests to COR3 and FEMA.

IV. REQUEST FOR CONFIDENTIAL DESIGNATION AND TREATMENT

The Generation Projects SOWs presented herein contain global positioning system ("GPS") coordinates of PREPA's power plants, which is critical energy infrastructure information ("CEII") that cannot be disclosed to the public. To protect such confidentiality, PREPA has redacted the GPS information from the Generation Projects SOWs herein submitted (Attachment A) and requests the Energy Bureau to determine that the GPS information is CEII and thus, confidential, and to maintain the public files with the redaction already provided.

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

SOW NO.	PROJECT DESCRIPTION	CONFIDENTIAL INFORMATION	LEGAL BASIS
2041	Inner Barrel Bundle	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
3056	Replacement of Excitation System Units 5 and 6	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
3065	Unit 6 LP-B Installation Work (Failure)	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
4071	Fuel Tanks Level Measurement System	GPS Location Page 4, Sec. 2.1 Page 11, Sec. 10.3	CEII
4072	Water Retention Tank Num. 3	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
4073	Unit PS 4 Refractory, Insulation, scaffolding and Painting Application Works	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII

SOW NO.	PROJECT DESCRIPTION	CONFIDENTIAL INFORMATION	LEGAL BASIS
4074	Contract, on request, for Crane Services PS4	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
4075	Procurement Turning Gear System, Units 3 and 4	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
4078	Upgrade OSI DCS	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
4080	Unit 4, Superheater Header Num. 5 Material and Installation	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII

Article 6.15 of the *Puerto Rico Energy Transformation and RELIEF Act*, Act no. 57 of 2014, as amended ("Act 57")[2], provides that "any person who is required to submit information to the Energy [Bureau] believes that the information to be submitted has any confidentiality privilege, such person may request the [Bureau] to treat such information as such[.]" *Id.* at Sec. 6.15. "If the Energy [Bureau], after the appropriate evaluation, believes such information should be protected, it shall grant such protection in a manner that least affects the public interest, transparency, and the rights of the parties involved in the administrative procedure in which the allegedly confidential document is submitted." *Id.* at Sec. 6.15(a). If the Energy Bureau determines that the information is confidential, "the information shall be duly safeguarded and delivered exclusively to the personnel of the Energy [Bureau] who needs to know such information under nondisclosure agreements." *Id.* at Sec. 6.15(b). "The Energy [Bureau] shall swiftly act on any privilege and

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

confidentiality claim made by a person subject to its jurisdiction by means of a resolution to such purposes before any allegedly confidential information is disclosed." *Id.* at Sec. 6.15(c).

Pursuant to its vested powers, the Energy Bureau approved the *Regulation on Adjudicative, Notices of Compliance, Rate Review and Investigations Proceedings* ("Regulation 8543").[3] Regarding the safeguards that the Energy Bureau gives to confidential information, Regulation 8543 provides that:

> [i]f in compliance with the provisions of [Regulation 8543] or any of the Energy Bureau's orders, a person has the duty to disclose to the Energy Bureau information considered to be privileged pursuant to the Rules of Evidence, said person shall identify the allegedly privileged information, request the Energy Bureau the protection of said information, and provide supportive arguments, in writing, for a claim of information of privileged nature. The Energy Bureau shall evaluate the petition and, if it understands the material merits protection, proceed according to what is set forth in Article 6.15 of Act No. 57-2014, as amended.

Regulation 8543 at Sec. 1.15.

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

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

Under the Critical Infrastructures Protection Act of 2001, the term "critical infrastructure" means "systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters." 42 U.S.C. § 5195c(e). In 2006, FERC Order no. 683 amended the regulations for gaining access to CEII and simplified procedures for obtaining access to CEII without increasing vulnerability of the energy infrastructure and ensuring that access to CEII does not facilitate acts of terrorism.

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

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

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

The aforementioned request for relief has been granted in other matters and dockets, and also for requests made under the captioned case, in which PREPA has had to produce information that included CEII, more specifically GPS. For example, two weeks ago PREPA submitted January 13 Motion, which included several statements of works similar to the Generation Projects SOWs tendered with this motion. The January 13 Motion Generation Projects SOWs included GPS information that PREPA redacted from the public filing and asserted that should remain under seal and declared confidential because, pursuant to federal and local law, it qualified as CEII. After evaluating PREPA's arguments, on January 21, 2022, the Energy Bureau granted confidential designation and treatment to the GPS information that had been redacted from the public versions of the filing. January 21 Order at pp. 3-5, Sec. III.

Is its respectfully submitted that the redacted GPS information qualifies as CEII and thus, should remain redacted. Furthermore, it is asserted that the redactions made are the manner that least affect the public interest, transparency, and the rights of the parties involved in this administrative procedure. *See*, Act 57-2014 at Sec. 6.15(a). Accordingly, and pursuant to the above, it is respectfully requested that the Honorable Energy Bureau find that the information

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

identified by PREPA as CEII is confidential and that the Secretary of the Energy Bureau be directed to keep the confidential CEII under seal.

V. CONCLUSION

WHEREFORE, PREPA respectfully requests the Honorable Energy Bureau to determine that PREPA has partially complied with the January 4 and January 21 orders; to schedule a technical conference to discuss the submitted Generation Projects SOWs, if the Energy Bureau deems it necessary; to determine that the GPS information redacted from the public filing is CEII and thus, confidential information; and to order enter an order directing the Secretary of the Energy Bureau to keep the confidential CEII under seal.

RESPECTFULLY SUBMITTED.

In San Juan Puerto Rico, this 25th day of January 2022.

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

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

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Tel. (787) 395-7133
Fax. (787) 497-9664

CERTIFICATE OF SERVICE

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

In San Juan Puerto Rico, this 25th day of January 2022.

s/ Katiuska Bolaños-Lugo
Katiuska Bolaños-Lugo

Attachment A

2041

Government of Puerto Rico

Puerto Rico Electric Power Authority

Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Inner Barrel Bundle,

Aguirre Power Station

1/20/2022

Introduction

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

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

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

The sections included in this document are:

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

Document Revision History

Version	Date	Summary of Changes

Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Aguirre Power Station – Inner Barrel Bundle
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

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

Program Manager: ***<Name>***

<Insert title here>

PREPA Project Sponsor: ***<Name >***

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Aguirre Power Station, Units 1 & 2	[redacted]

Note: *GPS coordinates are required for all facilities.*

2.2. Facilities Description

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

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

In Aguirre Power Station there's a need of a boiler feed water pump (BFP here after) inner barrel assembly spare. The BFP is an essential equipment required to reliably and efficiently operate both units in Aguirre (1 & 2). Each unit has its own BFP which supplies demineralized water to the boiler's economizer from the deaerator tank. This has the purpose of producing the flow rate and the pressure increase necessary to maintain proper production of superheated steam to move the turbine, and therefore, to produce power in the generator.

At this moment there is no spare BFP's available of any kind. This poses a threat to the availability of the units and, therefore, to the reliability of the electrical power grid system. This type of equipment takes about one year to be designed, fabricated, and delivered.

These BFP's are an original design of Siemens Energy and are used by the boiler's manufacturer with specific technical requisites such as: operating temperature, nominal flow, rotational speed, power required, discharge pressure and NPSHR (Net positive suction head required). And above all, the pump's dimensions are compatible with the space available.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the BFP inner barrel assembly spare for units 1 and 2 in the Aguirre Power Station will consist of the following:

The Contractor shall design, drafting, manufacture and delivery of one (1) Inner Barrel Assembly for the 9BB Motor Driven Boiler Feed Pump for use at the Aguirre Power Complex.

3.2. Type of Project

Indicate whether the intended plan is a(n):

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

Choose One (Restoration, Improved or Alternate) *If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

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

3.3. Preliminary Architectural and Engineering (A&E)

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

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

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

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
• (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
• 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount ($M)
Design, construction and delivery	$1,625,954.00
Total Project Estimated Cost	**$1,625,954.00**

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

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

Section 7. EHP Requirements

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

Section 8. Program Manager Lead Certification

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

Program Manager's Printed Name	Date
Title	Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name	Date
Title	Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

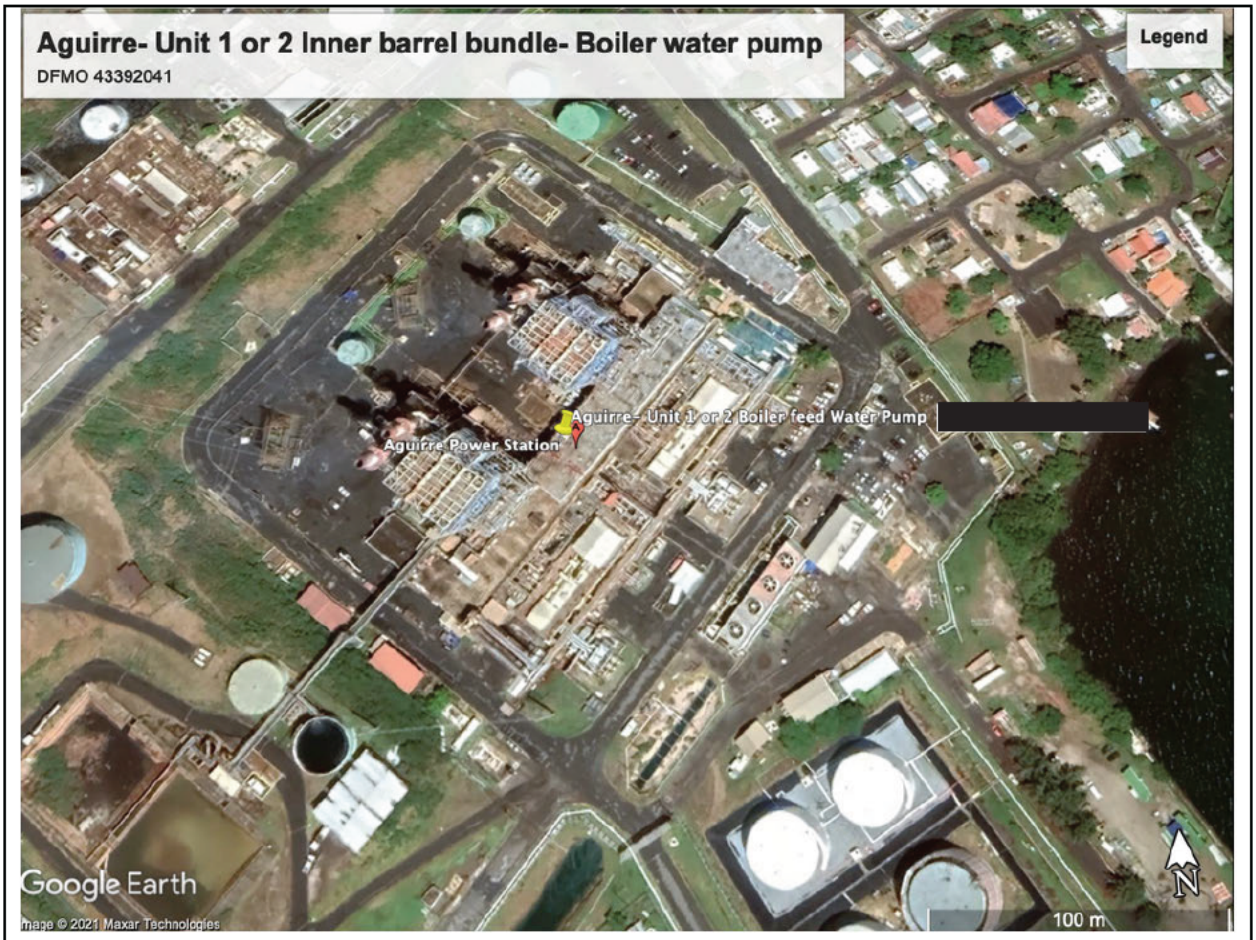
Please see attached the following:

- Contract 89662_Siemens Energy Inc
- Justification_Contract Req. 244323
- Service Order_CT 89662

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

NEPR-MI-2021-0002
ATTACHMENT B No. 41
Justifications
Inner Barrel Bundle

December 10, 2020

Neftalí González Cruz, Chief
Supplies Division

Carlos Negrón Alfonso
Generation Division Administrator

Request for approval of Requisition 244323, Acquisition and delivery of a replacement for a Boiler Feed Pump for the Aguirre and/or Costa Sur Steam Plant.

We hereof include, for evaluation and approval, the requisition aforementioned for the services of design, construction and delivery of a boiler feed pump replacement to be use in Aguirre or Costa Sur steam plants.

The boiler feed water pump (BFP here after) is an essential equipment required to reliably and efficiently operate both units in Aguirre and two units Costa Sur. Each unit has its own BFP which supplies demineralized water to the boiler's economizer from the deaerator tank. This has the purpose of producing the flow rate and the pressure increase necessary to maintain proper production of superheated steam to move the turbine, and therefore, to produce power in the generator.

In the case of Aguirre's units (1 & 2) the one that is motor driven (MDBFP) is necessary for the start-up and running of the Rankin steam cycle until the power output reaches 180 MW. Afterwards and up to 450 MW (maximum production), we use a turbine driven one (TDBFP). This last one uses steam extracted from de main turbine to generate the power necessary to sustain its operation.

In the case of Costa Sur's units 5 & 6, the start-up and running is achieved with a small motor-driven water pump for up to 200 MW. Higher outputs and up to 410 MW then require of the BFP, which is attached to the central stem of the main turbine.

At this moment there is no spare BFP's available of any kind. This poses a threat to the availability of the units and, therefore, to the reliability of the electrical power grid system. This type of equipment takes about one year to be designed, fabricated, and delivered; all of course, after the approval of the purchase order.

In the case of Aguirre, if there is a major fault in the MDBFP, it will be impossible to start up the unit (1 or 2), which will leave the power grid lacking 450 MW for a considerable length of time. If the same occurs in Costa Sur, in either unit 5 or 6, they will be limited to generate only 200 MW. This leave us with two operating scenarios: Aguirre's less profitable unit operation and a power limitation, and Costa Sur's needs to use more expensive fuel to reach higher outputs with higher damage to the environment.

These BFP's are an original design of Siemens Energy and are use by the boiler's manufacturer with specific technical requisites such as: operating temperature, nominal flow, rotational speed, power required, discharge pressure and NPSHR (Net positive suction head required). And above all, the pump's dimensions are compatible with the space available.

The work scope for these services include the following: design, construction, and delivery of the BFP to the designated plant. We include the documents that go with this requisition in Asset Suite.

The time of duration of these services will be approximately fifty-six (56) weeks and has a estimated cos of one million, seven hundred and fifteen thousand, eight hundred and sixty three dollars with zero cents ($1,715,863.00). It will progress as follows:

1. Cost of design and construction of BFP (Proposal U19-ES51087) - $1,615,863.00
2. Delivery of the BFP (Estimated cost) - $100,000.00

For further information, please contact Eng. Carlos A. Negrón Alfonso, Manager at Generation Division, at 6406.

Attachments,

Coordinated

Gerardo Sánchez Pierluisi, Acting Manager
Budget and Capital Improvements

Recommended

Daniel Hernández Morales
Generation Head

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

Approved

Efran Paredes Maisonet
Executive Director

Contract ID	00089662
Contract Release	
Execution Date	9/15/21
Printed	9/15/21

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Vendor:

SIEMENS ENERGY INC
4400 NORTH ALAFAYA TRAIL
MC Q1107
. FL 32826

Please Direct Inquiries To:

YADIRA L LUGO-CORDERO
Y-LUGO@AEEPR.COM
Title PROCUREMENT SUPV
Phone/Alternate Phone:
(787) 521-3235
Fax

Work Location:

JEFE OFIC ADM DIR SIST ELECT
NEOS 701
AVE PONCE DE LEON
PDA NUM 16.5
SANTURCE PR 00936

Title

ONE BFWP "INNER ASSEMBLY BARREL" SPARE FOR COSTA SUR OR AGUIRRE

Contract Value

Total Value	$ 1,625,954.0000 USD	** NOT TO EXCEED **	
Pricing Method	LUMP SUM		
Contract Type	FABRICATED MATERIALS	**Start Date**	9/15/21
Project		**End Date**	11/4/22

LUMA

Contract ID	00089662
Contract Release	
Execution Date	9/15/21
Printed	9/15/21

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Signatures

Anibal Olego	Joel S. Pantojas
Vendor Authorized Signature	Authorized Signature
Anibal Olego 09-15-2021	JOEL PANTOJAS CARABALLO Supervisor de Compras Principal
Printed Name/Title	Printed Name/Title
Date Signed / Phone	09-15-2021 / 787-521-2969
	Date Signed / Phone

Insurance Requirements

Coverage	Start Date	End Date	Insurance Description
1000000.0	4/1/20	4/1/21	AUTOMOBILE LIABILITY INSURANCE
2000000.0	4/1/20	4/1/21	COMMERCIAL GENERAL LIABILITY INSURANCE
1000000.0	4/1/20	4/1/21	EMPLOYER'S LIABILITY INSURANCE
845013.0			PAYMENT BOND
845013.0			PERFORMANCE BOND
1000000.0	4/1/20	4/1/21	PROFESSIONAL LIABILITY
845013.0	7/1/20	1/20/21	WORKMEN'S COMPENSATION INSURANCE OF COMMONWEALTH PUERTO RICO

Scope of Work

ORDEN DE SERVICIO, MATERIALES Y EQUIPOS

REQ. 244323

ONE BFWP "INNER ASSEMBLY BARREL" SPARE FOR COSTA SUR OR AGUIRRE

SE ADJUDICA ESTA ORDEN DE ACUERDO A NUESTRAS ESPECIFICACIONES, TÉRMINOS Y

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

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CONDICIONES Y SU PROPUESTA NÚM. U19-ES51087 REV. 4.
INFORMACION DE PERSONA CONTACTO AEE:
ING. MIGUEL A. BEAUCHAMP
TEL. 787-521-8035
E-MAIL: MIGUEL.BEAUCHAMP@PREPA.COM
COMPRADOR:
JOEL D. PANTOJAS CARABALLO
SUPERVISOR DE COMPRAS PRINCIPAL
TEL. 787-521-2969
E-MAIL: JOEL.PANTOJAS@PREPA.COM
SUPLIDOR: SIEMENS ENERGY
TEL. 321-347-2947
PAYMENT TERMS:
1. 15%: PURCHASE ORDER APPROVAL & MOBILIZATION LETTER
2. 25%: DESIGN DRAWING APPROVAL BY PREPA
3. 30%: EVIDENCE OF RECEIPT THE COMPONENTS TO MANUFACTURE
4. 30%: EQUIPMENT READY TO SHIP

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TERMS AND CONDITIONS
Article 1: Scope of Contract
1.1) The Contractor shall design, drafting, manufacture and delivery of one (1) Inner Barrel
Assembly for the 9BB Pump at Costa Sur Power Plant. All in substantial compliance
[CANA1]with the provisions of this Contract, Terms and Conditions, Proposal Forms, and Contractor¿s
Proposal, all of which are hereby made a part hereof.
1.2) Provided that, on or before the term of this Contract is expired, as part of its obligations herein
stated, the Contractor shall deliver to PREPA a true and exact copy of all diagrams, plans,
sketches, maps, and other documents used in the performance of contracted works and for
which a third-party copyright or patent right would not be an impediment for such delivery.
Article 2: Definitions
Whenever the words defined in this article or pronouns used instead are mentioned in this Contract, they shall have the meanings here given:
2.1) Engineer - shall mean the Generation Director of PREPA, acting directly or through his properly
authorized representatives.
2.2) Contracting Officer - shall mean the PREPA¿s Chief Executive Officer/Executive Director, acting

directly or through his properly authorized representatives.

2.3) Contract - shall mean collectively, all the covenants, terms, and stipulations in these Terms and Conditions [CANA2]and in all supplementary documents hereto attached which constitute essential parts of the Contract and are hereby made part thereof, to wit:

- Contract
- Contractor's Proposal
- Letter of Mobilization
- Insurances, Payment and Performance Bond.

2.4) Contractor - designates Siemens Power Generation Service Co., as the company that will perform all works as defined in U19-ES51087 Rev.4, dated July 23, 2021

2.5) Change order- a written agreement between the Parties that sets out changes in price, time, or scope of work to the Contract, which has been approved by the appropriate official pursuant to the general authorization for approval, and signed by both Parties as further described in Article 8.[CANA3]

2.6) Letter of Mobilization ¿ a letter sent to the Contractor by the Engineer, or his designated representative, notifying the Contractor of the date upon which the Contractor is given authority to begin the work. This letter shall be delivered with the approval of the Contract.

Article 3: Consideration

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3.1) The Contract price quoted in the Proposal shall constitute full compensation for supplies, labor, tools, equipment, other accessories, cost of all insurance, profit, Contractor¿s overhead and all other work satisfactorily for the design, drafting, manufacture and delivery of one (1) Inner Barrel Assembly for the 9BB Pump at Costa Sur Power Plant, in accordance with this Contract.

3.2) In accordance with the terms and conditions contained herein, PREPA agrees to pay and the Contractor accepts, as full payment for the complete performance of this Contract, $1,625,954.00, plus any additional amount to be paid due to extra work ordered and accepted by the Engineer and approved by the Contracting Officer, according to Article 8, Changes and/or Extra Work, below.

3.3) The Contractor shall submit its invoices for work already done according to the payment schedule as provided herein, under Payment to Contractor, together with the supporting documents required.

3.4) In preparing estimates, the material delivered on the site may be taken into consideration; provided that, the Contractor submits evidence that the materials have

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been paid for by him
and that said materials have been properly housed or stored at the job site in a manner which
will insure the preservation of their quality and fitness for the work and that the Contractor
shall not withdraw said material for any purpose other than incorporation into the work.

3.5) After the terms of the Contract have been fully complied, the final payment of the Contract will
be paid upon the presentation of a properly executed and duly certified invoice, therefore, after
the Contractor shall have furnished PREPA with a release of all claims against PREPA arising
under and by virtue of this Contract.

3.6) All invoices submitted by the Contractor shall include the following Certification in order to
proceed with its payment. This is an essential requirement and those invoices without this
Certification will not be processed for payment.

¿Under penalty of absolute nullity, I hereby certify that no employee, official or director of PREPA is a party or has any interest in the profits or benefits to be obtained under this Contract, or if any employee, official or director of PREPA has any interest in the profits or benefits under this contract a waiver has been previously obtained. I, also certify that the only consideration to (furnish the goods) or

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(provide the services) under this Contract is the payment agreed with PREPA's authorized representative. The total amount of this invoice is fair and correct. The (works) were completed, (the products) were delivered or (the services) were provided and no payment has been received for said concept.¿

_____

Contractor's Signature

Article 4: Commencement and Completion of Work

4.1) Delivery of Equipment

Equipment shall be delivery DAP PREPA Warehouse, Puerto Rico Incoterms 2020 in a maximum Sixty (60) consecutive weeks [KL4]from the completed Purchase Order date. [KL5]

4.2) Schedule of Proposed Progress

The Contractor, within twenty (20) business [CANA6][CANA7][CANA8]days after receipt of mobilization letter, shall file with the Engineer a time chart or schedule of proposed progress of the work and the proposed detailed method of carrying on the work including a full statement of equipment and equipment layout for the job. This progress chart and statement of operations shall show the dates of commencement and completion of each item of the work. If said progress chart and/or statement of operations are not satisfactory to the Engineer, they shall be revised by the Contractor to provide for the use of adequate and sufficient equipment and force, and a method of operations, which will assure the completion of the work within the Contract time. This information, when the Engineer has approved it all, shall become a part of

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this Contract.

Article 5: Suspension of Work

5.1) PREPA may, at any time, suspend the whole or any portion of the work under this Contract, by providing Contractor with a written notice stating the reasons for suspension at least 5 (five) days in advance of the day the suspension shall take effect. The right of PREPA to suspend the work shall not be construed as denying the Contractor all actual, reasonable and necessary costs and expenses due to the delays caused by such suspension. Additional BHGE costs or fees related to Suspension of Work shall be covered per Article 8 Changes and/or Extra Work.

5.2) Either Party may suspend the whole or any portion of the work under this Contract by reason of the occurrence of a Force Majeure event as described in Force Majeure Article 11 herein.

[CANA9]

5.3) In case of suspension of the work by PREPA for any reason, or in case the work is suspended in whole or in part due to the occurrence of a Force Majeure event, Contractor¿s obligations shall be extended for a period of time reasonably necessary to overcome the effects of any

such Force Majeure event. [CANA10]

5.4) If the suspension extends for more than 90 days, the Contractor shall have the right to terminate the Contract in accordance with these terms and conditions.

Article 6: Specifications and Drawings

6.1) PREPA reserves the right to review and approve all drawings, specifications, methods and data, which the Contractor develops hereunder. Such review or approval shall in no way relieve the Contractor from its responsibilities, obligations or liabilities under this Contract. The Contractor shall obtain such reviews or approval in writing from PREPA.

6.2) The Contractor shall keep at the working area a copy of the Contract, its supplementary documents, specifications and drawings and shall, at all times, give the Engineer access thereto.

Anything called for in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if called for or shown on both. In case of discrepancy in the specifications and drawings, the matter shall be immediately submitted to the Engineer, without whose decision said discrepancy shall not be adjusted by the Contractor, and the Contractor shall not proceed with the

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work so affected
until it has received written order from the Engineer. The Engineer will furnish, from time to
time, such additional detail drawings and other information as he may consider necessary for
the conduction of the work.

Article 7: Equipment to be Furnished by the Contractor

7.1) All equipment called for in the Specifications and/or shown on the drawings to be furnished by
the Contractor and shall be furnished in strict accordance with the technical requirements of
the Specifications.

7.2) The following is the parts list for the 9BB Inner Barrel Assembly, Part Number P4551AZ:

Article 8: Changes and/or Extra Work

8.1) PREPA may, at any time, make changes or order extra work within the Scope of Work
contracted, subject to previous written acceptance by PREPA's Contracting Officer. If such
changes or extra work require a price and/or schedule revision, such revision(s) shall be
negotiated and agreed in writing by both Parties before the commencement.

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8.2) Changes and/or Extra Work must be approved by the appropriate official pursuant to the general authorization for approval in order for payment of such change or extra work to be made.

8.3) Contractor shall apply for time extensions for construction changes, unforeseeable causes, changed conditions, etc., as indicated throughout the Specification only if the schedule of proposed progress is affected. [CANA11]

Article 9: Inspection

9.1) Periodic Inspection

a) All material and workmanship (if not otherwise designated by the specifications) shall be subject to inspection, examination, and test by PREPA's inspector at all reasonable times, during manufacture and/or construction. PREPA shall have the right to reject defective material, equipment or workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected and rejected material and equipment furnished by the Contractor shall be satisfactorily replaced with proper material, and equipment without charge to PREPA.

Contractor shall remove rejected material from the premises. Contractor

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shall furnish all
reasonable facilities, labor, materials, and equipment necessary for the safe and convenient
inspection and tests that may be performed in such manners as not to unnecessarily delay the
work.

9.2) Final Inspection

a) Whenever all the materials have been furnished and all work has been performed, all in
accordance with the drawings and specifications, the Contractor shall notify in writing the
Engineer that said work is completed and ready for final inspection at site.

b) If all contracted work provided for and contemplated by the Contract is found completed in
accordance with the specifications, this inspection shall constitute the final inspection and the
completion date shall be established as the date of receipt of the notice of the Contractor that
the work was completed and ready for final inspection. If, however, upon inspection by the
Engineer it is found that any work, in whole or in part, is unsatisfactory, the Engineer shall give
the Contractor the necessary instructions as to replacement of material and performance of

work necessary to final completion and acceptance and the Contractor shall immediately comply
with and execute such instructions.

c) Upon satisfactory replacement and performance of such work, the Contractor shall notify the Engineer, and another inspection shall be made which will constitute the final inspection if he said material is found to have been acceptably replaced and the work completed satisfactorily. In such event, the date of receipt of this last notice of the Contractor will be established as the completion date of the work or any separable part thereof under the Contract. The completion
date, thus established, shall be used in calculating the actual time of performance of the work.

The determination of whether the Project is substantially completed shall be per the Contract
documents, and as reasonably determined by PREPA.

d) Final inspection shall occur within a ten (10) day period after the Engineer has received notice
from the Contractor of the satisfactory Delivery (as defined herein) of the Product. [CANA12]

Article 10: Access to Work

10.1) The Contractor shall permit all persons appointed or authorized by PREPA to visit and inspect the work, or any part thereof at all times, and places during the progress of it, upon reasonable notice and without significant disruption to Contractor¿s business. [CANA13]

Article 11: Force Majeure

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11.1) The Parties hereto shall be excused from performing hereunder and shall not be liable in damages or otherwise, if and only to the extent that they shall be unable to perform or are prevented from performing by a force majeure event. For purposes of this Contract, force majeure means any event not caused by the fault or negligence, and beyond the reasonable control of, the Party claiming the occurrence of a force majeure event.
11.2) Force majeure may include, but not be limited to, the following: Acts of God, industrial
disturbances, acts of the public enemy, war, blockages, boycotts, riots, insurrections,
epidemics, pandemics, earthquakes, storms, floods, civil disturbances, lockouts, fires, explosions, interruptions of services due to the acts or failure to act of any governmental authority, provided that these events, or any other claimed as a force majeure event, and/or its effects, are beyond the reasonable control and without the fault or negligence of the Party claiming the force majeure event, and that such party, within 15 business days after the occurrence of the alleged force majeure, gives the other Party written notice describing the particulars of the occurrence and its estimated duration. The burden of proof as to whether a force majeure has occurred shall be on the Party claiming the force majeure. Failure to pay shall not constitute a Force Majeure event.
[CANA14][CANA15]
1.3) The Parties acknowledge the worldwide outbreak of the coronavirus disease, which is likely to affect the execution of the Contract. The Parties agree, that Contractor shall be entitled to reasonable adjustments

of the time delivery dates are caused directly or indirectly by the outbreak of the coronavirus disease (COVID-19).[CANA16]

Article 12: Penalty for Delays

12.1) If Contractor is delayed in completing the work, or any separable part thereof, within the timeframe established in Article 4, Commencement and Completion of Work, Contractor shall pay to PREPA an amount equal to $2,000.00 USD for each day of delay in completing the work or separable part thereof, up to a maximum of ten percent (10%) [KL17][KL18][KL19]of the price of the relevant part of the Contract that was delayed. The amounts payable for delay [KL20]established in this Article are the sole and exclusive remedies for all delay claims by PREPA

12.2) In the event that Contractor, due to his delay, had pay the total amount of the liquidated damages as above mentioned, and has failed to complete the work or any part separable thereof, it could be considered a breach of the Contract, and PREPA may terminate the Contract, execute the performance bond and pursue any other remedies under this Contract. [CANA21]

12.3) In case of a delay, the Contractor shall within ten (10) days from the beginning of any such delay notify the Engineer in writing of the causes of delay, who shall ascertain the facts and the extent of the delay and extend the time for completing the work when in his judgment the

findings of facts justify such an extension, and his findings of facts thereon shall be final and conclusive on the Parties hereto, subject only to appeal by the Contractor as provided in the Article herein provided on Disputes hereof; provided that, no claim made by Contractor against PREPA, its agents, contractors, subcontractors, employees, successors, assignees, for any cause whatsoever, during the progress of any portion of the work embraced in the Contract shall relieve any of the Parties from the performance of its obligations and of the work under this Contract, which shall not suffer any delay by reason of a claim being ascertained by either Party under this Contract.

12.4) Any damages caused by delays or hindrances caused exclusively by PREPA shall be considered as fully compensated for by the extensions of time as provided above including Contract price adjustment, which shall be covered by Article 8 Changes and/or Extra Work, except in the event of suspension of the work by PREPA as per Article 5 of this Contract.

12.5) If PREPA does not terminate the right of the Contractor to proceed, the Contractor shall continue the work, provided that the Contractor shall not be charged for

any amounts in relation
to any delays in the completion of the work due to force majeure events or situations, or failures
on the part of PREPA or any of its other contractors to carry out its obligations.
1[CANA22]
Article 13: Liabilities [CANA23]
13.1) Civil Responsibility
The appearing Parties agree that their respective responsibilities for damages under this Contract will be governed by the Puerto Rico Civil Code and its case law, as dictated by the Supreme Court of Puerto Rico, but subject to the limitations set forth herein. [CANA24]
13.2) The total liability of the Contractor for all claims, whether a claim is based in Contract, warranty,
indemnity, tort / extra contractual liability (including negligence), strict liability or otherwise,
shall not exceed the (i) Contract Price, or (ii) if PREPA places multiple order(s) under the
Contract, the price of each particular order for all claims arising from or related to that order.
DEFINITION OF CONTRACTOR UNDER THIS ARTICLE ON LIABILITIES:
For purposes of this Article on ¿Liabilities¿, the term ¿Contractor¿ means Contractor, its affiliates, subcontractors and suppliers of any tier, their respective employees, officers, agents and successors and assigns. [CANA25]

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INTENT OF PARTIES TO HAVE THIS ARTICLE ON LIABILITIES APPLY IN ALL CASES: This Article shall apply whether a claim is based in contract, warranty, indemnity, tort/extra- contractual liability (including negligence), strict liability or otherwise, and shall prevail over any conflicting terms. The Parties agree that their respective responsibilities for damages under this Contract will be governed by the terms of this Contract, and shall be each Party¿s sole and exclusive remedies.
TERMINATION OF CONTRACTOR¿S LIABILITY:
Contractor¿s liability shall terminate upon the expiration of the applicable warranty period, provided that PREPA may enforce a claim that accrued prior to that date by commencing an action, as applicable, under the Article on Disputes, before the expiration of the applicable statute of limitations but not later than one (1) year after the expiration of the warranty period.
This clause as to the expiration of liability does not place a limit or restriction on the indemnity obligations of Contractor with respect to third party personal injury or death claims or third party property damages claims as defined under the Indemnity clause[CANA26][CANA27].
INDIRECT OR CONSEQUENTIAL DAMAGES NOT COVERED:
The Contractor shall not be liable or responsible for any special, indirect, incidental or consequential damages, loss of profits or revenue, loss of business, loss or costs because of a plant shutdown, loss of power, downtime costs, cost of capital, loss of information and data, loss of production, or claims from customers of PREPA, or costs of replacement power, or any other such special,

indirect, incidental or consequential types of damages that may be claimed in relation to the work [CANA28]performed, under any legal theory which may be invoked for such claims or damages.

INDEMNITY FOR THIRD PARTY CLAIMS:

The Contractor agrees to save and hold harmless and to indemnify PREPA for all expenses and costs of any nature (including attorneys' fees) incurred by PREPA arising out of any claim made by any third party for personal injuries, including death, or for physical damage to third party property, caused by the Contractor, to the extent of Contractor¿s negligence in the performance of its obligations under the Contract. For purposes of Contractor¿s indemnity responsibility under this Article, no portion of the Covered Unit(s), Facility or the Site is considered third party property. PREPA agrees to save and hold harmless and to indemnify Contractor for all expenses and costs of any nature (including attorneys' fees) incurred by Contractor arising out of any claim made by any third party for personal injuries, including death, or for physical damage to third party property, caused by PREPA, to the extent of PREPA¿s negligence in the performance of its obligations under the Contract.

PROVISION ON THE OPERATION OF PREPA'S EQUIPMENT

It is hereby provided that Contractor is NOT allowed to operate PREPA¿s equipment at any time and that the Scope of Work does not provide for Contractor to operate any PREPA¿s equipment. Therefore, PREPA is responsible for the operation of its own equipment at all times.

Article 14: Independent Contractor

14.1) Contractor shall be considered as an independent contractor, for

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all material purposes under
this Contract, and all persons engaged or contracted by the Contractor for the performance of
its obligations herein, shall not be considered as employees or agents of PREPA. In
consequence, the Contractor is not entitled to any fringe benefits, such as, but not limited to
vacations, sick leave, and other.
Article 15: Termination

15.1) Notwithstanding anything to the contrary in this Contract regarding its term, PREPA may, at
any moment, terminate, cancel or accelerate its expiration, after giving Contractor a not less
than thirty (30) days prior written notice, when in PREPA's judgment such action responds to PREPA's best interest. Provided that, in the event Contractor fails to comply with any of its obligations under the Order, PREPA provide written notice, and if Contractor fails to commence a cure within 10 business days from the date of receipt of PREPA¿s default notice, then PREPA may terminate the Contract. [CANA29]
15.2) If PREPA terminates the Contract due to Contractor¿s failure to comply with its obligations, then PREPA, as its sole and exclusive remedy, may finish the work by whatever reasonable method it may deem expedient, at its sole risk, and Contractor will reimburse PREPA for its reasonable and verifiable costs to complete the Products up to the price for such

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Products under the Agreement.[CANA30]
15.3) Notwithstanding anything to the contrary in this Contract, if PREPA should terminate for
convenience this Contract, by written notice to Contractor, PREPA agrees to pay Contractor for
a) all milestones completed to date and b) for all work in progress (plus a reasonable profit
margin of 2.5% of the Contract remaining milestones).
15.4) The Parties acknowledge that PREPA is undergoing a transformation process, and therefore,
both Parties agree that in the eventuality of the execution of a Partnership Contract, Sale
Contract or any other PREPA Transaction (as these terms are defined in Act 120-2018[KL31]), PREPA
may sell or assign, [KL32](each, a ¿Transfer¿) any of its rights, title, or interest (by novation or other
instrument) in this Agreement as permitted by applicable law and at any time, and without Contractor¿s consent or cost, expense or incremental liability to PREPA, to any future operator of Puerto Rico¿s electric power transmission and distribution system or any of its affiliates, or to any governmental agency, body, public corporation or municipality of Puerto Rico; provided, that PREPA shall notify Contractor no later than thirty (30) days before the effective date of any such Transfer. The Contractor acknowledges that all his responsibilities and obligations under the Contract, such as work to be performed and services to be provided, etc.,

will continue in full force and effect until the expiration of the thirty (30) day period.

Article 16: Insurance, Bonds, and Indemnities

16.1) Contractor agrees to relieve and exonerate from responsibility and indemnify PREPA for all costs and expenses of any nature (including attorney's fees) incurred by PREPA and which originate or arise relating to claims by third Parties for personal damages, including death, or for property damage, but which damages have been caused by act or omission of Contractor in the performance or nonperformance of its obligations under this Contract.

Contractor shall secure and maintain in full force and effect during the life of this Contract as provided herein, policies of insurance covering all operations engaged in by the Contract as follows:
a) Bonds: as a Contract security, the Contractor shall furnish at the time of execution of the Contract:
b) A Performance Bond in the amount of one hundred percent (100%) of the Contract price, with good and sufficient surety satisfactory to PREPA guaranteeing that the

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Contractor will well and
faithfully perform the contract work. [CANA33]
c) All bonds shall be issued in the official form of PREPA and shall expire at the end of the Contract
and warranty period.
Article 17: NOT USED. [CANA34]
Article 18: Minimum Wage Rates

18.1) Laborers and other employees engaged under this Contract shall be paid not less than the
minimum wages rates prescribed by law. PREPA may withhold from any monies due to the
Contractor any sum necessary to make up the full amount of wages due under this Contract
and may distribute it directly to those entitled thereto hereunder.
Article 19: Contingent Fees

19.1) The Contractor guarantees that he has not employed any person to solicit or secure this
Contract upon any agreement for a commission percentage, brokerage or contingent fee.
Breach of this guarantee shall give PREPA the right to annul the Contract or, at its discretion
to deduct from the Contract price or consideration the amount of such commission, percentage,

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brokerage or contingent fees. This warranty shall not apply to commission¿s payable by
contractors upon contract or sales secured or made through bona fide established commercial
or selling agencies maintained by the Contractor for the purpose of securing business.

Article 20: Other Contracts

20.1) PREPA may award other contracts for additional work, and the Contractor shall fully cooperate
with such other contractors, and carefully fit his own work to that provided under other
contracts as may be directed by the Contracting Officer. The Contractor shall not commit or
permit any acts which interfere with the performance of work by any other Contractor. If compliance with this Article 20.1 threatens or impairs Contractor's ability to perform in substantial compliance with these terms and conditions, then Contractor shall bring to the attention of PREPA and may enter into any Change Order necessary to permit compliance.[CANA35]

Article 21: Officials not to benefit

1.1) No officer, employee or agent of PREPA, or of the Government of the Commonwealth of Puerto
Rico or Municipal Governments, shall be admitted to any share or part of this Contract or to

any benefit that may arise there from.

Article 22: Conflict of Interest

[KL37][KL38]

22.1) The Contractor certifies that he does not receive payment or benefit of any nature for services rendered regularly through an appointment to a governmental agency, body, public corporation or municipality of Puerto Rico. The Contractor also certifies that he may have consulting services contracts with other governmental agencies or bodies, but such condition does not constitute a conflict of interest for the Contractor.

22.2) The Contractor represents conflicting interests when on behalf of a client he must contend for that which it is his duty to oppose to comply with its obligations with another previous, present or potential client. Also, the Contractor represents conflicting interests when his conduct is described as such in the canons of ethic applicable to the Contractor and his personnel or in the laws or regulations of the Commonwealth of Puerto Rico.

22.3) In contracts with partnerships or firms, in the event that any of the partners, directors or employees of the Contractor should incur in the conduct described herein, said conduct shall

constitute a violation to the prohibitions provided herein. The Contractor shall avoid even the
appearance of the existence of conflicting interests.
22.4) The Contractor acknowledges that PREPA¿s Chief Executive Officer/Executive Director of PREPA
shall have the power to intervene the acts of the Contractor and/or its agents, employees, and
subcontractors regarding the enforcement of the prohibitions contained herein. In the event
that PREPA should discover the existence of adverse interests with the Contractor, PREPA¿s
Chief Executive Officer/Executive Director shall inform the Contractor, in writing, of PREPA¿s
intention to terminate this Contract within a thirty (30) day period. During said period, the
Contractor may request a meeting with the Executive Director to present his arguments
regarding the alleged conflict of interests, which meeting shall be granted by PREPA in every
case of alleged conflict of interests. In the event that the Contractor does not request such a
meeting during the specified thirty (30) day period or the controversy is not satisfactorily settled
during the meeting, this Contract shall be cancelled.
22.5) The Contractor certifies that, at the time of award of this

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Contract, it does not have any other contractual relation that can enter in a conflict of interest with this Contract. The Contractor also certifies that no public employee has any personal or economical interest in this Contract.

Article 23: Claims for Labor and Materials

23.1) The Contractor shall, at his own expense, assume the defense of and save harmless PREPA from claims for labor and materials and not suffer any mechanics or other liens to remain outstanding against any of the property used in connection with the work; and shall, on request, furnish satisfactory evidence that all persons who have done work or furnished materials have been fully paid. If the Contractor fails to comply with his obligations in this respect, PREPA may take such liens or claims and may withhold from any monies due to the Contractor such amounts as may be necessary to satisfy and discharge any such claims and any cost and expenses incidental thereto.

Article 24: Not Used. [LNK((LNU039][LNK((LNU040]

Article 25: Assignment

25.1) This Contract or any interest therein or any monies due or to

become due there under shall not
be assigned, hypothecated or otherwise disposed of without the previous consent in writing of
the Contracting Officer.

Article 26: Subcontractors

26.1) Contractor shall not subcontract its rights and obligations under this Contract, except in the
event PREPA gives previous written authorization for such actions, and such authorization shall
not be unreasonably withheld. Notwithstanding the foregoing, Contractor may subcontract all or parts of the work to any of Siemens Energy's manufacturing sites, or assigns or novate the Contract or parts thereof to any other company of the Siemens Energy Group without PREPA's consent. Provided that no subcontract shall be considered for PREPA¿s approval, except when the following requirements are met: (1) the Contractor delivers PREPA
a complete, non-marked copy of the signed subcontract, not less than thirty (30) days prior to
the effective date of the proposed subcontract; (2) the subcontract includes, as a condition for
its legal validity and enforceability, a provision whereby PREPA has the right to substitute,
subrogate or assume Contractors¿ rights under the subcontract, in the event that PREPA
declares the Contractor in breach or default of any of the Contract terms

and conditions; and
(3) the subcontract includes, as a condition for its validity and enforceability, a provision
establishing for the subcontractor the obligation to comply unconditionally and entirely with all
Contractors¿ obligations under the Contract (mirror image rule), except for such obligations,
terms and conditions which exclusively related with works or services not included under the [CANA41]
subcontract.
Article 27: Novation
27.1) Contractor and PREPA agree that no amendment or Change Order, during the contract term, it
is understood as a contractual novation, unless both Parties agree to the contrary, specifically
and in writing. This previous provision shall be equally applicable in such other cases where
PREPA gives the Contractor a time extension for the compliance of any of its obligations under
the Contract or where PREPA dispenses the claim or demand of any of its credits or rights under
this Contract.
Article 28: Patents and Copyrights

28.1) Contractor, at its own expense, shall defend any suit or action

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brought against PREPA based on a claim that any equipment or part thereof, copyright or un-copyrighted composition, secret process, patented or unpatented invention, article, or appliance manufactured or used in the performance of this Contract, including their use by PREPA, constitutes an infringement of any patents or copyrights of the United States, if notified promptly in writing by PREPA, and given the authority, information, and assistance for the defense of the same, and PREPA does not take any adverse position against Contractor, and Contractor shall pay all damages and costs awarded therein against PREPA.

28.2) If in such suit the equipment or any part thereof, or the composition, secret process, invention, article or appliance, is held to constitute infringement and its use is enjoined, the Contractor, at its option and expense, shall either (i) procure for PREPA the right to continue using the same or (ii) replace it with non-infringing equipment, composition, secret process, invention, article or appliance, or (iii) modify it so it becomes non-infringing; or (iv) replace the Part with non-infringing Parts; or (v) if mutually acceptable to the Parties, remove

the infringing Part and refund and/or reduce the price allocable to such part. The foregoing states the entire liability of the Contractor for patent and/or copyright infringement.

28.3) The provisions of 28.1 and 28.2 shall not apply to any Product or Part which is altered, modified or manufactured exclusively to [CANA42] PREPA¿s design. With respect to any Part furnished under the Contract which is not manufactured by Contractor, only the patent and /or copyright indemnity of the manufacturer, if any, shall apply.

Article 29: Waivers

29.1) No waiver of any breach of this Contract shall be held to be a waiver of any other subsequent breach. All rights and remedies afforded by PREPA in this Contract shall govern; all rights and remedies outside the contract shall be taken and construed as cumulative, that is, in addition to every other remedy provided herein or by law, subject to the Article 13, Liabilities

Article 30: Disputes

30.1) Except as otherwise specifically provided in this Contract, all disputes concerning questions of fact arising under this Contract shall be decided by the Contracting Officer, subject to written

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appeal by the Contractor within thirty (30) days to the Contracting Officer. As soon as
practicable thereafter, the Contracting Officer shall inform each party hereto of his decision
regarding the dispute, which decision shall be final and conclusive upon the Parties hereto,
unless such decision is challenged on the basis of being arbitrary, malicious or capricious. If
such challenge is made, either party may pursue its remedy at law or equity. In the meantime,
the Contractor shall diligently proceed with the work as directed.

Article 31: Payment to Contractor

31.1) During the life of the Contract, invoices for partial payments shall be made as follow:

Invoicing Milestone
Percentage
Purchase Order Approval &
Mobilization Letter
15%
Design Drawing approval by PREPA
25%
Evidence
of receipt the components to manufacture
30%
Equipment ready to Ship

30%

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100.00%

31.2) Upon completion and acceptance of all work required hereunder, the amount due to the Contractor under this Contract will be paid upon the presentation of a properly executed and duly certified voucher therefore, after the Contractor shall have furnished PREPA with a release, if required, or all claims against PREPA arising under and by virtue of this Contract, other than such claims, if any, as may be specifically excepted by the Contractor from the operation of the release in stated amounts to be set forth therein; provided that, the amount of such excepted claims is not included in the voucher for final payment.

31.3) All invoices submitted by the Contractor shall be subject to PREPA's approval, and its payment shall be done within forty five (45) days of invoice date. All invoices submitted by the Contractor shall include the Certification established in Article 3, Consideration, in order to proceed with its payments.

Article 32: Correction of Work after Final Payment

32.1) Neither the final certificate for payment nor any provision in the

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Contract documents shall relieve the Contractor of responsibility for any breach of warranty, unless otherwise specified, Contractor shall remedy any defects due thereto in accordance with the Warranty provisions of this Contract; PREPA shall give notice of observed defects within the applicable warranty period. All questions arising under this Section shall be decided by the Engineer, subject to appeal by the Contractor[CANA43], as provided in Article 30, Disputes, of this Contract.

Article 33: Laws to be Observed

33.1) Contractor shall observe and comply with any and all Federal, Commonwealth and Municipal Laws, by-laws, ordinances, and regulations in any manner affecting the work, the equipment or the materials used in the proposed rehabilitation and/or installation or construction, and those employed on the work or the conduct of the work, and with all such orders and decrees as exist at present or may be enacted prior to the completion of the work by bodies or courts having any jurisdiction or authority over the work.

33.2) Contractor shall save harmless and indemnify PREPA and its representatives¿ officers, agents,

and servants for fines, attorney¿s fees and penalties paid by PREPA, to governmental authorities
as sole result of Contractor¿s violation of any such law, by-law, ordinance, regulation, order or
decree, whether by himself or his employees subject to the limits of liability in Article 13,
Liabilities.

Article 34: Change in Law

34.1) If during the term of this Contract, occurs any change in law, including, but not limited to
changes in applicable tax law, which causes an increase in Contractor's costs when supplying
the Products to be acquired by PREPA, and after the Contractor presents evidence
that the change in law will cause a material increase in their cost to provide products or services,
and subject to mutual acquiescence by both Parties the Contract price, delivery and
performance dates shall be equitably adjusted to reflect additional costs or obligations incurred
by Contractor. Said changes shall be executed under Article 8 Changes and/or Extra Work[CANA44].

Article 35: Choice of Law

35.1) This Contract shall be governed by and construed in

accordance with the laws of the Commonwealth of Puerto Rico. Also, the contracting Parties expressly agree that only the federal courts located in Puerto Rico will be the courts of competent and exclusive jurisdiction to decide over the judicial controversies that the appearing Parties may have among them regarding the terms and conditions of this Contract. The Parties hereby knowingly and willingly waive any right to trial by jury. [CANA45]

Article 36: Separability

36.1) If a court of competent jurisdiction declares any of the Contract provisions as null or invalid,
such holding will not affect the validity and effectiveness of the remaining provisions of the
Contract and the Parties agree to comply with their respective obligations under such provisions
not included by the judicial declaration.

37: Warranty

37.1) Contractor warrants that all materials, parts, equipment used, and work performed under this
Contract substantially comply with its terms and conditions; that they are free from any and
all patent defects in materials and workmanship and that at the time of delivery, Contractor has title to each Product free and clear of liens and encumbrances. The foregoing warranties are conditioned on (i) no repairs, modifications or alterations being made to the Product and Parts other

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than by Contractor or its authorized representatives; (ii) PREPA handling, using, storing, installing, operating and maintaining the Product and Parts in compliance with any parameters or instructions in any specifications attached to, or incorporated into the Contract, (iii) or in the absence of such conditions, parameters or instructions or to the extent not applicable, in accordance with the generally accepted industry standards applicable in the locale where the Services are being performed and having regard to the nature of the Product and Services; (iv) PREPA discontinuing use of the Product and Parts after it has, or should have had knowledge of any defect in the Product or Parts; (v) PREPA providing Contractor with reasonable access to operating and maintenance data as requested by Siemens, (which may include secure broadband connection); (vii) Product and Equipment not having been subjected to accident (including force majeure), alteration, abuse or misuse; and (ix) PREPA not being in default of any payment obligation. [CANA46][CANA47]

37.2) The foregoing warranty for Products shall expire eighteen (18) months after the date of delivery or one (1) year after the first use of the Product, whichever occurs first. No warranty claim shall extend the applicable warranty period. If Products do not meet the above warranties, PREPA shall promptly notify the Contractor in writing prior to expiration of the warranty period. The Contractor shall (i) at its sole option, repair or replace defective Products, or refund all or part of the purchase price. . Warranty repair or replacement by the Contractor shall not extend or renew the applicable warranty period. PREPA shall

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obtain Contractor¿s agreement on the specifications of any tests it plans to conduct to determine whether a non-conformance exists. Contractor shall not be responsible for and shall have no obligation to pay the costs of and shall not be liable for any damages or losses arising from accessing, retrieving, removing, or transporting defective Products, or reinstalling repaired or replacement Products unless part of Contractor¿s original scope. THE REMEDIES SET FORTH IN HEREIN CONSTITUTE THE SOLE AND EXCLUSIVE REMEDIES FOR ALL CLAIMS ARISING OUT OF OR RELATING TO ANY FAILURE OF, OR ANY DEFECT OR NON-CONFORMITY IN, THE PRODUCTS OR PARTS, REGARDLESS OF WHEN THE FAILURE, DEFECT OR NON-CONFORMITY ARISES AND REGARDLESS OF THE CAUSE OR ACTION. THE WARRANTIES PROVIDED IN THIS ARTICLE ARE EXCLUSIVE AND ARE [CANA48]IN LIEU OF ALL OTHER WARRANTIES, CONDITIONS AND GUARANTEES WHETHER WRITTEN, ORAL, IMPLIED OR STATUTORY. NO IMPLIED OR STATUTORY WARRANTY, OR WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLIES.

Article 38: Correlation of Documents

38.1) In case of discrepancy or in the event of conflict among the different Contract documents such
as: Contract, Terms and Conditions, Proposal Forms, and the Contractor¿s Bidding Proposal,
these shall take precedence in the order given. The terms and conditions contained in the
Contract shall prevail over any conflictive terms and conditions contained in the Contractor's

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Bidding Proposal.
Article 39: Notice
39.1) PREPA agrees to give the Contractor immediate notice of any and all claims for which the
Contractor may be liable, and the Contractor agrees to give PREPA immediate notice of any
and all claims for which PREPA may be liable.
39.2) Any notice to be given hereunder shall be in writing and will be sufficiently served when
delivered in person or properly mailed to the following addresses:
To PREPA: Puerto Rico Electric Power Authority
PO Box 364267
San Juan, Puerto Rico 00936-4267
Attention: Mr. Neftalí González Cruz Head Materials Management Division
To Contractor: Siemens Energy Inc.
4400 Alafaya Trail
Orlando, FL, 3285
USA
Attention: Mr. Anibal Olego. Mr. Juan Castaneda
[BJ(GISLM50]
Article 40: Income Tax Withholding
40.1) PREPA will deduct and withhold corporate income tax at source to the Contractor the equivalent
of ten percent (10%) from payment for services rendered under this Contract, in compliance

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with the Internal Revenue Code for a New Puerto Rico, Act No. 1-2011, as amended, section
1062.03. Should PREPA deduct and withhold any corporate income taxes at source, PREPA
shall provide to Contractor, within sixty (60) days from payment, the official receipt issued by
the competent government authority to which the corporate income taxes have been paid, or
an alternative document acceptable to the relevant tax authorities. Notwithstanding, the
withholding to be done by PREPA as herein stated could be increased to twenty percent (20%)
in the event that the Contractor is a non-resident individual, which is a U.S. citizen, as provided
by the Act No. 1-2011, section 1062.08; or twenty-nine percent (29%) in the event that the
Contractor is a non-resident and non U.S. citizen individual; or a foreign corporation or partnership which is not dedicated to industry or business in Puerto Rico, as provided by Act 1- 2011, section 1062.08.
40.2) If a Release Letter is issue to the Contractor by the Treasury Department, the Contractor shall
be responsible to submit a copy of said Release Letter to PREPA for every calendar year;
otherwise, payments under the Contract shall remain subject to withholding at source.

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40.3) All invoices shall be segregated by concepts (services, materials, equipment, etc.), to identify the amounts subject to withholding and avoid undue deductions.

Article 41: Discrimination

41.1) The Contractor certifies that it is an equal opportunity employer, and does not discriminate by reason of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be victim or domestic violence, sexual aggression or harassment; for physical or mental disability or veteran status.

Article 42: Transfer of Funds

42.1) If Contractor decides to assign or transfer an amount, due or payable, to which he is entitled for services rendered or goods provided during the term of this Contract, Contractor shall notify PREPA of such transfer of funds, in accordance to the provisions of Act 21-2012. Said notice shall clearly indicate the rights granted, including a copy of the contract under which the assignment or transfer of funds is made, the exact amount of funds to be assigned or transferred, and specific identification information regarding the

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assignee (full name of the
person or company), address and any other contact information.
42.2) Contractor acknowledges and agrees that PREPA may deduct any amount, due or payable
under this Contract, that Contractor owes; PREPA may retain any said amount if Contractor
fails to fulfill its obligations and responsibilities under this Contract, or a claim arises for
warranty or defects regarding the services rendered or goods provided under this Contract, provided that Contractor agrees and acknowledges the amount.
[CANA51]Contractor also acknowledges and agrees that PREPA¿s payment obligation under any
assignment of funds will cease upon payment of the outstanding amounts under this Contract.
PREPA shall not be required to make payments or transfer any funds for an amount that
exceeds the payment to which Contractor is entitled to under this Contract, if Contractor agrees[CANA52].
Article 43: Mandatory Clauses Pursuant Act 3-2017 and Circular Letter 141-17
dated January 30, 2017
43.1) Both Parties acknowledge and agree that the contracted services herein may be provided to
another entity of the Executive Branch which enters into an interagency

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agreement with PREPA
or by direct disposition of the Office of the Chief of Staff. These services will be performed
under the same terms and conditions in terms of hours of work and compensation set forth in
this Contract. For the purpose of this clause, the term "entity of the Executive Branch" includes
all agencies of the Government of Puerto Rico, as well as public instrumentalities, public
corporations and the Office of the Governor
43.2) The Office of the Chief of Staff shall have the power to terminate this Contract at any time
Article 44: Compliance with the Government of Puerto Rico Contracting Requirements [KL53][KL54]
44.1) The Contractor will comply with all applicable State Law, Regulations or Executive Orders that
regulate the contracting process and requirements of the Commonwealth of Puerto Rico.
Previous to the signing of this Contract, the Contractor will have to submit the following
documents or certifications:
a) Certification issued by the Treasury Department of Puerto Rico which indicates that the
Contractor does not owe taxes to the Commonwealth of Puerto Rico; or is paying such taxes

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by an installment plan in full compliance with its terms (called ¿Certificado Deuda Contributiva¿
on the website).
b) An Income Tax Return Filing Certificate, issued by the Treasury Department of Puerto Rico
assuring that the Contractor has filed its Income Tax Return for the last five (5) tax years.
c) Certification issued by the Treasury Department of Puerto Rico which indicates that the
Contractor does not owe Puerto Rico Sales and Use Taxes to the Commonwealth of Puerto
Rico; or is paying such taxes by an installment plan and is in full compliance with its terms.
d) A Puerto Rico Sales and Use Tax Filing Certificate, issued by the Treasury Department of Puerto
Rico assuring that the Contractor has filed his Puerto Rico Sales and Use Tax for the last sixty
(60) contributory periods.
e) A copy of the Contractor Certificate of Merchant¿s Registration issued by the Treasury
Department of Puerto Rico.
f) Certification issued by the Municipal Revenues Collection Center (MRCC), assuring that the
Contractor does not owe any tax accruing during the last five (5) years to such governmental

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agency.
) A Personal Property Tax Filing Certification, issued by the MRCC which indicates that the
Contractor has filed its Personal Property Tax Return for the last five (5) contributory terms.
h) Certification, issued by the Child Support Administration, assuring that the Contractor is in
compliance with the withholdings required by law as an employer (called ¿Certificación de
Cumplimiento de ASUME¿ or ¿Certificado ASUME patronal¿ in the website)
i) Certificate, issued by the Department of Labor and Human Resources of
Puerto Rico, assuring that the Contractor has paid to the Department of Labor and Human
Resources of Puerto Rico its employees¿ contributions accruing during the last five (5) years, in
accordance with the Puerto Rico Employment Security Act (unemployment, temporary disability
or sickness or social security for drivers/chauffeurs), or is paying such contributions by an
installment plan in full compliance with its terms.
j) Certificate of Incorporation, or Certificate of Organization or Certificate of Authorization to do
business in Puerto Rico issued by the Puerto Rico Department of State.
k) Good Standing Certificate issued by the Puerto Rico Department of

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State.

l) Social Security and Income Tax Retentions: In compliance with Executive Order 1991 OE- 24; and C.F.R. Part 404 et. Seq., the Contractor will be responsible for rendering and paying the Federal Social Security and Income Tax Contributions for any amount owed as a result of the income, from this Contract. Executive Order 1991-OE-24; C.F.R. Part 404 et. seq.

m) Compliance with Act No. 1 of Governmental Ethics: The Contractor will certify compliance with Act No. 1-2012, as amended, known as the Ethics Act of the Government of Puerto Rico, which stipulates that no employee or executive of PREPA nor any member of his/he immediate family (spouse, dependent children or other members of his/her household or any individual whose financial affairs are under the control of the employee) shall have any direct or indirect pecuniary interest in the services to be rendered under this Contract, except as may be expressly authorized by the Governor of Puerto Rico in consultation with the Secretary of Treasury and the Secretary of Justice of the Government. 3 L.P.R.A. § 8611

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et seq.
n) Law 168-2000: Law for the Strengthening of the Family Support and Livelihood of Elderly
People: The Contractor will certify that if there is any Judicial or Administrative Order
demanding payment or any economic support regarding Act No. 168-2000, as amended, the
same is current and in all aspects in compliance. Act No. 168-2000 ¿Law for the Strengthening
of the Family Support and Livelihood of Elderly People¿ in Spanish: ¿Ley para el Fortalecimiento
del Apoyo Familiar y Sustento de Personas de Edad Avanzada¿, 3 L.P.R.A. §8611 et seq.
o) Law Num. 127-2004: Contract Registration in the Comptroller¿s Office of
Puerto Rico Act: Payment for services object of this Contract will not be made until this Contract
is properly registered in the Office of the Comptroller of the Government of Puerto Rico pursuant
to Law Number 18 of October 30, 1975, as amended.
p) Prohibition with respect to execution by public officers: (3 L.P.R.A. 8615(c)):
No public officer or employee authorized to contract on behalf of the executive agency for which he/she works may execute a contract between the agency for which he/she works and an entity or business in which

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he/she or any member of his/her family unit has or has had direct or indirect economic interest during the last four (4) years prior to his/her holding office.

q) Prohibition with respect to contracting with officers or employees:
(3 L.P.R.A. 8615(d))
No executive agency may execute a contract in which any of its officers or employees or any member of their family units has or has had direct or indirect economic interest during the last four (4) years prior to their holding office, unless the Governor gives authorization thereto with the previous recommendation of the Secretary of the Treasury and the Secretary of Justice.

r) Prohibition with respect to contracts with officers and employees of other Government entities:
(3 L.P.R.A. 8615(e))
No public officer or employee may be a party to or have any interest in any profits or benefits produced by a contract with any other executive agency or government dependency unless the Governor gives express authorization thereto with previous recommendation from the Secretary of the Treasury and the Secretary of Justice.

s) Prohibition with respect to evaluation and approval by public officers:
(3 L.P.R.A. 8615(f))
No public officer or employee who has the power to approve or authorize contracts shall
evaluate, consider, approve or authorize any contract between an executive

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agency and an
entity or business in which he/she or any member of his/her family unit has or has had direct
or indirect economic interest during the last four (4) years prior to his/her holding office.

t) Prohibition with respect to execution by public officers contracts with former public officers: (3 L.P.R.A. 8615(h))

No executive agency shall execute contracts with or for the benefit of persons who have been public officers or employees of said executive agency until after two (2) years have elapsed from the time said person has ceased working as such.

u) Anti-Corruption Code for a New Puerto Rico: Contractor agrees to comply with the provisions
of Act No. 2-2018, as the same may be amended from time to time, which establishes the Anti-
Corruption Code for a New Puerto Rico. The Contractor hereby certifies that it does not
represent particular interests in cases or matters that imply a conflict of interest, or of public
policy, between the executive agency and the particular interests it represents.

v) Contractor shall furnish a sworn statement to the effect that neither Contractor nor any
president, vice president, executive director or any member of a board of

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officials or board of
directors, or any person performing equivalent functions for Contractor has been convicted of
or has pled guilty to any of the crimes listed in Article 6.8 of Act 8-2017, as amended, known
as the Act for the Administration and Transformation of Human Resources in the Government
of Puerto Rico or any of the crimes included in Act 2-2018.
Contractor hereby certifies that it has not been convicted in Puerto Rico or United States Federal court for under Articles 4.2, 4.3 or 5.7 of Act 1-2012, as amended, known as the Organic Act of the Office of Government Ethics of Puerto Rico, any of the crimes listed in Articles 250 through 266 of Act 146-2012, as amended, known as the Puerto Rico Penal Code, any of the crimes typified in Act 2-2018, as amended, known as the Anti-Corruption Code for a New Puerto Rico or any other felony that involves misuse of public funds or property, including but not limited to the crimes mentioned in Article 6.8 of Act 8-2017, as amended, known as the Act for the Administration and Transformation of Human Resources in the Government of Puerto Rico. PREPA shall have the right to terminate the agreement in the event Contractor is convicted in Puerto Rico or United States Federal court for under Articles 4.2, 4.3 or 5.7 of Act 1-2012, as amended, known as the Organic Act of the Office of Government Ethics of Puerto Rico, any of the crimes listed in Articles 250 through 266 of Act 146-2012, as amended, known as the Puerto
Rico Penal Code, any of the crimes typified in Act 2-2018, as amended,

known as the Anti- Corruption Code for a New Puerto Rico or any other felony that involves misuse of public funds or property, including but not limited to the crimes mentioned in Article 6.8 of Act 8-2017, as amended, known as the Act for the Administration and Transformation of Human Resources in the Government of Puerto Rico.

w) Dispensation: Any and all necessary dispensations have been obtained from any government entity and that said dispensations shall become part of the contracting record.

x) Consequences of Non-Compliance: The Contractor expressly agrees that the conditions outlined throughout this Section are essential requirements of this Contract. Consequently, should any one of these representations, warranties or certifications be incorrect, inaccurate or misleading, in whole or in part, there shall be sufficient cause for the PREPA to render this Contract null and void, and the Contractor shall reimburse the PREPA all moneys received under this Contract.

Article 45: Delivery, Title and Risk of Loss

45.1) In accordance to Incoterm 2010, Contractor shall deliver Products to PREPA DAP Factory. Delivery shall mean delivery in accordance with the applicable delivery term at the manufacturing plant.

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Title and Risk of loss shall pass to PREPA at Delivery. [YLLC55][YLLC56]
Article 46: Other Taxes

46.1) All unemployment, retirement, and other Social Security contributions and taxes; all sales, use
and excise, privilege, business and occupational taxes, and any other taxes or fees payable by
and imposed on the Contractor, in connection with the execution of this contract, are and shall
be included as part of his prices
Article 47: NOT USED.
Article 48: [CANA57]NOT USED.
Article 49: Quality Assurance

49.1) The Contractor shall submit to PREPA its standard quality control program
and established quality assurance program, to satisfy all applicable regulation and requirements specified in the procurement documents. The program shall contain all those measures reasonably necessary to assure that all basic technical requisites ask for in the drawings, codes, tests, and inspections for design, fabrication, cleaning, installation, packing, handling, shipping, long term storage, when necessary, and test equipment are fulfilled.
Article 50: Complete Agreement

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This document, together with all attachments referenced herein, constitutes the complete agreement between the Parties.
Article 51:Confidentiality
51.1) Both during and after the term of this Agreement, the parties will treat as confidential all information obtained from the disclosing party and all information compiled or generated by the disclosing party under this Agreement for the receiving party, including but not limited to business information, the quotation, the Agreement, processes and procedures, know-how, methods and techniques employed by Contractor in connection with Products, technical data, drawings, flow charts, program listings, software code, and other software, plans and projections. Neither party may disclose or refer to the Contractor¿s Products under this Agreement in any manner that identifies the other party without advance written permission. Unless required by appropriate governmental authorities, neither party shall, without the prior written consent of the other party, issue any public statement, press release, publicity hand-out or other material relating to Products installed on PREPA¿s Site or Equipment. However, Contractor has the right to share confidential information with its affiliate and subcontractors provided those recipients are subject to the same confidentiality obligations set forth herein.
(b) Nothing in this Agreement requires a party to treat as confidential any information which: (i) is or becomes generally known to the public, without the fault of the receiving party; (ii) is disclosed to the receiving party, without obligation of confidentiality, by a third party

having the right to make such disclosure; (iii) was previously known to the receiving party, without obligation of confidentiality, which fact can be demonstrated by means of documents which are in the possession of the receiving party upon the date of this Agreement; or (iv) was independently developed by receiving party or its representatives, as evidenced by written records, without the use of discloser¿s confidential information, or (v) is required to be disclosed by law, except to the extent eligible for special treatment under an appropriate protective order, provided that the party required to disclose by law will promptly advise the originating party of any requirement to make such disclosure to allow the originating party the opportunity to obtain a protective order and assist the originating party in so doing.

(c) It is Contractor¿s policy not to unlawfully or improperly receive or use confidential information, including trade secrets, belonging to others.

This policy precludes Contractor from obtaining, directly or indirectly from any employee, contractor, or other individual rendering services to Siemens confidential information of a prior employer, client or any other person which such employee, contractor, or individual is under an obligation not to disclose. PREPA agrees to abide by this policy.

(d) Contractor shall retain all intellectual property rights in the Products, works, Contractor¿s documents, processes, Contractor¿s confidential information, and any design information and/or documents made by (or on behalf of) Contractor. Upon receipt of all fees, expenses and taxes due in respect of the relevant Products, Contractor grants to PREPA a non-transferable, non-exclusive, royalty-free license to copy, use and

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communicate Contractor¿s documents for the sole purpose of operation and maintenance of the Products.[CANA58]
END OF TERMS AND CONDITIONS
[CANA1]Agree with Revision.
[CANA2]Agree with Revisions.
[CANA3]Okay with Revision.
[KL4]Okay with revision.
[KL5]This will be updated based on final version of accepted proposal.
[CANA6]I would suggest a compromise of 15 business days.
[CANA7R6]Under review.
[CANA8R6]Please accept 20 business days. We will try to improve delivery of progress schedule as much as possible but in order to be accurate we need 20 business days
[CANA9]Okay with Revision
[CANA10]Okay with Revision
[CANA11]Okay with Revision.
[CANA12]Okay with Revision.
[CANA13]Okay with Revision.
[CANA14]Okay with Revision, if both parties agree to define ¿Reasonable Time¿on a period of time, may be 15 to days.
[CANA15R14]15 business days inserted.
[CANA16]I understand the request of possible extension of time for deliverables, if such justification has to do with Covid-19, but the cost should not be increase.
[KL17]LDs to be addressed together with revised proposal and delivery

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dates.
[KL18R17]Under review.
[KL19R17]Ok with revision
[KL20]Okay with Revision.
[CANA21]Okay with Revision.
[CANA22]Setoff addressed in separate section.
[CANA23]PREPA¿s Legal must address this comment by Siemens.
[CANA24]Okay with Revision.
[CANA25]Okay with Revision
[CANA26]Okay with Revision.
[CANA27R26]
[CANA28]Okay with Revsion.
[CANA29]Okay With Revison.
[CANA30]Okay with Revision.
[KL31]Will need to take a closer look at this Act to ensure we are ok with ability to assign or transfer.
[KL32]Legal must review this commensts.
[CANA33]Okay with Request.
[CANA34]Okay with deletion.
[CANA35]Okay with Revision.
[KL36]Given contract is with PREPA, eliminated to avoid confusion.
[KL37]
[KL38R37]Legal must review this deletion.
[LNK((LNUO39]Given no services are being provided, this should be inapplicable.

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[LNK((LNUO40]I agree. This is a procurement of Good, which will be pick up at Siemens Facilities in the US.
[CANA41]Okay with Revision.
[CANA42]Okay with Revision.
[CANA43]Okay with Revision.
[CANA44]Okay with Revision.
[CANA45]Legal must review this.
[CANA46]Okay with Revision.
[CANA47]Okay with Revision.
[CANA48]Okay with Revision.
[BJ(GISLM49]If the contract is defined FCA, the seller will be Siemens Energy Inc
[BJ(GISLM50]Okay with Revision
[CANA51]Okay with Revision.
[CANA52]Okay with Revision.
[KL53]Under review to ensure all required documentation already in place.
[KL54R53]If the contract is FCA, seller is Siemens Energy Inc. Siemens Energy Inc is not incorporated into Puerto Rico. Please review and advise documentation required for sellers outside Puerto Rico
[YLLC55]Delivery Term FCA is chosen
[YLLC56R55]Defined delivery to clarify.
[CANA57]Agree with Deletion.
[CANA58]Agree with Revision.

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* * * End of Contract * * *

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

January 10, 2022

Mario E. Miranda Sánchez, Interim Head
Supplies Division

Alexis Cruz Figueroa, Jefe
Aguirre Power Generating Complex

SERVICE ORDER FOR SYPPLYING ONE BFWP INNER ASSEMBLY BARREL FOR AGUIRRE COMPLEX.-SCOPE OF WORK CONTRACT #: 89662

The Contractor shall design drafting, manufacture and delivery of one (1) Inner Barrel Assembly for the Motor Driven Boiler Feed Pump for use at either Aguirre Power Complex or Costa Sur Power Plant. All in substantial compliance with the provisions of this Contract, Terms and Conditions, Proposal Forms and Contractor's Proposal.

The Contractor shall deliver the above-mentioned equipment to the Costa Sur Power Plant.

Coordinated,

Jorge L. Cotto Pérez, Interim Head,
Generation Directorate

Government of Puerto Rico

Puerto Rico Electric Power Authority

Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Costa Sur Power Plant - Units 5 & 6 Excitation System Upgrade

1/19/2022

Introduction

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

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

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

The sections included in this document are:

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

Document Revision History

Version	Date	Summary of Changes

Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Costa Sur Power Plant – Units 5&6 Excitation System Upgrade
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

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

Program Manager: ***<Name>***

<Insert title here>

PREPA Project Sponsor: ***<Name >***

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Costa Sur Static Excitation System **U. 5** **U. 6**	[redacted]

Note: *GPS coordinates are required for all facilities.*

2.2. Facilities Description

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

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Costa Sur units 5 and 6 are in need of an upgrade to their Static Excitation System, since after 23 years in the Plant they are completely obsolete. In case of an emergency, there are no new parts to be purchased and all the spare parts have been used, including units 3 and 4 Excitation System. In addition, one Excitation Power Transformer for both units is needed, since there is no spare one in the Plant. It is important to upgrade these Static Excitation Systems of the Steam Turbine Generators, since units 5 and 6 are the ones that regulate load and frequency in the electrical system of PR.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the units 5 & 6 Static Excitation System upgrade in Costa Sur Power Plant will consist of the following:

A. Design, manufacturing, supply, erection, testing and commissioning of Automatic Excitation Systems for units 5 and 6 in Costa Sur Power Plant.
B. Model Cutler-Hammer WDR2000 will be upgraded to Model DECS-2100 in both Costa Sur units 5 and 6.
C. Manufacture and delivery of one (1) Full Forcing Rectifier Duty Rated Excitation Power Transformer.
D. Basler will be in charge of the Excitation Control equipment and installation, and Engineering Services International Inc. will supply and install bus taps, bus runs, power cables and control wires, to and from the Excitation Control equipment.

3.2. Type of Project

Indicate whether the intended plan is a(n):

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

Choose One (Restoration, Improved or Alternate) *If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

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

3.3. Preliminary Architectural and Engineering (A&E)

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

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

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

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
• (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
• 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount ($M)
Unit 5 - full scope of Static Excitation System upgrade, including an Excitation Power Transformer	$1,564,397.00
Unit 6 – full scope of Static Excitation System	$1,196,537.00
Total Project Estimated Cost	**$2,760,934.00**

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

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

Section 7. EHP Requirements

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

Section 8. Program Manager Lead Certification

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

_____ _____

Program Manager's Printed Name Date

_____ _____

Title Signature

Section 9. PREPA Project Sponsor Comments

Comments

<Insert any comments here>

_____ _____

PREPA Project Sponsor's Printed Name Date

_____ _____

Title Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

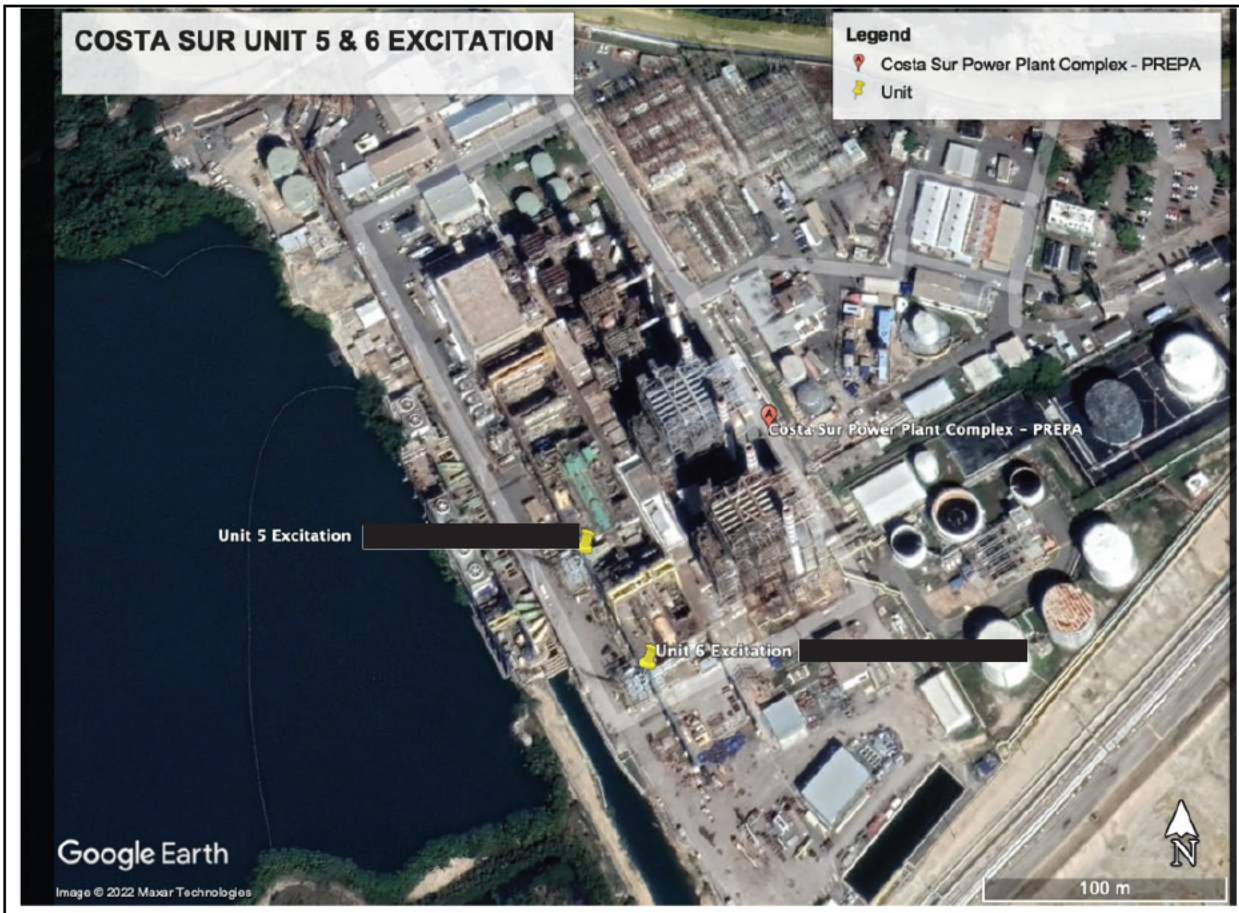
Please see attached the following:

- Units 5 and 6 Project Justification: Contract Req. 252643 (U.5) and Contract Req. 252645 (U.6)
- Units 5 and 6 Quotations: 957631 (U.5) and 957632 (U.6)
- Manufacturer Letter: Equipment Upgrade Explanation

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A

GOBIERNO DE PUERTO RICO
AUTORIDAD DE ENERGÍA ELÉCTRICA

Mario E. Miranda
Jefe División de Suministros

Miguel A. Beauchamp Ramos, Jefe Interino
Central Generatriz Costa Sur

SOLICITUD DE PRECIO, SYSTEM UPGRADE DECS-2100 STATIC EXCITATION SYSTEM UNIDAD 6 COSTA SUR (CR 252645)

Solicitud de precio por un estimado de $1,196,537.00 por la compra e instalación de un *upgrade DECS-2100 Static Excitation System* para la Unidad 6 de la Central Costa Sur.

Desde el año 1999 los equipos Basler WDR2000 están instalados y en servicio en las unidades 5 y 6 de la Central Costa Sur. La Central, en aquel momento, compró varios repuestos ordinarios para ambos sistemas. En el año 2011 se completó una mejora de carácter digital o electronica, únicamente a la porción del control regulador automático de voltaje con el fin de actualizar y mantener acceso a las piezas críticas digitales de repuesto de ambas unidades y así poder mantener comunicación con el gobernador de carga de la unidad y el despacho de la Central. Por razones de presupuesto, durante el periodo del 1999 al presente la Central consumió los repuestos de almacén, utilizó los dos sistemas de las Unidades 3 y 4 fuera de servicio para reabastecer el almacén y así continuó operando las Unidades 5 y 6. No obstante, luego de los Terremotos ocurridos los días 6,7 y 8 de enero de 2020, se consumieron todos los repuestos disponibles.

nformado consistentemente que las
n el año 2010 y luego en el 2019 caducaron los módulos de regulador ECS/RW-2000 previamente instalados en el año 2011. Durante los 23 años el sistema WDR-2000 y posterior la mejora ECS/RW-2000 continúan sirviendo fielmente a la Central Costa Sur, el sistema es tan robusto que requirió solo de servicio y monitoreo preventivo y comparado a los otros sistemas muy pocas partes:

mayormente circuitos integrados digitales conocidos como *modules* y/o acondicionadores de señales (*signal conditioners*). No obstante comenzando en el año 2019 las unidades comenzaron a presentar fallas diagnosticas pequeñas que indicaban deterioro de los circuitos digitales, en una ocasión en verano de 2019 se disparó la Unidad 5 por falsa señal de bajo voltaje del generador. Luego de esa falla, verano de 2020, fallan ambos; el *Exciter Control Module* y el *Thyristor Control Module* y a principios del 2020 el *Exciter Control Module* y los *Analog & Digital Input Modules* en la Unidad 6. Estas fallas consumieron todas nuestras partes de repuesto. En el caso de la Unidad 6 se adquirieron e instalaron los últimos módulos disponibles en fábrica, uno cual tuvo que ser remanufacturado por el fabricante y dilató su entrega pues, inicialmente, no paso la prueba de tensión del propio manufacturero luego de sacarla de su almacén. De igual manera, hay que tener presente que todos estos sistemas en servicio aun operan con *Firmware* y *Software* nativo de 16 y 32 bits, es decir Windows 95 hasta Windows 8, todos cuales también están obsoletos. El sistema es apoyado localmente por su distribuidor utilizando emuladores de Windows 95 y Windows 7 pero haciendo la salvedad que ya no se le puede escribir *Firmware* a las tarjetas y módulos existentes y que dichos módulos están obsoletos desde hace casi 10 años. Esto es crítico, porque ese *Firmware* es el que habilita el correcto diagnóstico de ambas unidades y simultáneamente permite que ambos reguladores se comuniquen e interactúen con el sistema de control y gobernador de carga y velocidad *Speedtronic* de cada unidad enviando los secuenciales de eventos y alarmas a estos sistemas de control de carga.

omunicación y diagnostico durante igualmente durante los periodo extraordinarios y de mantenimiento o conservación.

La mejora propuesta por el fabricante del WDR2000 y el ECS/RW-2000, Basler Electric, es un reemplazo urgente de los componentes que por 23 años han servido fiel a la Central y los cuales hoy están completamente obsoletos, no existen piezas nuevas para ellos y cualquier cambio en la comunicación de los otros sistemas de la Central no se podrían actualizar con estos reguladores existentes.

En el caso de los transformadores rectificadores, los mismo son más antiguos que los reguladores existentes hasta el 1987 y no hay en la central una unidad de reemplazo lo cual pone en una situación muy precaria a la Central y el sistema ya que por sus características es común que estos transformadores se fuercen o pulsen ordinariamente hasta un 150% sobre su capacidad para mantener el voltaje o tensión en las terminales del generador y el transformador elevador de la central (24/230kV), lo mismo aplica al adelantar o retrasar los pulsos de excitación de los reguladores para poder controlar el factor de potencia de la red variando los reactivos producidos por las Unidades 5 y 6. La pulsación para regular carga y reactivos es un fenómeno que induce calor, en ocasiones considerable, en las bobinas del transformador de excitatriz o *Rectifier PPT Unit* de cada unidad.

El servicio de Basler Electric se provee a nivel local, es la empresa ESI, inc, quien a través de un contrato de servicios y emergencias provee el personal local no solo a la Central sino a la totalidad de las Centrales térmicas e hidrogas brindando apoyo local, rápido y expedito durante las emergencias, incluyendo proveer sus servicios durante los apagones, terremotos y huracanes tanto a la línea completa de equipos Basler Electric y los sistema BH Bently Nevada y BH Speedtronic Mark. Además ESI, como representante exclusivo, también provee todo el enlace con el personal de ingeniería y servicio de Basler Electric tan reciente como el verano del 2021.

ener las Unidades 5 y 6 que regulan de Puerto Rico, se recomienda la inversión en la actualización y modernización de las dos unidades excitatrices y un transformador de resguardo y así evitar mayores contratiempos, dilaciones y anomalías resultantes de falta de equipo actualizado y/o sin repuestos. En términos económicos, a razón de un costo operacional de 5c/kWh ($20,750 por hora) y aproximando que las unidades se utilizan al menos 6,000 horas al año, el repago o retorno simple de cada una de estas unidades es 68 horas de producción, a juzgar por las últimas dos averías que sumadas impactaron más casi mes de producción mermada podemos concluir que esto tambien es una inversion prudente.

La Central entiende que no solo existe una justificación técnica sino que el repago de la misma revalida esta justificación técnica, esto sin incluir los beneficios de continuar confiablemente regulando frecuencia, voltaje y reactivos (factor de potencia) los cuales tienen un costo adicional al sistema eléctrico completo.

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AUTORIDAD DE ENERGÍA ELÉCTRICA

Mario E. Miranda
Jefe División de Suministros

Miguel A. Beauchamp Ramos, Jefe Interino
Central Generatriz Costa Sur

SOLICITUD DE PRECIO, SYSTEM UPGRADE DECS-2100 STATIC EXCITATION SYSTEM UNIDAD 5 COSTA SUR (CR 252643)

Solicitud de precio por un estimado de $1,564,397.00 por la compra e instalación de un *upgrade DECS-2100 Static Excitation System* para la Unidad 5 de la Central Costa Sur junto con la manufactura y entrega de un *Full Forcing Rectifier Duty Rated Excitation Power Transformer* de resguardo para ambas Unidades 5 y 6.

Desde el año 1999 los equipos Basler WDR2000 están instalados y en servicio en las unidades 5 y 6 de la Central Costa Sur. La Central, en aquel momento, compró varios repuestos ordinarios para ambos sistemas. En el año 2011 se completó una mejora de carácter digital o electronica, únicamente a la porción del control regulador automático de voltaje con el fin de actualizar y mantener acceso a las piezas críticas digitales de repuesto de ambas unidades y así poder mantener comunicación con el gobernador de carga de la unidad y el despacho de la Central. Por razones de presupuesto, durante el periodo del 1999 al presente la Central consumió los repuestos de almacén, utilizó los dos sistemas de las Unidades 3 y 4 fuera de servicio para reabastecer el almacén y así continuó operando las Unidades 5 y 6. No obstante, luego de los Terremotos ocurridos los días 6,7 y 8 de enero de 2020, se consumieron todos los repuestos disponibles.

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La mejora propuesta por el fabricante del WDR2000 y el ECS/RW-2000, Basler Electric, es un reemplazo urgente de los componentes que por 23 años han servido fiel a la Central y los cuales hoy están completamente obsoletos, no existen piezas nuevas para ellos y cualquier cambio en la comunicación de los otros sistemas de la Central no se podrían actualizar con estos reguladores existentes.

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La Central entiende que no solo existe una justificación técnica sino que el repago de la misma revalida esta justificación técnica, esto sin incluir los beneficios de continuar confiablemente regulando frecuencia, voltaje y reactivos (factor de potencia) los cuales tienen un costo adicional al sistema eléctrico completo.

12570 State Route 143
Highland, IL 62249-1074 USA
P: 618.654.2341
F: 618.654.2351
E: info@basler.com

SYSTEM UPGRADE QUOTATION

TO: **ESI, Inc.**
644 Ave Fdez Juncos S404
District View Plaza
San Juan, PR 00907-3181

QUOTATION (SQ) No.: **957632**

DATE of QUOTE: **October 15, 2021**

ATTN: Néstor Rivera-Galguera, (787) 431-6728 **riverane@esi-energy.com**

REF: South Coast Unit 6 Steam Turbine Generator **$1,196,537 Turnkey**

Item	Qty	Description	Price Each

Upgrade Cutler-Hammer WDR2000

1 **1** **DECS-2100 Static Excitation System** **$1,056,930**

Supply of a Static Exciter – to be installed by others.
The static exciter consists of digital excitation control and rectifier bridge assemblies, cooled with redundant fans, complete with accessories listed below, prewired and tested for used in an indoor Control/Rectifying cabinet – with a brush-type synchronous generator with main field requirements of 4262 Amperes at 355 Volts at rated load and power factor. The static exciter includes a multi-bridge design that provides a minimum of *N*+2 bridge redundancy, with continuous capacity of 4800 Amperes, with a 30–second forcing rating of 6700 Amperes – for operation in 40°C ambient, at up to 3300 feet above sea level
High Initial Response, with ceiling forcing voltage at 585 Volts, based on source voltage at rated level and connection to existing PPT. A spare PPT, proposed as separate line item is also herein included, as follows:

3730 kVA, 24000:480 Volts, 5.24%Z

The quoted system includes:

Excitation Control/Rectifying System - indoor rated - NEMA Type 1

Exterior ANSI Gray #61 (light gray) Fitted Line-Up to fit inside,
216″W (split 108″/108″) x 60½″D x 90″H + 12″H hats over power cubicles + approximately 2″H, welded channel bases
Approximately 5 tons, including pullout drawers
Front and Rear Access Required

Cabinet lights

Cabinet space heater

New thermostat for controlling space heater
Two (2) AC receptacles, for 120 V station-fed power
Shorting current transformer (CT) blocks, for CT secondaries

Item	Qty	Description	Price Each

DECS-2100 Excitation Control Features – continued

Dual-Control Channel

With automatic voltage regulator (AVR), automatic control, manual control, excitation limiters, integrated protection systems, Integrated Digital AVR set point adjuster

Regulation

Automatic Voltage Regulation Mode
Paralleling Compensation
Reactive Current / Line Drop Compensation
Adjuster Follower Circuits for Bumpless Transfer (auto-manual)
Bus Voltage Matching – during off-line operation to support synchronizing
Transient Gain Reduction transfer function (*TGR*)
Manual Control, field *current* regulator (*FCR*)
available as field *voltage* regulator (*FVR*) for testing
Auto-Manual Control Transfer – operator action

Sensing

Inputs for two sets of PTs, Regulating and Metering sets
Input for PT from the running-bus circuit – Voltage Matching
Inputs for three CTs from the machine under control

Limiting Functions including:

Under Excitation Limiter (*UEL*)
Over (Maximum) Excitation Limiter (*OEL*)
Instantaneous Field Current Limiter (*INST_CUR*)
separate on-line and off-line pickups
Volts/Hertz Limiter (*HXL*)

Protective Functions including:

Loss of Field (*40Q*), Alarm/Transfer/Trip with delay
Over Excitation Protection (*OEP*)
Instantaneous Field Over-Current Protection (*INST_CUR*)
separate on-line and off-line pick-ups
Volts/Hertz Protection (*24*)
Loss of PT sensing (*LOS_SENS*)
Loss of Voltage Sensing automatic transfer to metering PTs
Automatic Transfer to Manual – on failure of sensing potential
Field Ground Detector (*64F*), integrated in excitation control

Monitoring Functions:

Conduction of Current into Power Converter
Rotor (field winding) Temperature Monitoring

Power System Stabilizer (PSS),

Type: Two input; utilizing compensated frequency and power (IEEE 421.5 Model PSS-2B/C)

On-line Bode Analysis for PSS Tuning

Frequency vs. Gain/Phase: This block creates a range of sinusoidal signals and uses those signals to obtain the frequency response of the chosen regulator/exciter control loop.

Item	Qty	Description	Price Each

DECS-2100 Excitation Control Features – continued

Self-diagnostic documentation functions:

Event and Alarm Recorder
Configured with Four (4) Event Recorders, each with eight (8) channels
Data Logger

Interactive Display Panel (IDP-1500)

Please see product bulletin *TPJ*.

USB Hub

USB hub, isolated 4-port, UHR304

Ethernet Switch

industrial grade, 10/100 Mbps, RJ-45 ports, self-configuring

Field Ground Detector, FGD-2

to be powered from station low-voltage source

Analog I/O

Each Channel has the capability to sense four analog inputs
and two RTDs.
Eight, individually configurable, analog outputs
configured for: ±10 V or 4-20 mA
are also provided on each Channel

Digital I/O

Each Channel has the capability to sense 48 digital inputs.
Thirty-two digital outputs are also provided on each Channel.

Redundant Power Inputs,

Each logic/control module accepts two sources of power, for
enhanced fault tolerance.

Redundant Power Supplies,

a paralleled set of dual-sourced power supplies,
to feed the power inputs of the logic/control modules
plus a second set of single-sourced, power supplies
to feed the other power inputs of the logic/control modules

Power Supplies Dual Sources,

Inputs contribute power to the “auctioneering circuit” that provides an
interface to accept both AC and DC sources,
both the PPT’s secondary and the 125 Volt station battery.

Eight Power Converters, parallel-connected Redundant (N +2), drawout, upgraded *power drawers*

On-line maintenance
One Rectifier reparable or replaceable with the excitation system energized
patented active Temperature balancing among parallel bridges

Forced-Air Cooling, with redundant fans

Exciter loss of cooling alarm/trip

Item	Qty	Description	Price Each

DECS-2100 Excitation Control Features – continued

Incoming AC Line Surge Suppression/ Voltage Filters

De-Excitation module – for field discharge for shutdown

Crowbar module – for protection during pole slip

Field Discharge Resistor (FDR)

Shaft Voltage Suppression Network

Field Build-Up Circuit, flashing from AC source

480-Volt Input, molded-case circuit breaker
Flashing power transformer, 480:28 Volts, approximately
Flashing power rectifier
Flashing Contactors, DC

AC Field Breaker – "41A" & "41B" Devices

Drawout Air Circuit Breaker – EATON Magnum DS
5000-Ampere RMS rated, 100 kA RMS interrupting, +40°C

Standard Factory Tests

Witness Testing – at workshop, one workday or two consecutive workdays

Four (4) Sets O&M Instruction Books, CD-ROM copies

Four (4) Sets BESTCOMS™*Pro* Software Level 3
– compatible with Windows™
High-Level Logic for the Digitally-Processed Excitation Controller
Control functions diagrammed in the form of blocks
Inputs and Outputs shown with corresponding variable assignments
Labels and Terms with nomenclature consistent with synchronous machine excitation control

Backup Failsafe Automatic Synchronizer

2 **1** **Auto Synchronizer - via integrated function in DECS-2100** **$3,500**

This option adds an integrated automatic synchronizer to the system described in ***Item 1***.

- Automatic Synchronizing – *ANSI device number 25A. The DECS-2100 excitation controller includes integrated matching of the generator's voltage to the running bus's voltage. This additional option provides controls for the speed controlling governor and for the unit circuit breaker.*
- **Raise/Lower Signals to governor** *to adjust speed to support synchronization.*
- **Breaker-Closing signal**, *automatic synchronizer initiates closure of the generator circuit breaker when voltage magnitude, slip frequency, and phase difference are within preset limits*
- **52C Relay,** The breaker-closing command is supported with an interposing relay, added to *ITEM 1*.

Synchronism-Check for Automatic Synchronizing:
Please observe prudent practice, which requires a permissive set of contacts, in the breaker-closing circuit, from a synchronism-check (25) relay – not included herein.

Item	Qty	Description	Price Each

Equipment, continued

Protective Relay for Excitation Power Transformer

3 1 BE1-11t w/ (87) and in-cabinet CTs $8,313

Protection with relay supplied, mounted and wired in a back assy for ITEM 1

Current Transformers, three:

6000:5, C200, ANSI/IEEE C57.13
To Be Mounted in the rectifier power supply bus

Test Switches for the two sets of CTs, secondary leads

PPT primary CTs
CTs in the rectifier power supply bus, 6000:5

BE1-11t relay

Style: BE1-11 T6D2M4J1P0E000Y0
Differential protection with dual slope for quick and selective protection against internal faults.
5 Ampere nominal phase current inputs
Negative-Sequence Overcurrent (46) Protection
Instantaneous Overcurrent (50) Protection
Inverse-Time Overcurrent (51) Protection
Phase Current Differential (87) Protection

Full Forcing Rectifier Duty Rated Excitation Power Transformer

4 1 Excitation Transformer in Indoor Cabinet OPTION

Indoor NEMA 1 Enclosure, top mounted stubs
Paint: ANSI 61 Outdoor
Estimated Enclosure Size: 112"H x 120"W (+24" ATC) x 72"D
Primary ATC for customer entry – flex leads ≤ 15"L
Approximate Dry Weight: 22,500 lbs.
HV bus stubs for cable connection - Top entry access, straight lineup
LV bus stubs for cable connection - Top Entry access, diagonal lineup
Accessories: - (3) HV CTs, 150:5, T50 or C50
Qualitrol 118ITM Temperature Monitor w/type K-Thermocouple in Each LV Coil.
Space Heater package w/Thermostat in PPT Only (120V by others)

Power Potential Transformer (PPT)

3.730 MVA, 3 Phase, 60 Hz
Cooling ONAN, 220C Insulation class
Coil Processing: (VPI) Vacuum Pressure Impregnation
Temp Rise 115°C, Ambient 40C Average
Rectifier Duty, K Factor 9
Conductor: Copper; Taps: None
HV 24000 Wye, 125 KV BIL, 6.5%Z
Overvoltage: 110% continuous, 150% for 3 secs withstand.
Electrostatic Shield between primary and secondary winding
LV 480V Delta, 10 KV BIL
Overload: 150% of rated volts for 30 seconds, once every four Hours. (1) set of PT100 RTD's (1) per LV Winding wired to a Term. Block for Customer connection.
Standard Factory Testing

Item	Qty	Description	Price Each
		Equipment, continued	

Spare Parts

Description	Price Each
Exciter Control Module, ECM-2	$30,373
Interactive Display Panel, IDP-1500	$ 9,510
DXCB-2, HV, RoHS (1000-V/ 5000-A, 1 s)	$ 10,295
Bridge Control Module, BCM-2, 2nd Generation, RoHS	$ 8,505
IT-2, 2nd Generation, RoHS	$ 3,269
DIOM-2, 2nd Generation, RoHS	$ 4,263
AIOM-2, 2nd Generation, RoHS	$ 3,946
PT-Sensing Board for DECS-2100	$ 931
CT-Sensing Board for DECS-2100	$ 1,041
One Full Rated Power Drawer LV, RoHS	$49,964
FGD-2, LV, RoHS, for 800 Vdc maximum generator field voltage	$ 5,697

Discount: The *discounts* described above are available only FOR PURCHASE by the party to whom this proposal has been made.

Item	Qty	Description	Price Each

Technical & Schedule Notes

Machine Data: as reported in the request for proposal
Steam Turbine Generator, 544 MVA, 24 kV, 60 Hz, 0.80 power factor
Full-Load Rated Field: 4262 Amperes at 355 Volts

Existing Exciter: Cutler-Hammer WDR2000, G.O. ZCWD75139-06B 2. Date 12/1999

Drawings: Approval drawings consisting of the schematic diagram, the customer-interconnect ("conduit") drawing, the cubicle-layout (assembly) drawings and the excitation cubicle outline drawings can be **submitted within 4-6 weeks after acceptance of an order** with all of the necessary technical and commercial information.

Review & Approval: The estimated lead-time anticipates approval notification **within two weeks** after drawing submittal. System design and/or manufacturing will remain on hold until customer approval is received. If the approval process **extends beyond two weeks**, Basler Electric reserves the right to re-evaluate estimated shipping schedule based on manufacturing backlog.

Shipment: Based on assumptions of the schedule listed above for the date of the acceptance of the purchase order and the drawing submittal and review concluding by the dates shown above - the quoted DECS-2100 system, as offered herein, can be shipped in approximately **20 weeks after customer's drawing approval** and release for manufacture.

† Manufacturing Lead Times:
Lead times can vary based upon parts availability and other factors. Quoted lead times are based on the material lead times at the time of the quote; actual lead times will be determined at time of order.

Example Schedule	
Order Acceptance:	**Tuesday, December 07, 2021**
Estimated Drawings Schedule	9 weeks
submittal of drawings:	Tuesday, January 25, 2022
Drawings Review for Approval	3 weeks
receipt of approval	Tuesday, February 15, 2022
Estimated Production in Work Shop	20 † weeks
Preliminary Ship Date:	**Tuesday, October 18, 2022**
DURATION, from order acceptance to ship, based on series of assumptions described above:	28-32 weeks

Project Updates: Basler Electric's *project coordinator*, assigned after acceptance of an order, will provide progress updates at least once per week.

Client's Observation of FAT: Basler Electric's project coordinator will notify customer's contact with at least two weeks' notice of the schedule for final factory acceptance testing (FAT). Prior to the testing, Basler Electric's project coordinator will submit the factory acceptance testing plan for review and acceptance. The Contractor will notify Basler Electric's project coordinator of who will be visiting the factory and when.

Item	Qty	Description	Price Each

Commercial Notes

Scope of Work/Supply: Quoted equipment prices are for excitation control equipment and installation. All bus taps, bus runs, power cables and control wires will be supplied and installed by by esi, inc to and from the excitation control equipment, customer to provide adequate storage space for Basler supplied spare equipment.

Delivery: Delivery will be made FOB Seller's manufacturing plant, title and risk of loss shall pass to Buyer at that point, freight collect.

International Packaging / Shipping: Basler Electric's international shipping practice includes treated wood skids (per ISPM-15) with stretch-wrapped, fully enclosed crating for all equipment shipping outside the 48 contiguous states of continental U.S.A. Any other special requested packaging requirements may be subject to re-quote and must be specified at time of order. Changes requested less than 2 weeks from ship date may be subject to scheduling changes and/or price adjustments.

PSS Tuning: In accordance with Section 9.3 of the *FIELD SERVICE TERMS AND CONDITIONS,* **Form No. FA100006**, if this quotation includes Power System Stabilizer (PSS) tuning, the PSS data-collecting form must be completed and submitted to Basler Electric Company 30 days prior to the requirement of such tuning.

Field Service: Field service is included with the price of the equipment. This quotation includes an installation and field service work, please note that the installation and service pricing price is valid until January 30th, 2022 after-which those rates are subject to adjustment & change dependent upon the date a Purchase Order is actually received.

Terms and Conditions: esi, inc terms and conditions apply to this discounted quotation. All prices, taxes, transportation are included and quoted in United States Dollars. The pricing for equipment quoted included in this quotation is valid for 120 days from the date of issuance and contingent to a purchase order for upgrade SQ-957631, all of which are based on current costs of raw material and purchased parts. However, adjustments to the selling price may be required when the order is released for production.

Progress payment invoices against the equipment portion of this quotation will be issued, **based upon credit approval at time of order placement**, at the following project milestones:

1. Drawings sent out for customer approval - 25% of proposal pricing (net thirty days).
2. Drawings returned approved and final engineering design completed and released to manufacture - 25% of proposal pricing (net thirty days).
3. Equipment shipped-remainder of equipment pricing - 20% of proposal pricing (net thirty days).
4. Equipment installed and offline tested - 30% of proposal pricing (net thirty days).

Your Basler Sales Rep is:

esi, inc - engineering services int'l, inc
Attn: Nestor O Rivera Galguera PE a/o Keila Hernandez
644 Ave Fdez Juncos S404
District View Pz
SJ, Puerto Rico 00907-3181
Phone: +1 (787) 296-4941
Email: riverane@esi-energy.com,
Keila.Hernandez@esi-energy.com

12570 State Route 143
Highland, IL 62249-1074 USA
P: 618.654.2341
F: 618.654.2351
E: info@basler.com

SYSTEM UPGRADE QUOTATION

TO: **ESI, Inc.**
644 Ave Fdez Juncos S404
District View Plaza
San Juan, PR 00907-3181

QUOTATION (SQ) No.: **957631**

DATE of QUOTE: **October 15, 2021**

ATTN: Néstor Rivera-Galguera, (787) 431-6728 **riverane@esi-energy.com**

REF: South Coast Unit 5 Steam Turbine Generator **$1,564,397 Turnkey**

Item	Qty	Description	Price Each

Upgrade Cutler-Hammer WDR2000

1 **1** **DECS-2100 Static Excitation System** **$1,096,930**

Supply of a Static Exciter – to be installed by others.
The static exciter consists of digital excitation control and rectifier bridge assemblies, cooled with redundant fans, complete with accessories listed below, prewired and tested for used in an indoor Control/Rectifying cabinet – with a brush-type synchronous generator with main field requirements of 4262 Amperes at 355 Volts at rated load and power factor. The static exciter includes a multi-bridge design that provides a minimum of *N*+2 bridge redundancy, with continuous capacity of 4800 Amperes, with a 30–second forcing rating of 6700 Amperes – for operation in 40°C ambient, at up to 3300 feet above sea level
High Initial Response, with ceiling forcing voltage at 585 Volts, based on source voltage at rated level and connection to existing PPT. A spare PPT, proposed as separate line item is also herein included, as follows:

3730 kVA, 24000:480 Volts, 5.24%Z

The quoted system includes:

Excitation Control/Rectifying System - indoor rated - NEMA Type 1

Exterior ANSI Gray #61 (light gray) Fitted Line-Up to fit inside,
216″W (split 108″/108″) x 60½″D x 90″H + 12″H hats over power cubicles + approximately 2″H, welded channel bases
Approximately 5 tons, including pullout drawers
Front and Rear Access Required

Cabinet lights

Cabinet space heater

New thermostat for controlling space heater
Two (2) AC receptacles, for 120 V station-fed power
Shorting current transformer (CT) blocks, for CT secondaries

Item	Qty	Description	Price Each

DECS-2100 Excitation Control Features – continued

Dual-Control Channel

With automatic voltage regulator (AVR), automatic control, manual control, excitation limiters, integrated protection systems, Integrated Digital AVR set point adjuster

Regulation

Automatic Voltage Regulation Mode
Paralleling Compensation
Reactive Current / Line Drop Compensation
Adjuster Follower Circuits for Bumpless Transfer (auto-manual)
Bus Voltage Matching – during off-line operation to support synchronizing
Transient Gain Reduction transfer function (*TGR*)
Manual Control, field *current* regulator (*FCR*)
available as field *voltage* regulator (*FVR*) for testing
Auto-Manual Control Transfer – operator action

Sensing

Inputs for two sets of PTs, Regulating and Metering sets
Input for PT from the running-bus circuit – Voltage Matching
Inputs for three CTs from the machine under control

Limiting Functions including:

Under Excitation Limiter (*UEL*)
Over (Maximum) Excitation Limiter (*OEL*)
Instantaneous Field Current Limiter (*INST_CUR*)
separate on-line and off-line pickups
Volts/Hertz Limiter (*HXL*)

Protective Functions including:

Loss of Field (*40Q*), Alarm/Transfer/Trip with delay
Over Excitation Protection (*OEP*)
Instantaneous Field Over-Current Protection (*INST_CUR*)
separate on-line and off-line pick-ups
Volts/Hertz Protection (*24*)
Loss of PT sensing (*LOS_SENS*)
Loss of Voltage Sensing automatic transfer to metering PTs
Automatic Transfer to Manual – on failure of sensing potential
Field Ground Detector (*64F*), integrated in excitation control

Monitoring Functions:

Conduction of Current into Power Converter
Rotor (field winding) Temperature Monitoring

Power System Stabilizer (PSS),

Type: Two input; utilizing compensated frequency and power (IEEE 421.5 Model PSS-2B/C)

On-line Bode Analysis for PSS Tuning

Frequency vs. Gain/Phase: This block creates a range of sinusoidal signals and uses those signals to obtain the frequency response of the chosen regulator/exciter control loop.

Item	Qty	Description	Price Each

DECS-2100 Excitation Control Features – continued

Self-diagnostic documentation functions:

Event and Alarm Recorder
Configured with Four (4) Event Recorders, each with eight (8) channels
Data Logger

Interactive Display Panel (IDP-1500)

Please see product bulletin *TPJ*.

USB Hub

USB hub, isolated 4-port, UHR304

Ethernet Switch

industrial grade, 10/100 Mbps, RJ-45 ports, self-configuring

Field Ground Detector, FGD-2

to be powered from station low-voltage source

Analog I/O

Each Channel has the capability to sense four analog inputs
and two RTDs.
Eight, individually configurable, analog outputs
configured for: ±10 V or 4-20 mA
are also provided on each Channel

Digital I/O

Each Channel has the capability to sense 48 digital inputs.
Thirty-two digital outputs are also provided on each Channel.

Redundant Power Inputs,

Each logic/control module accepts two sources of power, for
enhanced fault tolerance.

Redundant Power Supplies,

a paralleled set of dual-sourced power supplies,
to feed the power inputs of the logic/control modules
plus a second set of single-sourced, power supplies
to feed the other power inputs of the logic/control modules

Power Supplies Dual Sources,

Inputs contribute power to the “auctioneering circuit” that provides an
interface to accept both AC and DC sources,
both the PPT’s secondary and the 125 Volt station battery.

Eight Power Converters, parallel-connected Redundant (N +2), drawout, upgraded *power drawers*

On-line maintenance
One Rectifier reparable or replaceable with the excitation system energized
patented active Temperature balancing among parallel bridges

Forced-Air Cooling, with redundant fans

Exciter loss of cooling alarm/trip

Item	Qty	Description	Price Each

DECS-2100 Excitation Control Features – continued

Incoming AC Line Surge Suppression/ Voltage Filters

De-Excitation module – for field discharge for shutdown

Crowbar module – for protection during pole slip

Field Discharge Resistor (FDR)

Shaft Voltage Suppression Network

Field Build-Up Circuit, flashing from AC source

480-Volt Input, molded-case circuit breaker
Flashing power transformer, 480:28 Volts, approximately
Flashing power rectifier
Flashing Contactors, DC

AC Field Breaker – "41A" & "41B" Devices

Drawout Air Circuit Breaker – EATON Magnum DS
5000-Ampere RMS rated, 100 kA RMS interrupting, +40°C

Standard Factory Tests

Witness Testing – at workshop, one workday or two consecutive workdays

Four (4) Sets O&M Instruction Books, CD-ROM copies

Four (4) Sets BESTCOMS™*Pro* Software Level 3
– compatible with Windows™
High-Level Logic for the Digitally-Processed Excitation Controller
Control functions diagrammed in the form of blocks
Inputs and Outputs shown with corresponding variable assignments
Labels and Terms with nomenclature consistent with synchronous machine excitation control

Backup Failsafe Automatic Synchronizer

2 **1** **Auto Synchronizer - via integrated function in DECS-2100** **$3,500**

This option adds an integrated automatic synchronizer to the system described in ***Item 1***.

- Automatic Synchronizing – *ANSI device number 25A. The DECS-2100 excitation controller includes integrated matching of the generator's voltage to the running bus's voltage. This additional option provides controls for the speed controlling governor and for the unit circuit breaker.*
- **Raise/Lower Signals to governor** *to adjust speed to support synchronization.*
- **Breaker-Closing signal**, *automatic synchronizer initiates closure of the generator circuit breaker when voltage magnitude, slip frequency, and phase difference are within preset limits*
- **52C Relay,** The breaker-closing command is supported with an interposing relay, added to *ITEM 1*.

Synchronism-Check for Automatic Synchronizing:
Please observe prudent practice, which requires a permissive set of contacts, in the breaker-closing circuit, from a synchronism-check (25) relay – not included herein.

Item	Qty	Description	Price Each

Equipment, continued

Protective Relay for Excitation Power Transformer

3 **1** **BE1-11t w/ (87) and in-cabinet CTs** **$8,313**

Protection with relay supplied, mounted and wired in a back assy for ITEM 1

Current Transformers, three:

6000:5, C200, ANSI/IEEE C57.13
To Be Mounted in the rectifier power supply bus

Test Switches for the two sets of CTs, secondary leads

PPT primary CTs
CTs in the rectifier power supply bus, 6000:5

BE1-11t relay

Style: BE1-11 T6D2M4J1P0E000Y0
Differential protection with dual slope for quick and selective protection against internal faults.
5 Ampere nominal phase current inputs
Negative-Sequence Overcurrent (46) Protection
Instantaneous Overcurrent (50) Protection
Inverse-Time Overcurrent (51) Protection
Phase Current Differential (87) Protection

Full Forcing Rectifier Duty Rated Excitation Power Transformer

4 **1** **Excitation Transformer in Indoor Cabinet** **$327,860**

Indoor NEMA 1 Enclosure, top mounted stubs
Paint: ANSI 61 Outdoor
Estimated Enclosure Size: 112"H x 120"W (+24" ATC) x 72"D
Primary ATC for customer entry – flex leads ≤ 15"L
Approximate Dry Weight: 22,500 lbs.
HV bus stubs for cable connection - Top entry access, straight lineup
LV bus stubs for cable connection - Top Entry access, diagonal lineup
Accessories: - (3) HV CTs, 150:5, T50 or C50
Qualitrol 118ITM Temperature Monitor w/type K-Thermocouple in Each LV Coil.
Space Heater package w/Thermostat in PPT Only (120V by others)

Power Potential Transformer (PPT)

3.730 MVA, 3 Phase, 60 Hz
Cooling ONAN, 220C Insulation class
Coil Processing: (VPI) Vacuum Pressure Impregnation
Temp Rise 115°C, Ambient 40C Average
Rectifier Duty, K Factor 9
Conductor: Copper; Taps: None
HV 24000 Wye, 125 KV BIL, 6.5%Z
Overvoltage: 110% continuous, 150% for 3 secs withstand.
Electrostatic Shield between primary and secondary winding
LV 480V Delta, 10 KV BIL
Overload: 150% of rated volts for 30 seconds, once every four Hours. (1) set of PT100 RTD's (1) per LV Winding wired to a Term. Block for Customer connection.
Standard Factory Testing

Item	Qty	Description	Price Each
		Equipment, continued	

Spare Parts

Description	Price Each
Exciter Control Module, ECM-2	$30,373
Interactive Display Panel, IDP-1500	$ 9,510
DXCB-2, HV, RoHS (1000-V/ 5000-A, 1 s)	$ 10,295
Bridge Control Module, BCM-2, 2nd Generation, RoHS	$ 8,505
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DIOM-2, 2nd Generation, RoHS	$ 4,263
AIOM-2, 2nd Generation, RoHS	$ 3,946
PT-Sensing Board for DECS-2100	$ 931
CT-Sensing Board for DECS-2100	$ 1,041
One Full Rated Power Drawer LV, RoHS	$49,964
FGD-2, LV, RoHS, for 800 Vdc maximum generator field voltage	$ 5,697

Discount: The *discounts* described above are available only FOR PURCHASE by the party to whom this proposal has been made.

Item	Qty	Description	Price Each

Technical & Schedule Notes

Machine Data: as reported in the request for proposal
Steam Turbine Generator, 544 MVA, 24 kV, 60 Hz, 0.80 power factor
Full-Load Rated Field: 4262 Amperes at 355 Volts

Existing Exciter: Cutler-Hammer WDR2000, G.O. ZCWD75139-06B 2. Date 12/1999

Drawings: Approval drawings consisting of the schematic diagram, the customer-interconnect ("conduit") drawing, the cubicle-layout (assembly) drawings and the excitation cubicle outline drawings can be **submitted within 4-6 weeks after acceptance of an order** with all of the necessary technical and commercial information.

Review & Approval: The estimated lead-time anticipates approval notification **within two weeks** after drawing submittal. System design and/or manufacturing will remain on hold until customer approval is received. If the approval process **extends beyond two weeks**, Basler Electric reserves the right to re-evaluate estimated shipping schedule based on manufacturing backlog.

Shipment: Based on assumptions of the schedule listed above for the date of the acceptance of the purchase order and the drawing submittal and review concluding by the dates shown above - the quoted DECS-2100 system, as offered herein, can be shipped in approximately **20 weeks after customer's drawing approval** and release for manufacture.

† Manufacturing Lead Times:
Lead times can vary based upon parts availability and other factors. Quoted lead times are based on the material lead times at the time of the quote; actual lead times will be determined at time of order.

Example Schedule	
Order Acceptance:	**Tuesday, December 07, 2021**
Estimated Drawings Schedule	9 weeks
submittal of drawings:	Tuesday, January 25, 2022
Drawings Review for Approval	3 weeks
receipt of approval	Tuesday, February 15, 2022
Estimated Production in Work Shop	20 † weeks
Preliminary Ship Date:	**Tuesday, October 18, 2022**
DURATION, from order acceptance to ship, based on series of assumptions described above:	28-32 weeks

Project Updates: Basler Electric's *project coordinator*, assigned after acceptance of an order, will provide progress updates at least once per week.

Client's Observation of FAT: Basler Electric's project coordinator will notify customer's contact with at least two weeks' notice of the schedule for final factory acceptance testing (FAT). Prior to the testing, Basler Electric's project coordinator will submit the factory acceptance testing plan for review and acceptance. The Contractor will notify Basler Electric's project coordinator of who will be visiting the factory and when.

Item	Qty	Description	Price Each

Commercial Notes

Scope of Work/Supply: Quoted equipment prices are for excitation control equipment and installation. All bus taps, bus runs, power cables and control wires will be supplied and installed by by esi, inc to and from the excitation control equipment, customer to provide adequate storage space for Basler supplied spare equipment.

Delivery: Delivery will be made FOB Seller's manufacturing plant, title and risk of loss shall pass to Buyer at that point, freight collect.

International Packaging / Shipping: Basler Electric's international shipping practice includes treated wood skids (per ISPM-15) with stretch-wrapped, fully enclosed crating for all equipment shipping outside the 48 contiguous states of continental U.S.A. Any other special requested packaging requirements may be subject to re-quote and must be specified at time of order. Changes requested less than 2 weeks from ship date may be subject to scheduling changes and/or price adjustments.

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Field Service: Field service is included with the price of the equipment. This quotation includes an installation and field service work, please note that the installation and service pricing price is valid until January 30th, 2022 after-which those rates are subject to adjustment & change dependent upon the date a Purchase Order is actually received.

Terms and Conditions: esi, inc terms and conditions apply to this quotation. All prices, taxes, transportation are included and quoted in United States Dollars. The pricing for equipment quoted included in this quotation is valid for 120 days from the date of issuance, which is based on current costs of raw material and purchased parts. However, adjustments to the selling price may be required when the order is released for production.

Progress payment invoices against the equipment portion of this quotation will be issued, **based upon credit approval at time of order placement**, at the following project milestones:

1. Drawings sent out for customer approval - 25% of proposal pricing (net thirty days).
2. Drawings returned approved and final engineering design completed and released to manufacture - 25% of proposal pricing (net thirty days).
3. Equipment shipped-remainder of equipment pricing - 20% of proposal pricing (net thirty days).
4. Equipment installed and offline tested - 30% of proposal pricing (net thirty days).

Your Basler Sales Rep is:

esi, inc - engineering services int'l, inc
Attn: Nestor O Rivera Galguera PE a/o Keila Hernandez
644 Ave Fdez Juncos S404
District View Pz
SJ, Puerto Rico 00907-3181
Phone: +1 (787) 296-4941
Email: riverane@esi-energy.com ,
Keila.Hernandez@esi-energy.com

12570 State Route 143
Highland, IL 62249-1074 USA
P: 618.654.2341
F: 618.654.2351

February 9, 2021

Power Plant Operations PREPA
Puerto Rico

SUBJECT: **Project Support Letter – Basler and ESI, Inc.**
Project Description: Design, Manufacturing, Supply, Erection, Testing and Commissioning of Automatic Excitation Systems for PREPA Power Stations

Dear Plant Operations & Purchasing Managers:

Through this letter, Basler Electric authorizes Engineering Services International, Inc. ("ESI") to provide the quote for the Excitation System, Transformer and Auxiliary equipment in the Commonwealth of Puerto Rico for the subject topic.

ESI has extensive capabilities and experience in the domain of power generation including turbine control, excitation, protection and automatic voltage regulator systems. Since 2009 ESI has continuously serviced Basler and Cutler Hammer AVR and excitation systems in PREPA power plants with the full support of the Basler factory.

Basler Electric has been manufacturing excitation systems for over 50 years and have supplied systems to over 140 different Countries, including Puerto Rico. Specific to PREPA, Basler has supplied more than 20 excitation and AVR units for the following plants: San Juan Steam and Combined Cycle Plant; Palo Seco Thermal Station; Vega Baja Peaker Station; Yabucoa Peaker Station; SOUCO Thermal & Peaker Stations; and Aguirre Peaker Station.

Headquartered in Highland, Illinois, USA, Basler Electric is an Original Equipment Manufacturer with a global presence and local offices ensuring reliable and swift support for spare parts and immediate after-market support services. The excitation systems are designed and manufactured in our Highland, Illinois, factory.

If you should have additional questions on this letter, please contact me directly at the phone number or e-mail address below.

Sincerely,

Tom Harnetiaux

Tom Harnetiaux
Vice President of Sales
ph.: +1-618-654-2341
e-mail: tomharnetiaux@basler.com

12570 State Route 143
Highland, IL 62249-1074 USA
P: 618.654.2341
F: 618.654.2351

January 17, 2021

Subject: WDR2000 & ECS-2100 Life Cycle Update

To whom it may concern,

Basler Electric is committed to providing high quality, reliable products, solutions, and support that exceeds our customers' expectations. As a leader in the industries we serve, it is our goal to sustain and support our customers in their demanding applications with the latest available technology. Always at the leading edge of innovation, Basler continuously identifies new paths for product development which surpass the performance and reliability demands of an increasingly complex power generation industry.

In June of 2006, Basler acquired the Excitation Controls Equipment product line from Eaton/Cutler Hammer. Included in this acquisition was the WDR and ECS Excitation Systems. The WDR2000 was obsolete since 2001 and afterwards the ECS-2100 served the industry well for many years. As of January 2012, the ECS-2100 is superseded by our DECS-2100 Excitation System product offering with expanded and up to date microprocessors and our latest software development.

The DECS-2100 replaces both WDR and ECS-2100 system. The DECS-2100 provides the sophistication, performance, and reliability the industry has come to expect from Basler. The DECS-2100 is now and for the foreseeable future, our flagship excitation system product portfolio.

The ECS-2100 product has reached the end of its life cycle and this product is now obsolete as no spare parts are manufactured and the technology to repair them is in limited supply. No assemblies or components supply remain and we will not be able offer replacements.

For the ECS-2100 product line, Basler offers "Front-End" replacements to cost-effectively retrofit the ECM2 control components of the DECS-2100 into the controls section of existing ECS-2100 cabinets. A Front-End replacement allows you to keep and use the existing power magnetics and enclosures and eliminates obsolete ECS-2100 cards.

For the WDR2000 Basler offers a complete upgrade for the entire excitation system which installs into the existing WDR footprint and cable lead hookups to make for a quick and simple transition.

Basler offers technical and application support for our current and recent product lines via our Technical Support Group. This support is available free of charge simply by contacting us.

If you have any questions or would like additional information, please feel free to contact me.

Sincerely,

BASLER ELECTRIC CO.

Larry Perez

Director of Product Line Management

Government of Puerto Rico

Puerto Rico Electric Power Authority

Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Costa Sur Power Plant Permanent Repairs

12/23/2021

Introduction

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

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

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

The sections included in this document are:

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

Document Revision History

Version	Date	Summary of Changes

Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Costa Sur Unit 6 – Spare LPB Repairs and Reassembly
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

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

Program Manager: ***<Name>***

<Insert title here>

PREPA Project Sponsor: ***<Name >***

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Costa Sur Power Plant, Unit 6	[redacted]

Note: *GPS coordinates are required for all facilities.*

2.2. Facilities Description

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

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

After a forced shut down of Costa Sur Power Plant Unit 6 due to high vibrations reflected on bearings 4 and 5 during an electrical disturbance on transmission line 38900, a visual inspection of the turbine detected broken diaphragms, shroud bands, and buckets of stages L-1 and L-2 of low pressure rotor B (LPB) turbine and generator end.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the spare LPB turbine rotor B repairs and reassembly of Costa Sur unit 6 will consist of the following:

- Reassembly of Thrust bearing, Generator H2 seals, installation of LPA Hood, spare LPB and crossovers.
- Line Boring.
- Bearings and Seals Inspections.
- Spare LPB Rotor and Diaphragm Repairs.
- Supply and installation of Conventional Packing Rings, Strips and its hardware.
- Vortex Shredder Tip Seals, as an option.

3.2. Type of Project

Indicate whether the intended plan is a(n):

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

Choose One (Restoration, Improved or Alternate) *If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

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

3.3. Preliminary Architectural and Engineering (A&E)

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

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

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

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
• (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
• 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount ($M)
Repairs and Reassembly	$2,076,415.00
Total Project Estimated Cost	**$2,076,415.00**

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

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

Section 7. EHP Requirements

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

Section 8. Program Manager Lead Certification

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

_____ _____

Program Manager's Printed Name Date

_____ _____

Title Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name _____ Date _____

Title _____ Signature _____

Section 10. Attachments

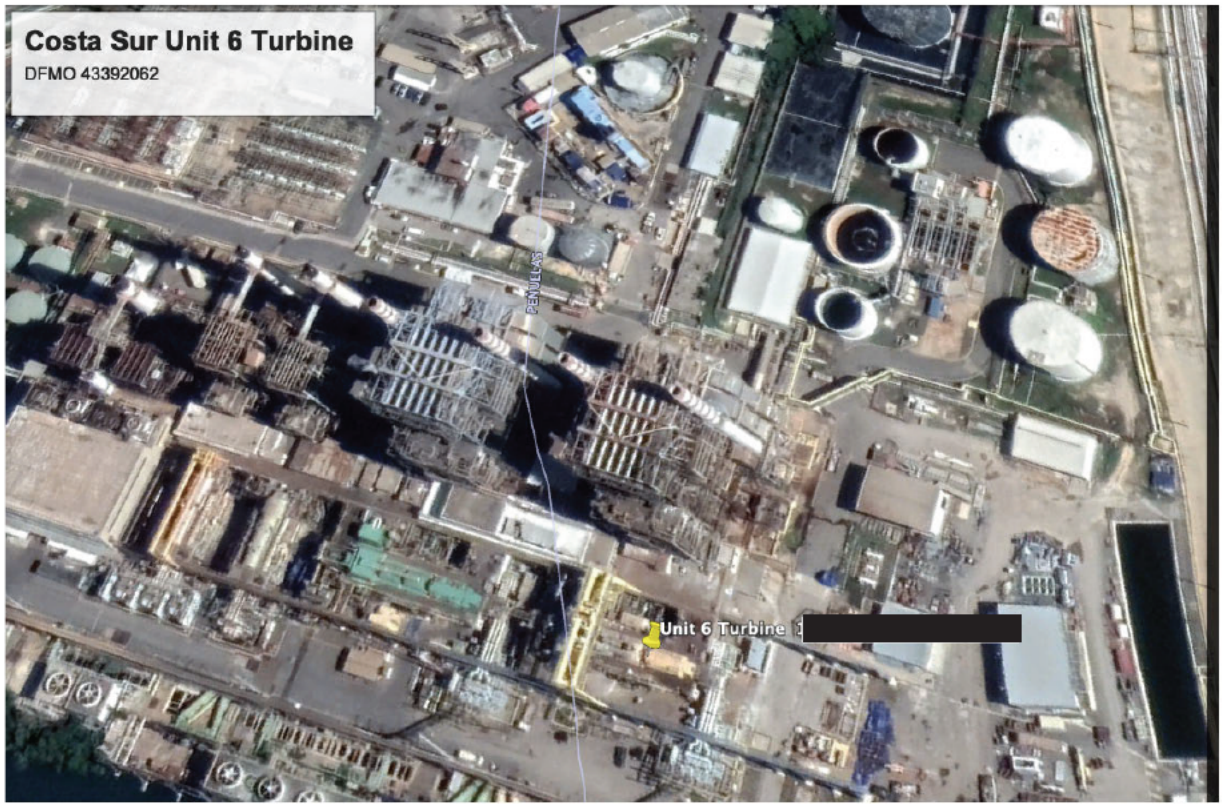
10.1. Project Detailed Cost Estimates

- Please see attached contract 91092, Contractor Proposal 211147R1 with Technical Specifications, and PREPA's Funds Certifications and Justifications.

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A

SOLICITUD DE AUTORIZACIÓN DEL DIRECTOR EJECUTIVO PARA OTORGAR CONTRATOS/ÓRDENES DE COMPRA/ÓRDENES DE SERVICIO DE $10,000 O MÁS

1. **Fecha de la solicitud:** 7 de octubre de 2021
2. **Directorado u Oficina:** Generación
3. **Director o Administrador:** William Rios Mera, Director, Interino
4. **Tipo de Contrato:** (Ej. Servicios Legales) Servicios Reparación e Instalación Spare Rotor LPB Turbina CS 6
5. **Naturaleza del Contrato:** [X] **Nuevo** Enmienda Renovación
6. **Contratista:** Mechanical Dynamics & Analysis LLC (MD&A)
7. **Representante Autorizado del contratista:** Álvaro Brusi
8. **Método de selección del contratista:** Negociación Directa
9. **Cuantía solicitada:** $1,917,678
10. **Ámbito de servicios y justificación del contrato:** Ver memorando de solicitud y aprobación adjunto
11. **Favor de completar los encasillados 11(a, b, c y d) únicamente en caso de que esta solicitud sea para una enmienda al contrato que conlleve un aumento en cuantía:**
    a. **¿Esta solicitud corresponde a la primera petición de enmienda al contrato original?** __Sí **X** No
    b. **Justificación para la solicitud de aumento en cuantía incluida en esta solicitud:**
    _____
    c. **Historial del contrato** (En los siguientes tres encasillados, no incluir la cuantía solicitada):
       (1) **Cuantía del contrato original:** $_____
       (2) **Cuantía total de enmiendas autorizadas previamente:** $_____
       (3) **Total autorizado (Suma de los dos encasillados anteriores):** $_____
    d. **Número del contrato original:** _____
12. **Partida presupuestaria:** 01-1071-31401-555-354, Proyecto 16975, Estimado 107523
13. **Procedencia de los fondos:** ☐ Estatales ☐ Federales ☐ Fondos Mixtos **X** Ingresos Propios
14. **Vigencia del contrato:** 12 de octubre de 2021 a 30 de junio de 2022
15. **¿La Autoridad tiene otro contrato vigente con el contratista incluido en esta solicitud?** **X** **Sí** ☐ **No**
16. **De tener otro contrato, favor de especificar:**
    Núm.: Ver Anejo **Cuantía:** $_____ **Vigencia:** **Desde:** _____ **Hasta:** _____
    Tipo de servicios: _____
17. **Se incluye Certificación de Fondos aprobada por el Directorado de Finanzas el** 8 de octubre de 2021.

Recomendado: _____ 10.12.2021

Fernando M. Padilla Padilla
Subdirector Ejecutivo

Aprobado: _____ 15 OCT. 2021

Josué A. Colon Ortiz
Director Ejecutivo

Nota: Si requiere de espacio adicional en alguna de las secciones de esta solicitud, puede utilizar una hoja adicional y hacer referencia a la sección particular.

CERTIFICACIÓN

Yo, William Rios Mera, Director de Generación, Interino, de la Autoridad de Energía Eléctrica de Puerto Rico, certifico que he revisado los documentos y detalles del contrato cuya autorización solicito. Por lo tanto, certifico:

1. Que el contrato cuya autorización solicito es cónsono con la política pública de control de gastos y buen uso de fondos públicos establecida por el Gobernador de Puerto Rico, honorable Pedro R. Pierluisi Urrutia;
2. Que el Directorado u Oficina que dirijo cuenta con disponibilidad de fondos para el otorgamiento del contrato cuya autorización solicito;
3. Que la contratación cuya autorización solicito no representará sobregiro presupuestario para el Directorado u Oficina que dirijo;
4. Que el servicio o producto objeto del contrato cuya autorización solicito representa una actividad y un gasto permisible dentro de las normativas locales y federales;
5. Que las cuantías del contrato cuya autorización solicito son razonables tomando en cuenta el servicio o la industria;
6. Que el contrato cuya autorización solicito no representa duplicidad innecesaria;
7. Que el contrato cuya autorización solicito no representa un servicio para el cual la entidad que dirijo cuenta con personal en nómina disponible para realizar el trabajo que intereso contratar;
8. Que el otorgamiento del contrato cuya autorización solicito cumple con las disposiciones de la Ley Pública Número 187 de 30 de junio de 2016, conocida como "Ley de Supervisión, Administración y Estabilidad Económica de Puerto Rico" (PROMESA, por sus siglas en inglés), y la reglamentación y procesos establecidos por la Junta de Supervisión y Administración Financiera para Puerto Rico respecto a la contratación gubernamental, de ser aplicable;
9. Que, durante el proceso previo al otorgamiento del contrato, cumplimos con las normativas internas aplicables y cumpliremos con los procedimientos y normativas correspondientes para su otorgamiento;
10. Que se verificó el estatus del contratista en el "System for Award Management", en caso de ser una contratación con fondos federales;
11. Que, conforme a mi mejor conocimiento, entiendo que ningún funcionario o empleado público del Directorado u Oficina que dirijo tiene interés pecuniario alguno, directo o indirecto, sobre las ganancias o beneficios producto del contrato cuya autorización solicito;
12. Que la Solicitud de Autorización responde única y exclusivamente a la necesidad del servicio en el Directorado u Oficina que dirijo y no a intereses ajenos a esta, al fin público o a presiones o solicitudes por parte de alguna persona dentro o fuera del Gobierno de Puerto Rico;
13. Que he leído y conozco las disposiciones de la Ley Núm. 1-2012, según enmendada, conocida como "Ley de Ética Gubernamental de Puerto Rico de 2011", y que el otorgamiento del contrato cuya autorización solicito no representa una contravención a alguna de sus disposiciones;
14. Que he leído y conozco las disposiciones de la Ley Núm. 2-2018, según enmendada, conocida como "Código Anticorrupción para un Nuevo Puerto Rico", y que el otorgamiento del contrato cuya autorización solicito no representa una contravención a alguna de sus disposiciones;
15. Que al momento no cuento con información o creencia relacionada con la persona natural o jurídica parte del contrato cuya autorización solicito que demuestre o brinde algún indicio de actividad ilegal o antiética, conforme a la normativa estatal o federal;
16. Que la contratación cuya autorización solicito cumple con todas las leyes, órdenes, reglamentos, cartas circulares y demás normativas aplicables a la contratación gubernamental en Puerto Rico;
17. Que toda la información incluida en la Solicitud de Autorización y certificada mediante mi firma es una condición esencial para la autorización de la contratación que solicito y que, de no ser correcta, en todo o en parte, tal circunstancia será suficiente para dejar sin efecto su autorización;
18. Que cuento con un documento (ej. certificación, declaración jurada) en el que la persona natural o jurídica parte del contrato cuya autorización solicito consigna que ella o él, o alguno de los oficiales de la persona jurídica, no ha sido convicta a nivel estatal o federal por atentar contra el interés público y que, al momento de emitir el referido documento, no tiene conocimiento de que esté siendo investigada por alguna entidad estatal o federal;
19. Que entiendo cabalmente y reconozco las consecuencias jurídicas, éticas, penales o administrativas de esta Certificación en caso de que su contenido sea falso.

Y para que así conste firmo hoy, 7 de octubre de 2021.

William Rios Mera

(Director o Administrador)

SF-321205-2
DG-321209-2

AEE 700.0-438
Rev. 8/14

Autoridad de Energía Eléctrica de Puerto Rico

CERTIFICACIÓN DE FONDOS DE CONTRATOS POR SERVICIOS PROFESIONALES

Número de Responsabilidad: 354 Nombre de Responsabilidad: Complejo Generatriz Costa Sur

Se incluye copia del Contrato descrito a continuación:

Nombre del Contratista o Compañía: Mechanical Dynamics & Analysis LLC (MD&A)

Número del Contrato: TS-M20-21 (Req. 251225) Número de Cuenta: ESTIMADO: 107523 01-1071-31401-555-354 Año Fiscal: 21-22

Cantidad: $1,917,678.00 Fecha de Comienzo: 10/12/21 Fecha de Terminación: 6/30/2022

Certificamos que no se proyectó sobregiro presupuestario y se posee capacidad financiera para cubrir esta transacción. Este contrato está en cumplimiento con el Inciso G de la Carta Circular de la Oficina de Gerencia y Presupuesto Núm. 117-14 del 1 de julio de 2014.

1. Requerido por:

Firma: William Ríos Mera

Nombre: William Rios Mera

Título: Director de Generacion, Interino

Fecha: 7/oct/21

2. Aprobado por el Director Correspondiente:

Firma: Por:

Nombre: Josue A. Colon Ortiz

Título: Director Ejecutivo

Fecha: 8 de octubre de 2021

3. Recomendado por el Departamento de Presupuesto:

Firma: Lizzandra Matias

Nombre: Lizzandra Matías Varela

Título: Contralor, Contabilidad y Presupuesto

Fecha: 8 de octubre de 2021

4. Aprobado por el Director de Finanzas:

Firma:

Nombre: Nelson Morales Rivera

Fecha: 8 de octubre de 2021

Todo contrato por servicios profesionales con una cuantía sobre cien mil dólares ($100,000), debe presentarse para la aprobación de la Junta de Gobierno, según la Norma Sobre Niveles de Aprobación de Documentos de la Autoridad de Energía Eléctrica de Puerto Rico.

Aprobado por la Junta de Gobierno:

Firma:

Nombre: Fecha:

SF- 321205-2

GOBIERNO DE PUERTO RICO
AUTORIDAD DE ENERGÍA ELÉCTRICA

7 de octubre de 2021

Lizzandra Matías Varela
Contralora

Rafael Rodríguez Torres
Gerente Senior
Programa Infraestructura de Generación

SOLICITUD DE APROBACIÓN CERTIFICACIÓN DE FONDOS, REPARACION Y REINSTALACIÓN ROTOR B DE BAJA PRESION TURBINA UNIDAD 6 CENTRAL COSTA SUR, PROYECTO TS-M20-21, REQ. 251225

Se incluye copia del memorando de justificación y de aprobación para el proyecto de asunto por la cantidad de $1,917,678. Agradecemos la aprobación de la Certificación de Fondos correspondiente.

Anejo

AEE 700.0-436
Rev. 8/14

Autoridad de Energía Eléctrica de Puerto Rico

SF-322648.2

CERTIFICACIÓN DE FONDOS DE CONTRATOS POR SERVICIOS PROFESIONALES

Número de Responsabilidad: 354 Nombre de Responsabilidad: Complejo Generatriz Costa Sur

Se incluye copia del Contrato descrito a continuación:

Nombre del Contratista o Compañía: Mechanical Dynamics & Analysis LLC (MD&A)

Número del Contrato: 91092 (TS-M20-21) Número de Cuenta: 01-1747-17556-555-287 Año Fiscal: 2021-2022

Cantidad: $158,737.00 Fecha de Comienzo: 10/12/2021 Fecha de Terminación: 06/30/2022

Certificamos que no se proyectó sobregiro presupuestario y se posee capacidad financiera para cubrir esta transacción. Este contrato está en cumplimiento con el Inciso G de la Carta Circular de la Oficina de Gerencia y Presupuesto Núm. 117-14 del 1 de julio de 2014.

1. Requerido por:

Firma: Jorge L Cotto Pérez

Nombre: Jorge L. Cotto Pérez

Título: Director de Generación

Fecha: 6-Diciembre 2021

2. Aprobado por el Director Correspondiente:

Firma: Mary C Zapata Acosta

Nombre: Mary C. Zapata Acosta

Título: Subdirectora Ejecutiva

Fecha: 9 dic 2021

3. Recomendado por el Departamento de Presupuesto:

Firma: Lizzandra Matías Varela

Nombre: Lizzandra Matías Varela

Título: Contralora, Contabilidad y Presupuesto

Fecha: 9 de diciembre de 2020

4. Aprobado por el Director de Finanzas:

Firma:

Nombre: Nelson Morales

Fecha: 9-diciembre. 2021

Approved with observations in the attachment.

Todo contrato por servicios profesionales con una cuantía sobre cien mil dólares ($100,000), debe presentarse para la aprobación de la Junta de Gobierno, según la Norma Sobre Niveles de Aprobación de Documentos de la Autoridad de Energía Eléctrica de Puerto Rico.

Aprobado por la Junta de Gobierno:

Firma:

Nombre: Fecha:

Coordinado: Carmen E. Rodríguez, Jefa Auxiliar 8-dic-2021

Observations to Certification of Funds

December 9, 2021

Today, we received five requests from the Generation Directorate for certification of funds using the emergency account with the presumption that PREPA will receive reimbursement from FEMA:

Contract No.	Name of Contractor/Company	Amount	Location
TS-M23-21 (Req. 252977)	ARG Precision Corp.	$17,995,000	Mayagüez
91092 (TS-M20-21)	Mechanical Dynamics	$158,737	Costa Sur
MR 715443	Subasta Formal	$630,000	Aguirre
MR712745	Subasta Formal	$625,000	Aguirre
Req. 253618	RFP – Emergency Procedures	$750,000	Aguirre

The Finance Directorate has the best interest in providing a response that satisfies the needs of the Generation Directorate. As such, we have some observations that we would like to share with you as part of the certification of funds process:

1. The specific Mayaguez projects proposed appear to be in the list of projects for which PREB issued a Resolution and Order. Finance is not aware of any resolution or discussion with PREB that authorizes PREPA to proceed with works related to this project. If the Legal or Generation Directorates have different information, it should be discussed to properly complete this process. PREPA Legal Department should review the Resolution and Order Case No. NEPR-MI-2021-0002 dated November 18, 2021, to see how it impacts the Request for Certification of Funds.

2. Based on the information provided, the listed projects do not appear to be budgeted within Necessary Maintenance Expenses (NME). If so, PREPA would need an internal budget reallocation within the generation NME budget (which we understand does not require FOMB approval).

3. Based on the information provided, it is not clear if the proposed projects qualify for FEMA reimbursement. If PREPA intends to secure federal funding, we should obtain written confirmation from the appropriate authority (whether FEMA/COR3).

4. In the case of Contract 91092 (TS-M20-21) in the amount of $158,737, if the repairs requested are due to damages caused by the M6.4 Earthquake, this should be referred LUMA Risk Management for possible inclusion under the property insurance program.

SF- 322648-1

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

December 2, 2021

Mario E. Miranda
Materials Management Division Head, Interim

Jaime A. Umpierre Montalvo
Hydro & Gas and Cambalache Division Head

AMMENDMENT OF CONTRACT 91092, MECHANICAL DYNAMICS & ANALYSIS LLC (MD&A), SPARE LOW PRESSURE TURBINE ROTOR B REPAIRS AND REASSEMBLY FOR UNIT 6 SOUTH COAST STEAM POWER PLANT, PROJECT TS-M20-21, CHANGE REQUEST 1901

On October 15, 2021 the Puerto Rico Electric Power Authority (PREPA) engaged the services of MD&A for the repairs and installation of Low Pressure Turbine Rotor B (LPB). It is a Turn Key Project to restore the generation of South Coast Unit 6. The services were contracted for $1,917,678.00, based on budgetary proposal 211147R1, including parts, mechanics, craftmen, labors and supervisory services onsite for 8 days.

PREPA is under an energy crisis to supply the electric demand. Time is of the essence. To minimize the downtime of Unit 6 forced outage, PREPA decided to receive in advance the stationary sections of the LPB and the mobilization of MD&A personnel before the LPB Rotor arrives. This strategy will allow us to return to service Unit 6 by the end of this year instead of pushing forward the timeline for two more weeks. By this decision and including a Balance Technician for the Start Up process, the cost of the project is increased by $158,737.00, for a new total of $2,076,415. This is an overdraft of 8.3%.

The funds to cover the overdraft are available in the project estimate 107523 and will be paid with the account 01-1747-17556-555-287.

Based on the above, we request to proceed with the amendment of Contract 91092. For additional information or clarifications please call extension 4832.

Enclosure

Coordinated

Gerardo Sánchez Pierluisi, Manager
Budget and Capital Improvement Dept.

Recommended

Jorge Cotto
Generation Director, Interim

Approved

Mary C. Zapata Acosta
Deputy Executive Director of Operations

SF-322645-2

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

December 2, 2021

Lizzandra Matias Varela
Comptroller

Jaime A. Umpierre Montalvo
Hydro & Gas and Cambalache Division Head

AMMENDMENT OF CONTRACT 91092, MECHANICAL DYNAMICS & ANALYSIS LLC (MD&A), SPARE LOW PRESSURE TURBINE ROTOR B REPAIRS AND REASSEMBLY FOR UNIT 6 SOUTH COAST STEAM POWER PLANT, PROJECT TS-M20-21, CHANGE REQUEST 1901

On October 15, 2021 the Puerto Rico Electric Power Authority (PREPA) engaged the services of MD&A for the repairs and installation of Low Pressure Turbine Rotor B (LPB). It is a Turn Key Project to restore the generation of South Coast Unit 6. The services were contracted for $1,917,678.00, based on budgetary proposal 211147R1, including parts, mechanics, craftmen, labors and supervisory services onsite for 8 days.

PREPA is under an energy crisis to supply the electric demand. Time is of the essence. To minimize the downtime of Unit 6 forced outage, PREPA decided to receive in advance the stationary sections of the LPB and the mobilization of MD&A personnel before the LPB Rotor arrives. This strategy will allow us to return to service Unit 6 by the end of this year instead of pushing forward the timeline for two more weeks. By this decision and including a Balance Technician for the Start Up process, the cost of the project is increased by $158,737.00, for a new total of $2,076,415. This is an overdraft of 8.3%.

The funds to cover the overdraft are available in the project estimate 107523 and will be paid with the account 01-1747-17556-555-287.

We are including for your approval the Certification of Funds to proceed with the amendment of Contract 91092. For additional information or clarifications please call extension 4832.

Enclosure

Coordinated

Gerardo Sánchez Pierluisi, Manager
Budget and Capital Improvement Dept.

Gerardo Antonio Sanchez Pierluisi

From: Carmen Elisa Rodríguez Rodríguez
Sent: Tuesday, November 30, 2021 9:12 AM
To: Angel A. Perez Carrasquillo
Cc: Mary C Zapata Acosta; FERDINAND CORREA MENDEZ; Jorge E. Sanchez Valle; ejn1714@gmail.com; Gerardo Antonio Sanchez Pierluisi
Subject: Listado de Proyectos Prioritarios de Generación - Fondos FEMA
Attachments: Book2.xlsx

Saludos:

Les incluyo los proyectos que se están considerando para solicitar los fondos a FEMA.

Es importante nos envié la siguiente documentación para preparar el PW.

- Estimado completo de costos
- Documentación de licitación (Pedidos, contratos, RFPs)
- Listado de Personal y horas estimadas (Horas hombres sin overhead)
- Material (retiros de inventario y/o compra de materiales) – Incluir 25% de almacén
- Equipo de AEE a utilizarse y uso de horas
- Estimado de retiro y disposición de chatarra

Atentamente,

Autoridad de Energía Eléctrica

Carmen Elisa Rodríguez Rodríguez
Jefa Auxiliar de División

Tel. (787) 521-4885
carmene.rodriguez@prepa.com

37	DN	Costa Sur Power Plant				27		Unit 6 LP-B Instalatio n Work (Failure)	Installation and commissioning of the repaired Low Pressure Rotor-B of the Power Turbine of Unit 6	Alternate	Consensus-based codes and standards approved by FEMA consistent with the FEMA Public Assistance Alternative Procedures (Section 428) guide for Permanent Work, the Bipartisan Budget Act of 2018, and the latest Design Criteria Documents (DCDs) will be the basis for the final design and specifications for this project.	Integratio n of Codes and Standards will be identified in the Plans and Specificati ons.	N/A	$ 2,000,000.00	N/A	N/A

LUMA

Contract ID	00091092
Contract Release	
Execution Date	10/15/21
Printed	10/15/21

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Mail Invoice To:	**Vendor:**
AUTORIDAD DE ENERGIA ELECTRICA DIVISION DE TESORERIA P.O. BOX 70253 SAN JUAN PR 00936-8253	MECHANICAL DYNAMICS ANALYSIS.3 LTD 19 BRITISH AMERICAN BLVD LATHAM NY 12110

Please Direct Inquiries To:	**Work Location:**
JOEL D PANTOJAS-CARABALLO JPANTOJAS13525@AEEPR.COM **Title** PROCUREMENT SUPV G5 **Phone/Alternate Phone:** 787-521-3034 **Fax** 787-521-3171	TALLER DE MECANICA COSTA SUR CENTRAL COSTA SUR CARR. NUM. 127, KM 15.7 GUAYANILLA PR 00656

Title

SPARE LPB REPAIRS AND REASSEMBLY FOR UNIT 6

Contract Value

Total Value	$ 1,917,678.0000 USD	** NOT TO EXCEED **	
Pricing Method	ESTIMATE		
Contract Type	TECHNICAL SERVICES	**Start Date**	10/13/21
Project	100000107059	**End Date**	6/30/22

LUMA

Contract ID	00091092
Contract Release	
Execution Date	10/15/21
Printed	10/15/21

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Signatures

Vendor Authorized Signature	Authorized Signature
Jose F. Theoktisto / Contracts & Proposal Manager	JOEL PANTOJAS CARABALLO Supervisor de Compras Principal
Printed Name/Title	Printed Name/Title
October 15, 2021	10-15-2021
Date Signed	Date Signed
518-399-3616	787-521-2969
Phone	Phone

Terms and Conditions - Text at End

Facility	Standard	Revision	S/P	Text	Title
	PH000001	004	S	Y	EQUAL OPPORTUNITY
	PH000002	005	S	Y	COMPLIANCE WITH LAWS.
	PH000004	005	S	Y	INFRINGEMENT
	PH000006	016	S	Y	CLAUSULAS PARA PAGOS DE IMPUESTOS ESTAT
	PH000007	004	S	Y	APPLICABLE LAW
	PH000011	006	S	Y	CHANGES TO ORDER.
	PH000031	009	S	Y	CONFIDENTIALITY
	PH000033	009	S	Y	FORCE MAJEURE
	PH000037	008	S	Y	TERMINOS PARA RETENCION EN EL ORIGEN
	PH000038	005	S	Y	NONWAIVER.
	PH000039	008	S	Y	PRICE & PAYMENT
	PH000040	007	S	Y	RELATIONSHIP OF THE PARTIES.
	PH000056	008	S	Y	TAXES AND DUTIES

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text at End

Facility	Standard	Revision	S/P	Text	Title
	PH000057	005	S	Y	TERMINATION
	PH000079	001	S	Y	QUALITY STANDARDS AND WARANTIES 1
	PH000080	002	S	Y	QUALITY STANDARDS AND WARANTIES 2
	PH000082	002	S	Y	ANTI-KICKBACK

Scope of Work

ORDEN DE SERVICIO, MATERIALES Y EQUIPOS
REQ. 251225
SPARE LPB REPAIRS AND REASSEMBLY FOR UNIT 6 COSTA SUR POWER COMPLEX
SE ADJUDICA ESTA ORDEN DE ACUERDO A NUESTRAS ESPECIFICACIONES, TÉRMINOS Y CONDICIONES Y A SU PROPUESTA NÚM. 211147R1 DEL 23 DE SEPTIEMBRE DE 2021.
NOTA:
SE INCLUYE COMO ANEJO LOS SIGUIENTES DOCUMENTOS LOS CUALES CONFORMARAN PARTE DE ESTE CONTRATO:
1. PROPUESTA 211147R1 DE LA COMPAÑÍA MD&A
2. SPARE LPB INSPECTIONS & RECOMMENDATIONS
NOTA ESPECIAL:
1. REPARACIONES CONFORME A LA PROPUESTA QUE ACOMPAÑA ESTE CONTRATO TENDRÁN QUE SER AUTORIZADAS POR EL GERENTE DE PROYECTO, ING. JAIME A. UMPIERRE MONTALVO.
SE REQUIERE AL CONTRATISTA UN CERTIFICADO DE SEGURO FIRMADO POR UN REPRESENTANTE AUTORIZADO DE UNA COMPAÑÍA EN PUERTO RICO QUE DESCRIBA LAS SIGUIENTES CUBIERTAS, EN ORIGINAL:

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Contract

Scope of Work

A) SEGURO COMPENSACIÓN PARA ACCIDENTES EN EL TRABAJO (F.S.E.)
B) SEGURO DE RESPONSABILIDAD PATRONAL.
1) LÍMITE DE $1,000,000 POR PERSONA EN EL CASO DE LESIONES CORPORALES Y $1,000,000 POR ACCIDENTE.
C) SEGURO COMPRENSIVO DE RESPONSABILIDAD GENERAL.
1) LÍMITE DE $1,000,000 POR OCURRENCIA Y DE $1,000,000 AGREGADO QUE INCLUYA CUBIERTA DE OPERACIONES COMPLETADAS Y PRODUCTOS.
D) SEGURO COMPRENSIVO DE RESPONSABILIDAD AUTOMÓVIL.
1) $1,000,000 LÍMITE SENCILLO COMBINADO.
INFORMACION DE PERSONA CONTACTO AEE:
ING. MIGUEL A. BEAUCHAMP RAMOS
TEL. 787-521-8035
E-MAIL: MIGUEL.BEAUCHAMP@PREPA.COM
COMPRADOR:
JOEL D. PANTOJAS CARABALLO
SUPERVISOR DE COMPRAS PRINCIPAL
TEL. 787-521-2969
E-MAIL: JOEL.PANTOJAS@PREPA.COM
SUPLIDOR: MECHANICAL DYNAMICS & ANALYSIS
TEL. 518-399-3616
DESGLOSE DE COSTOS:
1. SEGÚN PROPUESTA INCLUÍDA COMO ANEJO A ESTE CONTRATO.
TÉRMINOS Y CONDICIONES:
EL CONTRATISTA OBTENDRÁ Y MANTENDRÁ VIGENTE DURANTE LA DURACIÓN DEL CONTRATO LOS PERMISOS APROPIADOS DE TODAS LAS AUTORIDADES REGULADORAS

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

MUNICIPALES, ESTATALES Y FEDERALES, RESPECTO A LOS SERVICIOS OFRECIDOS.
EN CASO DE INCUMPLIMIENTO DE SERVICIO O DE NO SER SATISFACTORIO, LA AUTORIDAD SE RESERVA EL DERECHO DE CANCELAR ESTE CONTRATO EN CUALQUIER MOMENTO SIN NECESIDAD DE NOTIFICACIÓN PREVIA.
EL CONTRATISTA SERA RESPONSABLE POR TODOS LOS DAÑOS QUE SE OCASIONE A PERSONAS O LA PROPIEDAD, COMO RESULTADO DE SU FALTA O NEGLIGENCIA EN RELACION CON EL TRABAJO QUE SE LLEVA A CABO.
EL CONTRATISTA TIENE QUE DESGLOSAR SU FACTURA ENTRE LO QUE ES LABOR Y MATERIALES, PARA LA APLICACIÓN DE LA APORTACIÓN ESPECIAL DE 1.5 % BAJO LA LEY NÚM. 48-2013. DE NO DESGLOSAR L FACTURA SE APLICARÁ LA APORTACIÓN A LA TOTALIDAD DE LA MISMA. ADEMÁS, TIENE QUE SOMETER JUNTO A LA FACTURA, EL CONDUCE FIRMADO POR EL USUARIO (Y SU NOMBRE EN LETRA DE MOLDE) COMO EVIDENCIA DE HABER RECIBIDO EL SERVICIO. DE NO PROVEERLO SU FACTURA LE SERA DEVUELTA.
EL CONTRATISTA ACUERDA LLEVAR A CABO TODOS LOS TRABAJOS CONTRATADOS EN CUMPLIMIENTO CON TODAS LAS LEYES, REGLAMENTACIONES U ORDENANZAS FEDERALES, ESTATALES Y MUNICIPALES DE SALUD Y SEGURIDAD.
LEY 2-2018 CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO
1. EL CONTRATISTA SE COMPROMETE A CUMPLIR CON LAS DISPOSICIONES DE LA LEY NÚM. 2-2018, CONOCIDA COMO EL CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO.
2. EL CONTRATISTA MANTENDRÁ VIGENTE EN EL REGISTRO DE PROVEEDORES DE LA AEE, UNA DECLARACIÓN JURADA, ANTE NOTARIO PÚBLICO, EN LA QUE INFORMARÁ SI LA PERSONA NATURAL O JURÍDICA O CUALQUIER PRESIDENTE, VICEPRESIDENTE, DIRECTOR, DIRECTOR EJECUTIVO, O MIEMBRO DE UNA JUNTA DE OFICIALES O JUNTA

Contract

Scope of Work

DE DIRECTORES, O PERSONAS QUE DESEMPEÑEN FUNCIONES EQUIVALENTES PARA LA PERSONA JURÍDICA, HA SIDO CONVICTA O SE HA DECLARADO CULPABLE DE CUALQUIERA DE LOS DELITOS ENUMERADOS EN LA SECCIÓN 6.8 DE LA LEY 8-2017, SEGÚN ENMENDADA, CONOCIDA COMO ¿LEY PARA LA ADMINISTRACIÓN Y TRANSFORMACIÓN DE LOS RECURSOS HUMANOS EN EL GOBIERNO DE PUERTO RICO¿, O POR CUALQUIERA DE LOS DELITOS CONTENIDOS EN ESTE O CUALQUIERA DE LOS DELITOS INCLUIDOS EN LA LEY 2-2018.

3. EL CONTRATISTA CERTIFICA QUE NO HA SIDO CONVICTO EN PUERTO RICO O EN LOS ESTADOS UNIDOS POR INFRACCIÓN A LOS ARTÍCULOS 4.2, 4.3 O 5.7 DE LA LEY 1-2012, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY ORGÁNICA DE LA OFICINA DE ÉTICA GUBERNAMENTAL DE PUERTO RICO, CUALQUIER DE LOS DELITOS ENUMERADOS EN LOS ARTÍCULOS 250 A 266 DE LA LEY 146-2012, SEGÚN ENMENDADA, CONOCIDA COMO EL CÓDIGO PENAL DE PUERTO RICO, CUALQUIERA DE LOS DELITOS TIPIFICADOS EN LA LEY 2-2018, SEGÚN ENMENDADA, CONOCIDA COMO EL CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO O CUALQUIER OTRO DELITO QUE IMPLIQUE EL MAL USO DE LOS FONDOS O PROPIEDAD PÚBLICA, INCLUYENDO, PERO SIN LIMITARSE, A LOS DELITOS MENCIONADOS EN LA SECCIÓN 6.8 DE LA LEY 8-2017, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY DE ADMINISTRACIÓN Y TRANSFORMACIÓN DE RECURSOS HUMANOS EN EL GOBIERNO DE PUERTO RICO.

4. LA AUTORIDAD DARÁ POR TERMINADO EL CONTRATO EN CASO DE QUE EL CONTRATISTA RESULTE CONVICTO EN PUERTO RICO O EN LOS ESTADOS UNIDOS POR INFRACCIÓN A LOS ARTÍCULOS 4.2, 4.3 O 5.7 DE LA LEY 1-2012, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY ORGÁNICA DE LA OFICINA DE ÉTICA GUBERNAMENTAL DE PUERTO RICO; CUALQUIERA DE LOS DELITOS ENUMERADOS EN LOS ARTÍCULOS 250 A 266 DE LA LEY 146-2012, SEGÚN ENMENDADA, CONOCIDA COMO EL

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

CÓDIGO PENAL DE PUERTO RICO, CUALQUIERA DE LOS DELITOS TIPIFICADOS EN LA LEY 2-2018, CONOCIDA COMO CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO O CUALQUIER OTRO DELITO QUE IMPLIQUE EL USO INDEBIDO DE FONDOS O PROPIEDAD PÚBLICA, INCLUYENDO, PERO SIN LIMITARSE A, LOS DELITOS MENCIONADOS EN LA SECCIÓN 6.8 DE LA LEY 8-2017, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY DE ADMINISTRACIÓN Y TRANSFORMACIÓN DE RECURSOS HUMANOS EN EL GOBIERNO DE PUERTO RICO.

SCOPE OF WORK

ON SEPTEMBER 7, 2021 THE GENERATION DIRECTORATE REQUESTED AUTHORIZATION TO ENGAGE IN DIRECT PROCUREMENT AND ACQUISITION OF SERVICES WITH MD&A FOR THE INSPECTION OF THE HIGH, INTERMEDIATE AND LOW PRESSURE A & B SPARE ROTOR TURBINE STAGES (HP/IP/LPA/LPB) FOR SOUTH COAST STEAM POWER PLANT.

DURING THE LAST QUARTER OF 2020 MD&A DID A MAJOR MAINTENANCE AND REPAIRS TO THE TURBINE OF SOUTH COAST UNIT 6, RETURNING THE UNIT FOR GENERATION ON FEBRUARY 2021. ON AUGUST 22, 2021 THIS UNIT FORCED SHUT DOWN DUE TO HIGH VIBRATIONS REFLECTED ON BEARINGS 4 AND 5 DURING AN ELECTRICAL DISTURBANCE ON LINE 38900, 115KV TRANSMISSION LINE. ON AUGUST 31, 2021 PREPA ISSUED AN EMERGENCY SERVICE ORDER TO MD&A FOR TECHNICAL FIELD SERVICES TO PERFORM VISUAL INSPECTION, ASSESSMENT OF THE DAMAGES AND ROOT CAUSE ANALYSIS. THE PRELIMINARY DAMAGES FOUND DURING THE VISUAL INSPECTION OF SEPTEMBER 3, 3021 ARE: BROKEN DIAPHRAGMS, SHROUD BANDS, AND BUCKETS OF STAGES L-1 AND L-2 OF LOW PRESSURE ROTOR B (LPB) TURBINE AND GENERATOR END. THE REPAIR PERIOD IS ESTIMATED BETWEEN FOUR TO FIVE MONTHS.

TO MINIMIZE THE DOWNTIME OF UNIT 6 FORCED OUTAGE, MD&A UPON PREPA REQUEST, PROVIDED PROPOSAL 201198R1 AS THE FIRST STEP TO DEFINE THE RECONDITIONING

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Contract

Scope of Work

OF THE SPARE TURBINE SECTIONS WHILE THE DAMAGED LPB ROTOR IS REPAIRED. THE DAMAGED LPB ROTOR AND THE SPARE HP AND IP ROTORS WILL REPLACE EXISTING ROTORS OF UNIT 5 DURING ITS INCOMING MAJOR OUTAGE DURING THE NEXT FISCAL YEAR. THE SPARE LPB ROTOR WILL BE INSTALLED RECONDITIONED IN UNIT 6.
ON SEPTEMBER 24, 2021 MD&A SENT IN ADVANCE THE BUDGETARY PROPOSAL 211147R1, WITH ASSUMPTIONS BECAUSE THE SPARE LPB ROTOR IS ON ITS WAY TO THEIR SHOP FOR INSPECTION. THIS PROPOSAL CONSIST OF A TURN KEY PROJECT: INCLUDING LABOR; EQUIPMENT; TFA¿S; SPARE LPB ROTOR AND DIAPHRAGMS REPAIRS; SUPPLY AND INSTALLATION OF CONVENTIONAL PACKING RINGS, STRIPS AND ITS HARDWARE; VORTEX SHREDDER TIP SEALS AS AN OPTION; BEARINGS AND SEALS INSPECTIONS; LINE BORING; AND REASSEMBLY OF THRUST BEARING, GENERATOR H2 SEALS, INSTALLATION OF LPA HOOD, SPARE LPB AND CROSSOVERS.
SECTION 15.2. (C) OF ACT 83 OF MAY 2, 1941, AS AMENDED, ESTABLISHES THAT THE AUCTION REQUIREMENT WILL NOT BE NECESSARY: "WHEN SPARE PARTS, ACCESSORIES, EQUIPMENT OR SUPPLEMENTARY SERVICES ARE NEEDED FOR PURPOSES OR SERVICES PREVIOUSLY. IN ADDITION, SUBSECTION (D) OF SAID SECTION ESTABLISHES THAT "WHEN SERVICES OR PROFESSIONAL OR EXPERT WORKS ARE REQUIRED AND THE AUTHORITY DEEMS THAT, IN THE INTEREST OF GOOD ADMINISTRATION, SUCH SERVICES OR WORKS SHOULD BE CONTRACTED WITHOUT SUCH ADVERTISEMENTS."
THE COST FOR THE SERVICES UNDER BUDGETARY PROPOSAL 201198R1 IS OF $1,917,678. THE FUNDS ARE AVAILABLE IN THE PROJECT 107059 AND WILL BE PAID WITH THE ACCOUNT 01-1071-31101-555-354.
ACCORDING TO PREPA¿S RULES REGARDING LEVELS OF APPROVAL OF DOCUMENTS, AS REVISED (NORMA SOBRE NIVELES DE APROBACIÓN DE DOCUMENTOS DE LA AUTORIDAD

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Contract

Scope of Work

DE ENERGÍA ELÉCTRICA), ON ITS ARTICLE IV, MATERIALS ACQUISITIONS, EQUIPMENT OR SERVICES, SECTION B, ESTABLISHES THAT THE EXECUTIVE DIRECTOR AUTHORIZES CONTRACTS WHICH ARE EXEMPT OF AN OPEN COMPETITIVE PROCESS UNDER DIRECT NEGOTIATIONS, IN EXCESS OF $1,000,000 TO A MAXIMUM OF $2,000,000.

Terms and Conditions - Text

Facility		**Standard**	PH000001
Revision	004	**Description**	EQUAL OPPORTUNITY

EQUAL OPPORTUNITY.
By accepting this Purchase Order, the Seller certifies that it will not discriminate on the basis of race, color, national origin, sex, religion, age, disability, veteran status or in any way otherwise prohibited by law and will indemnify Buyer against any claims arising from such unlawful discrimination by Seller.

Facility		**Standard**	PH000002
Revision	005	**Description**	COMPLIANCE WITH LAWS.

COMPLIANCE WITH LAWS.
Seller warrants that the Materials, Services or Work Product shall be performed, produced, priced, sold and delivered in strict compliance with all applicable local, domestic and international laws, rules and regulations.

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text

Facility		**Standard**	PH000004
Revision	005	**Description**	INFRINGEMENT

INFRINGEMENT.
Seller shall hold harmless, defend and indemnify Buyer , its affiliates and its and their respective employees, officers and directors from and against all claims, demands, losses or damages, costs or expenses (including attorneys' fees and other expenses incident thereto) arising out of any infringement, or any alleged infringement, of any intellectual property rights, including rights arising under any patent, copyright, trademark, license and trade secret, in connection with any Material, Work Products, or Services, except to the extent any infringement resulted from designs provided by Buyer to Seller. Without limiting the foregoing, the Seller shall, at its own expense (i) procure for the Buyer an irrevocable royalty-free license or right to continue using such Materials, Work Product or Services (ii) with Buyer's prior written approval, replace the infringing Material, Work Product, or Services with substantially equal but non-infringing Materials, Work Product or Services or (iii) with Buyer's prior written authorization, modify the infringing Materials, Work Product or Services so it becomes non-infringing; provided that no such replacement or modification shall in any way amend or relieve Seller of its warranties and guarantees set forth in this Order.

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Contract

Terms and Conditions - Text

Facility		**Standard**	PH000006
Revision	016	**Description**	CLAUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDE

CLÁUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDERALES
EN CUMPLIMIENTO CON LA SECCIÓN 2906 DEL ARTÍCULO 2, DEL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO, LA AUTORIDAD DE ENERGÍA ELÉCTRICA ESTÁ EXENTA DEL PAGO DEL ARBITRIO GENERAL DEL 6.6%. ADEMÁS, A PARTIR DEL 15 DE NOVIEMBRE DE 2006, ESTÁ EXENTA DEL PAGO DEL IMPUESTO A LA VENTA Y USOS (IVU) ESTATAL Y MUNICIPAL POR VIRTUD DE LA SECCIÓN 2508 DE LA LEY 117 DEL 4 DE JULIO DE 2006, CONOCIDA COMO LA LEY DE JUSTICIA CONTRIBUTIVA.
* LAS FACTURAS TIENEN QUE DETALLAR EL CONCEPTO DE LA COMPRA O SERVICIO.

LOCAL AND FEDERAL TAXES CLAUSE
IN COMPLIANCE WITH PUERTO RICO'S INTERNAL REVENUE SERVICE CODE, SECTION 2906, ARTICLE 2, PUERTO RICO ELECTRIC POWER AUTHORITY IS EXCEMPT OF 6.6% TAX PAYMENT, ALSO, STARTING ON NOVEMBER 15TH, 2006; AND IN ACCORDANCE TO LAW 117 OF 4TH OF JULY OF 2006, KNOWN AS "LEY DE JUSTICIA CONTRIBUTIVA"; PREPA IS EXCEMPT OF "IVU (IMPUESTO A LA VENTA Y USOS ESTATAL Y MUNICIPAL)" TAX PAYMENT.
INVOICES SHALL INCLUDE ALL DETAILS RELATED TO GOOD OR SERVICE PURCHASED.

Facility		**Standard**	PH000007
Revision	004	**Description**	APPLICABLE LAW

APPLICABLE LAW.

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text

Facility		**Standard**	PH000007
Revision	004	**Description**	APPLICABLE LAW

This Order will be governed by and construed in accordance with the laws of the Commonwealth of Puerto Rico without regard to its principles regarding conflicts of laws. Exclusive jurisdiction and venue for any action arising hereunder will be in Puerto Rico, whether in Federal or Commonwealth Court.

Facility		**Standard**	PH000011
Revision	006	**Description**	CHANGES TO ORDER.

CHANGES TO ORDER.
No modifications, changes or substitutions of Materials, Services or Work Product or extra charges of any kind or change in or cancellation of or waiver of or exception to any of the terms or conditions of this Order will be recognized unless authorized by Buyer in writing. Buyer may direct, in writing, changes, including additions to or deletions from the quantities of Materials, Work Product or Services originally ordered, or in the specifications or drawings. Unless otherwise agreed to by the parties, if any such change causes an increase or decrease in the cost of, or the time required for performance hereunder, an equitable adjustment shall be made in the price and/or delivery schedule. Any claims for adjustment shall be asserted by Seller no later than thirty (30) days from the date of Seller's receipt of notice of such change. Nothing contained herein shall excuse Seller from proceeding with a change directed by Buyer

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Contract

Terms and Conditions - Text

Facility		**Standard**	PH000011
Revision	006	**Description**	CHANGES TO ORDER.

prior to negotiation of any adjustment. Notwithstanding the foregoing, mutually agreeable adjustments for any changes under this Order may be made by a written Order revision from one party which is confirmed in writing by the other party.

Facility		**Standard**	PH000031
Revision	009	**Description**	CONFIDENTIALITY

CONFIDENTIALITY.
This Order and all plans, drawings, designs and specifications which may be supplied by Buyer to Seller shall remain the property of Buyer and any information derived there from or otherwise communicated to the Seller in connection with this Order shall be regarded by Seller as strictly confidential and shall not, without the prior written consent of Buyer, be disclosed to any third party or made use of by Seller.

Facility		**Standard**	PH000033
Revision	009	**Description**	FORCE MAJEURE

FORCE MAJEURE.
Neither party shall be in breach of the Order to the extent that any delay or default in performance is due to Force Majeure. The term "Force Majeure" will mean any cause which is not within the control of the party claiming force majeure and which, by the exercise of due diligence, such party is unable to prevent or overcome, including but not limited to,

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text

Facility		**Standard**	PH000033
Revision	009	**Description**	FORCE MAJEURE

flood, fire, tornado, governmental order, insurrections, riots and wars. Within seven (7) days of the commencement of an event of Force Majeure, the party affected thereby will provide the other party with written notice of the event. Any event of Force Majeure shall not affect Buyer's right of termination as set forth in TERMINATION Section hereof.

Facility		**Standard**	PH000037
Revision	008	**Description**	TERMINOS PARA RETENCION EN EL ORIGEN

INFORMACION SOBRE RETENCIÓN EN EL ORIGEN
LA AUTORIDAD RETENDRÁ EL EQUIVALENTE AL 10% DE TODO PAGO POR SERVICIOS PRESTADOS QUE SE EFECTÙE BAJO ESTE CONTRATO, DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994, SECCIÓN 1143, SEGÚN ENMENDADA. NO OBSTANTE, SE DISPONE QUE LA RETENCIÓN A EFECTUARSE POR LA AUTORIDAD BAJO LAS DISPOSICIONES DE LA PRESENTE CLÁUSULA PODRÍA AUMENTAR A:
20% EN CASO DE QUE EL PROFESIONAL FUERA UN INDIVIDUO NO RESIDENTE CIUDADANO DE LOS ESTADOS UNIDOS DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994 , SECCION 1147; O UN 29% EN CASO DE QUE EL POFESIONAL FUERA UN INDIVIDUO NO RESIDENTE Y NO CIUDADANO DE LOS ESTADOS UNIDOS, O UNA CORPORACIÓN O SOCIEDAD EXTRANJERA NO DEDICADA A INDUSTRIA O NEGOCIO EN PUERTO RICO, DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994, SECCIONES 1147 Y 1150.

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text

Facility		**Standard**	PH000037
Revision	008	**Description**	TERMINOS PARA RETENCION EN EL ORIGEN

SI EL DEPARTAMENTO DE HACIENDA HA EMITIDO UN CERTIFICADO DE RELEVO A FAVOR DEL PROFESIONAL, ES RESPONSABILIDAD DE ÉSTE, SOMETER COPIA DEL RELEVO A LA AUTORIDAD PARA CADA AÑO NATURAL, DE LO CONTRARIO, LOS PAGOS SEGUIRÁN SUJETOS A LA RETENCIÓN EN EL ORIGEN. TODA FACTURA DEBE DETALLARSE POR CONCEPTOS (SERVICIOS, MATERIALES, EQUIPO, ETC.) PARA IDENTIFICAR LAS PARTIDAS SUJETAS A RETENCIÓN Y EVITAR DESCUENTOS INDEBIDOS.
LA AEE PUEDE TERMINAR ESTE CONTRATO UNILATERALMENTE, EN CASO DE QUE EL CONTRATISTA NO OBSERVE CUALQUIERA DE LAS CLÁUSULAS ANTERIORES, POR CUALQUIER FALLA EN EL CUMPLIMIENTO CON CUALQUIERA DE LAS DISPOSICIONES DEL CONTRATO, INCLUYENDO ESTE ADDENDUM, MEDIANTE LA PREVIA NOTIFICACIÓN POR ESCRITO AL CONTRATISTA DENTRO DEL TÉRMINO DE TREINTA DÍAS ANTES DE COBRAR EFECTIVIDAD LA TERMINACIÓN.

Facility		**Standard**	PH000038
Revision	005	**Description**	NONWAIVER.

NONWAIVER.
No waiver by any party of any condition, or of any breach of any provision contained in this Order, in any one or more instances, will be deemed to be or construed as a further or continuing waiver of any such condition or breach or waiver of any other condition or of any breach of any other provision.

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text

Facility		**Standard**	PH000039
Revision	008	**Description**	PRICE & PAYMENT

PRICE & PAYMENT.
The prices specified in the Purchase Order shall include all charges and expenses in connection with the packing and shipping of the Materials to Buyer. No additional charges of any kind will be allowed unless specifically agreed to in writing in advance. Payment will be made as set forth in this Order; however payment may be withheld or portions thereof may be deducted or setoffs may be made against Seller if Seller does not perform in accordance with this Order. The time for payment of invoices and acceptance of any applicable discounts shall be based on the date when the invoice is received and stamped by PREPA's Accounts Payable, and all pertinent information is correct on the invoice.
All invoices are to be sent to the following address: Puerto Rico Electric Power Authority, Treasury Division, PO Box 70253, San Juan, PR 00936.

Facility		**Standard**	PH000040
Revision	007	**Description**	RELATIONSHIP OF THE PARTIES.

RELATIONSHIP OF THE PARTIES.
Seller is an independent contractor. This Purchase Order does not create a partnership or joint venture between Seller and Buyer. Seller is not an agent of Buyer, and Seller has no authority to act on behalf of Buyer. Except as otherwise provided in this Purchase Order, Seller will provide any and all labor, supervision, materials, and equipment necessary to

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text

Facility		**Standard**	PH000040
Revision	007	**Description**	RELATIONSHIP OF THE PARTIES.

provide the Materials, Services or Work Product as set forth in this Order, and Seller will obtain any and all permits and authorizations required by applicable law to provide such Materials, Services or Work Product. Seller will control the means and manner of the providing of the Materials, Services or Work Product. Seller's personnel will not be considered employees of Buyer, and Buyer will not provide Seller's personnel with wages, salaries, or benefits.

Facility		**Standard**	PH000056
Revision	008	**Description**	TAXES AND DUTIES

TAXES AND DUTIES.
Seller shall be responsible for and pay directly, all corporate and individual taxes measured by net income or profit imposed by any governmental authority on Seller, its employees or subcontractors due to the execution of any agreement or the performance of or payment for work hereunder. Unless otherwise agreed in writing or prohibited by law, the price set forth in this Order shall not include any local tax (IVU) but Seller shall pay any federal tax, US Customs fees, Shipping Surcharge fees or other tax required to be imposed on the Materials, Services or Work Product.
Important:
PREPA is a government owned company exempt for pay taxes under Section

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text

Facility		**Standard**	PH000056
Revision	008	**Description**	TAXES AND DUTIES

2906, Article 2 of Puerto Rico's Internal Revenue Service Code and Section 2508 of Law Number 117 of July 4, 2006 known as "Ley de Justicia Contributiva (IVU)"

Facility		**Standard**	PH000057
Revision	005	**Description**	TERMINATION

TERMINATION.
Buyer may, at its option, cancel any unfulfilled Order, in which event Buyer's only obligation shall be to pay for Materials shipped or Work Product or Services performed prior to the receipt cancellation; provided, however, that if this Order covers Materials manufactured to Buyer's specifications, upon receipt of notice of cancellation, Seller shall stop all performance except as otherwise directed by Buyer, and if Seller is not in breach of this Order, Buyer shall pay Seller's actual, direct, unavoidable and reasonable costs resulting from such termination, not to exceed the total price of the Materials, Work Product or Services stated in this Order. Upon such payment, title to any Materials or Work Product, including uncompleted Materials or Work Product, shall pass to Buyer. In the event of default by Seller in the performance of any obligation hereunder, including time of delivery, or in the event it becomes apparent that delivery cannot be accomplished within the time specified, Buyer may, at its option, cancel this Order entirely, without penalty or liability

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text

Facility		**Standard**	PH000057
Revision	005	**Description**	TERMINATION

(except for Materials received and accepted.) All provisions necessarily requiring survival beyond any termination of this Order, including, but not limited to, those relating to audit, choice of law, confidentiality, indemnity, title and warranty shall survive any such termination.

Facility		**Standard**	PH000079
Revision	001	**Description**	QUALITY STANDARDS AND WARANTIES 1

QUALITY STANDARDS AND WARANTIES.
Seller warrants (i) title to the Materials or Work Product, free and clear of all liens and encumbrances and (ii) that Materials, Work Product and Services will be in exact accordance with this Order, the specifications, drawings, samples or other descriptions furnished or adopted by Buyer and will be fit and sufficient for the purpose intended, merchantable, of good material, design and workmanship, free from defect and be new and of best quality, unless otherwise specified. Such warranty shall survive delivery and shall not be deemed waived either by reason of Buyer's acceptance of the Materials, Work Product or Services or by payment for them. The Materials, Work Product or Services shall be subject to Buyer's right of inspection and rejection at any reasonable time before or during the manufacturing process or provision of Service and within forty-five (45) days after delivery to destination or completion. Materials, Work Product or Services other than those specified shall not be submitted without

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text

Facility		**Standard**	PH000079
Revision	001	**Description**	QUALITY STANDARDS AND WARANTIES 1

Buyer's written authorization.

Facility		**Standard**	PH000080
Revision	002	**Description**	QUALITY STANDARDS AND WARANTIES 2

Rejected Material and Services or Work Product may be returned or re-performed at Seller's expense. The making or failure to make any inspection, approval, payment or acceptance of the Materials, Work Product or Services shall in no way impair Buyer's right to reject or revoke acceptance of non-conforming Materials, Work Product or Services or to avail itself of any other remedies to which Buyer may be entitled, notwithstanding Buyer's knowledge, the substantiality, or the ease of discovery of any non-conformity. If any time prior to one (1) year from the date of completion of any Services, or the earlier of one (1) year from the date of installation or eighteen(18) months from receipt of any Materials or Work Product if the Materials, Work Product or Services, or any part thereof, do not conform to these warranties or the specifications, Seller shall promptly correct such nonconformity to the satisfaction of Buyer at Seller's sole expense; failing which, Buyer may proceed to make corrections or accomplish Seller's work by the most expeditious means available, and the costs of cover or correction shall be for Seller's account. Seller's liability hereunder shall extend to all damages proximately caused by the breach of any of the foregoing

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text

Facility		**Standard**	PH000080
Revision	002	**Description**	QUALITY STANDARDS AND WARANTIES 2

warranties, including incidental damages such as removal, inspection, costs of return, warehousing and reinstallation. These warranties are in addition to, and shall not be construed as restricting or limiting any warranties of Seller, express or implied, or which are provided by law or exist by operation of law.

Facility		**Standard**	PH000082
Revision	002	**Description**	ANTI-KICKBACK

Seller represents that no unrecited consideration, kickbacks, fees, payments, gifts, entertainment, or things of value were given to or requested by any Buyer employee as an inducement to enter into or continue this Order, and that Seller further agrees to immediately report any such request, demand, or occurrence relating to any Buyer employee or this Order to: Puerto Rico Electric Power Authority, Material Management Division Head Office, P.O. Box 3670151, San Juan, Puerto Rico 00936-0151; Telephone: 787-521-3268, or 787-521-3310. Seller shall adhere to Buyer's Expected Ethical Conduct Standards as defined in PREPA's Code of Ethic or Leyes de Ética which is available at: http://www.prepa.com/spanish.asp?url=http://www.aeepr.com/suministros.asp

* * * **End of Contract** * * *

September 23, 2021

PUERTO RICO POWER AUTHORITY

SOUTH COAST, UNIT 6

UNIT 6 REASSEMBLY

BUDGETARY PROPOSAL 211147R1

MD&A
MECHANICAL DYNAMICS & ANALYSIS LLC
19 BRITISH AMERICAN BLVD. • LATHAM • NEW YORK • 12110
PHONE: (518) 399-3616 • FAX: (518) 399-3929
www.MDAturbines.com

MECHANICAL DYNAMICS & ANALYSIS LLC
19 BRITISH AMERICAN BLVD. • LATHAM • NEW YORK • 12110
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www.MDAturbines.com

September 23, 2021

PROPOSAL 211147R1

Miguel Beuchamp, Plant Manager
PREPA - South Coast
Road 127, Km 15.7
Guayanilla, PR 00656

MIGUEL.BEAUCHAMP@prepa.com

Re: REASSEMBLY SOUTH COAST, UNIT 6

Dear Mr. Beuchamp,

Mechanical Dynamics & Analysis LLC (MD&A) is pleased to offer you the following budgetary proposal for performing the above referenced work.

Please note that MD&A's team has reviewed the reassembly plan and believes that coupling sleeves will be required for reassembly which has not been included in this proposal offer and have a long lead time for delivery.

MD&A appreciates having this potential opportunity to serve PREPA at its South Coast station, and if we get the order, it will be completed in a highly professional manner.

Sincerely,

Greg D. Phillips
Operations Manager Outage Services

GDP*211147R1*/md
Enclosures

cc: J. Theoktisto, MD&A Manager Contracts and Proposals
J. Durkee, MD&A Vice President Outage Services
D. Gould, MD&A General Manager Machining Services
H.M. Lee, MD&A Manager Steampath Proposals
A. Brusi, MD&A Regional Sales Manager

PRICING & SCOPES

ITEM	WORK SCOPE	ESTIMATED PRICE	DURATION
A	Reassembly of Thrust bearing, Generator H2 seals, LPA Hood, LPB (including TLA on LPB) and crossovers	$460,178	8 days, Two-12 hours shifts/day.
B	Line Boring	$124,415	
C	Bearings and Seals Inspection and Cleaning	$70,995	
D	LPB Spare Rotor and Diaphragm Repairs (1 Hood)	$1,058,370	4-5 weeks based on 3 weeks lead time for bucket manufacturing.
E	Conventional Packing Rings & Spill Strips	$180,950	
F *(Optional)*	Vortex Shredder Tip Seals	$22,770	

NOTES:

***Item A**: Budgetary price assumes all components and parts onsite for reassembly, (8) days working (2) shifts (12) hours per shift. Technical director, Foreman and (7) mill wrights on day shift and Superintendent, Foreman and (7) Millwrights on night shift.*

***Item B**: Budgetary price includes only line boring services, no parts such as sleeves, coupling bolts, or any other hardware. BFW quote attached for reference and Time and Material rates for additional work which will apply per quote + 17% markup.*

Workscope C: Bearings and Seals Inspection and Cleaning

ITEM	DESCRIPTION	SCOPE	PRICE
H1	T5 Elliptical Bearing Nom 17"	Inspect, report, centrifugal cast w/virgin grade 2 babbitt, NDE, finish machine to customer specifications, refit dowels as required	$9,575
H2	T6 Elliptical Bearing Nom 18"	Inspect, report, centrifugal cast w/virgin grade 2 babbitt, NDE, finish machine to customer specifications, refit dowels as required	$20,202
H3	T4 GE Oil Deflector Nom 17" up to 7T	Clean, inspect, provide/install & finish machine new aluminum seal teeth; refit dowels as required	$5,285
H4	T5 TE Oil Deflector Nom 17" up to 7T	Clean, inspect, provide/install & finish machine new aluminum seal teeth; refit dowels as required	$5,285
H5	T5 GE Oil Deflector Nom 17" up to 7T	Clean, inspect, provide/install & finish machine new aluminum seal teeth; refit dowels as required	$5,285
H6	T6 TE Oil Deflector Nom 18" up to 7T	Clean, inspect, provide/install & finish machine new aluminum seal teeth; refit dowels as required	$6,036
H7		Estimated freight (1) shipment each direction	$9,326
	TOTAL		**$70,995**

NOTES:

a) *Our estimate includes freight for 1 shipment on each direction.*
b) *Emergent Repairs will be quoted upon inspection*

Workscope D: Spare LPB Rotor and Diaphragms Repair Budgetary Estimate

ITEM	DESCRIPTION	SCOPE	PRICE
SP1	LPPB Rotor Repair	Straighten blend and polish all stages as required Machine Journals Remove, supply and install L1 notch group (TE and GE) Perform High Speed Balance	$530,420
SP2	LPB Diaphragm Repair	Potential Workscope: Major weld repair Double Flow Diaphragm partitions Minor repair stages 14 to 17 consisting of local weld, straighten, blend and polish Weld repair eroded setback face and side wall (25% of diaphragm) Weld repair eroded spill strips groove (25% of diaphragms) Window weld repair diaphragms (25% of diaphragms)	$527,950

Workscope E: Conventional Packing Rings & Spill Strips

Supply and installation LPB interstage packing and spill strips, including all new hardware. See Quote 260932 attached for additional details.

Optional Workscope F: Vortex Shredder Tip Seals

Includes upgrade of (12) rows of tip seals to MD&A's Advanced Vortex Shedder Spills. that have a minimum radial height of 0.200 inches. The Vortex Shedder shape will be applied to the first row in each diaphragm. Premeasure and installation by MD&A are mandatory with Vortex Spill Strips.

***Note**: Vortex Shedder shape can only be applied to new seals*

PRICING CLARIFICATIONS

1. **Terms and Conditions** – MD&A's proposal is based on the attached document titled "MD&A Terms and Conditions, Services and Parts (Dated 09/11/17)".

2. **Payment**
   a. We propose the following Payment Schedule:
      i. 30% due upon contract Issuance
      ii. 20% invoiced upon completion of mobilization
      iii. 50% invoiced upon completion of work
   b. All invoices net thirty (30).
   c. This payment schedule is per outage.
   d. Our pricing includes all travel and living expenses.
   e. Our price does not include import / export customs taxes, duties, or the cost of any required work permits or visas. If these are required, they would be billed to the customer at cost plus administrative mark up.
   f. All pricing is in current, 2021 US Dollars. Pricing quoted would apply for the work to be performed in 2021. All Payments shall be made in US dollars.

3. This proposal may be impacted by unforeseen circumstances arising out of the **Coronavirus Pandemic** that require extra costs such as mandatory quarantine for personnel or other. MD&A will do its best to notify the Customer of such circumstances as soon as they become aware, however the Customer shall be responsible for any extra costs related to quarantine as may be required to accommodate COVID-19 restrictions & protocols.

4. **Validity** - Proposal is valid for ninety (90) days. Extensions may be requested by the Customer.

5. **Shipping** (If tooling or equipment requested)
   a. Customer to provide assistance with freight forwarding and customs processes, if parts or equipment are requested as part of the emerging works.
   b. MD&A cannot accept liability for shipping or customs delays for the fields while they are awaiting or in transit. We have allowed seven (7) days for customs clearance and transit time each way for a total of 14 days in customs. Delays in customs clearance and transit time occurring beyond thirty (30) days may entitle MD&A to additional rental costs. Furthermore, it is incumbent that AES has secured the necessary paperwork and/or permits for all import/exports, etc., including paying all duties and taxes needed in advance of shipments.

TECHNICAL CLARIFICATIONS

GENERAL

1. In case of a work stoppage of any nature beyond MD&A's control, including severe weather, we will give the Customer the option of keeping our crew standing by locally or returning our crew to their home base. In the event that crew members are required to return to their respective home base location and to return to the Customer's plant at a later date to finish the work, MD&A will submit a quotation for appropriate "in and out" expenses due to the work stoppage.

2. MD&A assumes no liability for the crane inspection or its operational reliability. It will be the Customer's responsibility to determine that the crane meets all operational and safety standards. The Customer shall have a complete preventive maintenance check performed prior to the outage. We understand that it may be necessary to share the use of the crane with another vendor. Minor delays in crane availability can be accommodated, however extended periods of time during which the crane is not available will be considered delay time.

3. All electrical testing will be performed at the OEM's recommended voltages, unless otherwise instructed by Customer.

4. The conditions of any tests related to work performed by MD&A, shall be mutually agreed upon and MD&A shall be notified of, and may be represented at, all tests that may be made.

5. Customer is responsible for treatment and removal of hazardous substances and related contamination of any nature.

6. Straight time is defined as work up to (8) hours on weekdays. Overtime is defined as work after (8) hours on weekdays and all day Saturday. Double time is defined as work performed on Sundays and holidays.

7. We plan to start the work when all the turbine and generator components are back on site at South Coast and have the unit ready for turning gear on or before the ninth day (9th) after the start of reassembly.

8. Extra work scope includes:
   a. All non-specified repairs. Repairs identified during the inspection will be quoted upon discovery.
   b. Destructive removal of bolts, nuts, threaded fasteners, or components in not included in the base scope of work. It is presumed these items can be removed by normal (non-destructive) means. Should destructive removal be required, the scope will be considered extra work.
   c. All non-specified machining or hand fitting.
   d. Estimated staff and labor is based on the planned word dates stated above. If conditions not within MD&A's ability to control, such as the extension of time for repair activities, cause the schedule to be extended, all staff time and expenses, and any added labor costs beyond the end date above, would be considered extra.
   e. If standby time is encountered, waiting for work to be completed by others, it will be considered an extra ((limited to 10 hours straight time, per person per day).
   f. Labor support such as scaffolding, electrical hookups, moving of equipment, and positioning of components for emergent repair work or for changes in defined repair work will be provided on a T&M basis regardless of whether the repairs are performed by MD&A or another contractor.

9. We plan on using the following Subcontractor services:

Service	Name
Line Boring	BFW

OUTAGE SERVICES

10. MD&A's Project Staff, will include one (1) Technical Director, one (1) Day Shift Labor Foreman, one (1) Night Shift Labor Supervisor, one (1) Labor Foreman and an average of seven (7) Turbine Mechanics per shift (Per pricing table note A)

11. The Craft labor work schedule will be twelve (12) hours per shift, two (2) shifts per day, seven (7) days per week throughout the reassembly process.

12. Craft Labor will be provided from MD&A's cadre of non-union turbine mechanics.

13. Temporary facilities to be brought on site:
    a. Tool Container (8' x 8' x 20')
    b. (1) Craft trailer
    c. Portable Toilets

14. Our proposal includes checking turbine internal component alignment and making minor alignment changes such as diaphragm elevation shim changes and bearing adjustments. Major alignment changes such as the need to move inner casings or re-shim the generator are not included.

15. Included in this proposal is Topless laser alignment of LPB turbine section

    MD&A proposes aligning the LPB turbine section using MD&A's Topless Alignment® process. This process offers the same benefits as a Tops-on / Tops-off alignment without the time and effort required to rebuild the unit for Tops-on measurements. Using this method, MD&A has aligned over 1,750 turbine sections with over 1,150 being made by General Electric, Toshiba, and Hitachi. MD&A will provide one Alignment Engineer with specialized laser measuring equipment to perform all measurements and calculations required to align this turbine. Included in this proposal is (1) site visit with a total of up to 2 days Engineer time on site. If additional days are required than extra costs would apply.

    These activities include:

    a. Laser centerline measurements through all outer gland cases and diaphragms for use in determining their relative radial positions
    b. Packing fit bore roundness measurements – required to align each diaphragm and gland to its elliptical center.
    c. Identification of significant diaphragm & gland distortion that may result in insufficient packing tooth clearance, with clearance recommendations for these locations.
    d. Horizontal joint distortion measurements of the LP inner casing – required to calculate Tops-On / Off movements of steampath components
    e. Calculation of ideal line
    f. Calculation of all required moves
    g. Review as found condition with recommendations for any moves and identification of any alignment problems.

h. Verification of component positions after corrective moves are made.
i. Issue report with final bore positions prior to leaving site.
j. Issuance of detailed final report 30 days after outage completion.

16. MD&A has NOT included in this proposal support for startup including controls or vibration engineer.

STEAMPATH

17. Steampath repairs workscope is strictly budgetary, pending completion of inspection.

18. High Speed Balance Clarification
    a. Proposal assumes the MD&A St. Louis balance facility has a set of stock bearings and drive plates suitable for use for the high-speed balance, subject to confirmation upon receipt of the rotor. If not, an additional bearing charge may apply. Stub shafts and their installation are not included unless specifically called out in line item"
    b. Customer to provide the following:
        i. Unit history of operation i.e., water induction incidents, packing rubs on start up, high vibration.
        ii. Past bucket replacement, which stages, where the buckets came from, original design or modified
        iii. Past repair work such as journal machining, dovetail machining
        iv. We have assumed the rotor has two journals.
        v. Supply of balance weights. Can be provided by MD&A on T&M basis. Balancing by material removal, such as grinding, is not performed at HSB.
    c. The rotor must pass the incoming checks in the HSB facility per instruction. The following is the list of required tests and inspections:
        i. Full inspection of the rotor per HSB inspection forms.
        ii. Rotor boresonic inspection or UT of the periphery inspection of the rotor bore. On units greater than 20 years old a test is required within last 10 years for rotors with bore. On rotors without a bore a PAUT of the periphery is required if forging is pre 1970.
    d. Adapter plates to couple a rotor to the balance bunker drive usually employ existing rabbet diameters and existing bolt holes. Dimensional information on the coupling needs to be provided to the balance cell as soon as possible to determine if existing adapter plates can be used, otherwise cycle time of an adapter plate needs to be factored in. Any adapter plate design options (to expedite cycle and reduce cost) that require modification to the field must be approved by HSB Engineering and agreed to by the customer.
    e. Data from the final balance run and overspeed test if applicable will be provided to the customer in the final report. This proposal assumes a maximum of 25 runs.
    f. While high speed balance verifies the balance and smooth operation of the rotor throughout the entire speed range it should be noted that additional full train factors, including alignment and balance of adjacent rotors may affect the subject rotor on site.

DIVISION OF RESPONSIBILITIES

A. CONSUMABLES / MATERIALS	CUSTOMER	MD&A
1. All parts, including gaskets, material, nuts, keys, washer, bolts, and fittings, in a timely manner.	X	
2. Lubricating oils and greases which will be a part of the operating unit.	X	
3. Cribbing and barrier materials.	X	
4. Consumable materials including rags, cleaning fluids, emery cloth, etc.	X	
5. Welding/Cutting gasses (for the defined scope of on-site work).	X	
6. Joint and thread lubricants.	X	

B. SITE SERVICES	CUSTOMER	MD&A
1. Scaffolding services (as required).	X	
2. Insulation services (as required).	X	
3. Compressed air for tools.	X	
4. Night shift lighting (as required).	X	
5. Service water.	X	
6. Drinking (potable) water & coolers	X	
7. Electrical services (a list of required services including location, voltage and amperage can be provided).	X	
8. Isolation of all electrical services (including disconnect, at Isophase termination enclosures, both generator line side and neutral links, and neutral grounding transformer connections; disconnect all RTD's as required).	X	
9. Drain and refill of main lube oil tank and seal oil system (as required).	X	
10. Blinding of pressurized piping if required for lockout-tagout (LOTO).	X	
11. Temporary office.	X	
12. Craft Break Trailer		X
13. Temporary sanitary facilities.		X
14. Phone, fax and internet connections.	X	
15. Provide a secure area and lay down space for MD&A equipment adjacent to the repair area.	X	

C. TOOLS & EQUIPMENT	CUSTOMER	MD&A
1. Rotor stands, special tools, jigs, non-standard wrenches, and alignment fixtures provided by the OEM or fabricated by the Customer to facilitate maintenance.	X	
2. Overhead crane (as required).	X	
3. Flatbed trucks and mobile crane, including outside equipment handling (as required).	X	

C. TOOLS & EQUIPMENT	CUSTOMER	MD&A
4. Forklift for turbine deck.		X
5. Lapping blocks for valves (as required).	X	
6. Try bars for valve bushing alignment & clearance (as required).	X	
7. All hand tools.	X	
8. Non-OEM supplied rigging.	X	
9. Taps and dies up to 1 ½ inches.	X	
10. Tool container.	X	
11. Turbine deck protection, plywood and cribbing.	X	

D. EHS	CUSTOMER	MD&A
1. Safety tagging.	X	
2. Safe access to and from work area.	X	
3. Secure parking area & transportation.	X	
4. Security for parts and tool storage.	X	
5. Hazardous material removal (as required).	X	
6. Written plant safety regulations and procedures.	X	
7. Waste containers for disposal of trash.	X	
8. First aid facilities (emergency use only).	X	
9. All required permits.	X	
10. Fire protection equipment other than local fire fighters.	X	
11. Portable Air Conditioning (as required)	X	
12. Crane Inspection Report (performed within 12 months of planned outage completion)	X	

E. PERSONNEL / DOCUMENTS	CUSTOMER	MD&A
1. Representative for coordination of parts and repair decisions and to authorize Extra Work to avoid delays.	X	
2. Start-up and Operation personnel.	X	
3. Access to all available drawings, operating procedures, information, historical data, and O&M manuals on the equipment covered under this proposal.	X	
4. Electricians and Instrument Technicians.	X	
5. Crane Operator (as required).		X
6. Technical Direction.		X
7. Final report.		X

LABOR RATE SCHEDULE - NON-UNION

MD&A Proposal 211147R1

September 23, 2021

RATES VALID THROUGH DECEMBER 31, 2021			
BILLING RATES	**S.T.**	**O.T.**	**D.T.**
Superintendent	$147.00	$220.50	$220.50
Foreman	$75.00	$112.50	$112.50
Precision Turbine Mechanic	$66.00	$99.00	$99.00
TRAVEL AND LIVING			
Superintendent Travel Time	S.T. capped at 8 hrs. max each way		
Superintendent Travel Expenses	Cost + 10%		
Superintendent Per Diem (7-day per week basis)	$260.00 per day		
Craft Mob/Demob	$650.00 each way		
Craft Per Diem (7-day per week basis)	$175.00 per day		
LABOR EQUIPMENT AND TOOL RENTAL RATES			
Turbine Tool Container	$1,265.00 per day		
Tool Transportation / Shipping and Freight	Cost + 17%		
Materials and Services	Cost + 17%		
Materials and Consumables	Cost + 17%		
Purchased / Subcontracted Parts and Services	Cost + 17%		
NOTE: No taxes are included. Customer would be responsible for these.			

NOTES:

1. Rates are based on a minimum of ten (10) hours per day, six (6) days per week per person, unless noted differently in the proposal. Any required standby time will be billed at S.T. rates and limited to ten (10) hours per day, six (6) days per week per person.
2. O.T. is defined as work over eight (8) hours on weekdays and all hours worked on Saturdays, Sundays, and Holidays.
3. Pricing does not include shipping and freight, which will be invoiced at cost plus 17%.
4. Rate excludes weld filler materials in some high deposition applications and all silver solder.
5. Travel hours will be invoiced on a straight time basis for actual hours traveled.

TERMS:

1. 1½% per month finance charge applied to late payments.
2. All prices in U.S. Dollars.
3. Subject to MD&A TERMS AND CONDITIONS, SALE OF SERVICES AND PARTS (dated 9/11/17).

2021 RATE SCHEDULE

PREPA, South Coast Unit 6 – Steam Turbine LPB Reassembly
MD&A Proposal 211147 - September 23, 2021
(01/01/21 THRU 12/31/21)

	Hourly Rates *(Note 2)* S.T.	O.T.
Engineering Rates		
Field Engineer, Technical Field Advisor, Generator Specialist	$ 248.50	$ 373.00
Project Management, Steampath Engineering Supervision	$ 271.00	$ 406.00
Engineering Consultant, Specialty Field Engineer	$ 338.00	$ 507.00
Controls, Excitation, Balancing, Alignment, Shell/Casing Repair		
Principal Engineer	$ 386.50	$ 579.50
Labor Rates		
Steampath Specialist, Lead Seal Technician, CAD Designer, Reverse Engineering Technician	$ 194.00	$ 291.00
Steampath Work Leader	$ 145.50	$ 218.00
Steampath Technician	$ 133.50	$ 200.00
Blader, Machinist, Welder, Seal Technician		
Gas Turbine Bucket/Blade Specialist	$ 200.00	$ 300.00
Gas Turbine Repair Technician	$ 154.00	$ 231.00
Generator Technician	$ 187.50	$ 281.50
Craft Labor, Administrative/Clerical	Available upon request	

Equipment, Parts, Services		**Daily**	**Weekly**
Turbine Tool Container	*(Note 3)*	$1,265.00	$7,590.00
Purchased/Subcontracted Parts and Services		Cost + 17%	
Steampath Consumables	*(Note 4)*	$ 12.00/person/hour	

Travel and Living Expenses		
Per Diem	*(Note 5)*	$ 250.00/person
Travel Expenses	*(Note 6)*	Cost + 10%
Personal Vehicle (to and from worksite)		IRS Standard Rate + 10%

NOTES:

1. *Rates are based on a minimum of ten (10) hours per day, six (6) days per week per person, unless noted differently in the proposal. Any required stand-by time will be billed at S.T. rates and limited to ten (10) hours per day, six (6) days per week per person.*
2. *O.T. is defined as work over eight (8) hours on weekdays and all hours worked on Saturdays, Sundays, and Holidays.*
3. *Pricing does not include shipping and freight, which will be invoiced at cost plus 17%.*
4. *Rate excludes weld filler materials in some high deposition applications and all silver solder.*
5. *Firm price per diem rate includes local transportation, lodging, meals, laundry, communications and incidentals and will be invoiced on a 7 day per week basis. Price shown is based on rural to medium suburban areas. Large metropolitan locations (such as NYC, Chicago, Los Angeles, etc.) or locations where seasonal/special event rates apply will be quoted upon request.*
6. *Travel hours will be invoiced on a straight time basis for actual hours traveled.*

TERMS:

1. *Payment terms – Net 30 days.*
2. *1½% per month finance charge applied to late payments.*
3. *All prices in U.S. Dollars.*
4. *Subject to MD&A TERMS AND CONDITIONS, SALE OF SERVICES AND PARTS (dated 9/11/17).*

MD&A LLC, 19 British American Blvd., Latham, NY 12110
Tel: 518-399-3616, Fax: 518-399-3929
WWW.MDATURBINES.COM

2021 TOOL/EQUIPMENT RENTAL SCHEDULE

U.S. and CANADA

(01/01/21 THRU 12/31/21)

Equipment Rentals *(Note1)*	Daily	Weekly
Turbine Tool Container	$ 1,265.00	$ 7,590.00
Generator Repair Equipment and Tool Rental		
Induction Heating Set	N/A	$ 6,800.00
Generator Tool Trailer	N/A	$ 2,950.00
Power Rollers	N/A	$ 1,650.00
Field Removal System *(Note 3)*	N/A	$ 8,620.00
Stator Cooling Water Vacuum–Pressure Test Skid	$ 685.00	$ 4,110.00
Voltage Regulator Test Set	$ 105.00	$ 630.00
AC Hi-Pot	$ 570.00	$ 3,420.00
Test Box	$ 310.00	$ 1,850.00
Stator ElCid Test Equipment	$ 915.00	$ 5,490.00
Specialty Generator Equipment	Available upon request	
Turbine Repair Equipment and Tool Rental		
Portable Lathe (over 60 tons)	$ 660.00	$ 3,950.00
Portable Lathe (60 tons or less)	$ 467.00	$ 2,800.00
Portable Machine Shops	$ 500.00	$ 3,000.00
Line Boring Bars (1 ½" to 4" diameter)	$ 355.00	$ 2,130.00
Line Boring Bars (over 4" diameter)	$ 375.00	$ 2,250.00
Vertical Turning Lathe/Boring Machine	$ 265.00	$ 1,590.00
Flange Facing Machine	$ 250.00	$ 1,500.00
Metal Disintegration Machine (MDM) *(Note2)*	$ 990.00	$ 5,940.00
Stud Removal Machine	$ 310.00	$ 1,860.00
Lamina Hydraulic Drill and Power Pack	$ 420.00	$ 2,520.00
Cylinder Boring Machine	$ 285.00	$ 1,710.00
Portable Honing Machine	$ 135.00	$ 800.00
CNC Milling Machine	$ 260.00	$ 1,560.00
Three Axis Master Milling Machine	$ 275.00	$ 1,650.00
Knee Milling Machine, 24"	$ 310.00	$ 1,860.00
Bucket/Blade Milling Machine	$ 142.00	$ 850.00
Punch Press	$ 142.00	$ 850.00
Cover/Shroud Roller	$ 142.00	$ 850.00
Welding Machine	$ 150.00	$ 900.00
Laser Joint Flatness Measurement Instrumentation *(Note 3)*	$ 365.00	$ 2,190.00
Welding Package (manual welding machine, cables, stingers)	$ 165.00	$ 990.00
Automatic MIG Orbital Welding System (no consumables included)	$ 465.00	$ 2,790.00
Automatic TIG Orbital Welding System (no consumables included)	$ 1,250.00	$ 7,500.00
ASME Certified Weld Procedures (labor supervisor required)	$2,800.00/procedure/use	
Heat Treating Equipment (6-ways, heating pads, thermocouples, etc.)	$ 325.00	$ 1,950.00
Turbobalancer	$ 308.00	$ 1,848.00
ADRE 408	$ 500.00	$ 3,000.00
Rotor Shipping Skids and Containers	Available upon request	
Other Tooling and Equipment	Available upon request	

NOTES:

1. *Pricing does not include shipping and freight. Shipping and freight will be invoiced at cost plus 17%.*
2. *Rate does not include consumables. All consumables will be charged at cost plus 17%.*
3. *Requires the use of an MD&A Specialty Field Engineer (not included in rental rate).*

TERMS:

1. *Payment terms – Net 30 days.*
2. *1½% per month finance charge applied to late payments.*
3. *All prices in U.S. Dollars.*
4. *Subject to MD&A TERMS AND CONDITIONS, SALE OF SERVICES AND PARTS (dated 9/11/17).*

2021 MD&A Rate Schedule

is available upon request.

MD&A LLC, 19 British American Blvd., Latham, NY 12110
Tel: 518-399-3616, Fax: 518-399-3929
WWW.MDATURBINES.COM

BFW Coupling Services

A Proposal for BFW Coupling Boring for Mechanical Dynamics & Analysis, LTD at South Coast

Contact Name: Greg Phillips

Contact Title: Operations Manager

Phone #: (518) 410-1740

E-mail: Gdphillips@MDATURBINES.com

Date: September 9, 2021 Quotation #: P21-4215-CM

Subject: **South Coast** Unit 6 Coupling Project
Approximate Start Date: Fall 2021
BFW Reference: P21-4215-CM

Attention: Greg Phillips

Greg:

Thank you for the opportunity to quote on your upcoming outage.

The proposal attached is based on four technicians providing around the clock coverage utilizing one BFW Coupling Boring Machine. If your schedule allows for single shift coverage, the price per hole will not be affected; however, the mobilization charges will be reduced.

For the "C" we would require new sleeves for the line boring. If the customer is interested in upgrading to hydraulic bolts on the "B" coupling, we can assist in getting the quote from SKF.

If you have any questions, please feel free to contact me at the number below or by return email.

Yours truly,
BFW Coupling Services Limited

Mike Hyatt
Services Coordinator

Scope

To prepare the bores (line bore and / or hone) for Mechanical Dynamics & Analysis, LTD at South Coast. BFW will machine the sleeves of the hydraulic coupling bolts and machine the coupling bolts to the final size based on the bore dimensions resulting from the bore preparation. The hydraulic coupling bolts will be installed if required. These operations will be performed in under 2 hours per hole maximum. Up to 0.050 inches of material removal in a 20"-long bore will not affect this estimated maximum time. From 0.050 inches up to 0.100 inches of material removal in a 20"-long bore will not impact the price but might affect the 2-hour time frame. Removal of more than 0.100 inches of material will affect the price per hole.

Machining and Installation Notes

Proper bore preparation for a Hydraulic Bolt retrofit is paramount to the success of such an upgrade. After many years of extensive experience with Hydraulic Coupling Bolts, BFW Coupling Services has developed the "BFW" Bore Preparation System for this requirement. The process eliminates misshapen holes which may have resulted from previous honing of the bores. Since Hydraulic Coupling Bolts attempt to fill the entire bore of a coupling hole, sleeve expansion in a slightly misshapen hole can result in a leveraging action which could affect coupling concentricity and/or hole alignment thus creating a potential risk for significantly increasing future assembly times. Hydraulic Coupling Bolts in holes prepared using traditional methods may not have the full body fit which they were designed for; Misshapen holes can cause the bolt/sleeve to have point contact in the bore. Upsets or faults in the grid may cause such couplings to experience slight slippage. This in itself may not cause the turbine to trip on vibration, but it can create difficulty in removing the sleeves during future outages. Hydraulic Coupling Bolts provide tremendous time and cost savings with a very short payback period. However, without proper bore preparation, the full value of this investment may not be realized.

Match Bore

In the vast majority of installations, the hydraulic coupling bolt sleeves are machined by BFW to accommodate the final bore dimensions resulting from the line boring operation. In spite of this, in some rare cases BFW may be asked to line bore the coupling holes to a tighter requirement such as

- relative to the OD dimensions of pre-sized sleeves
- all holes to the same OD
- match bore one coupling half to an existing coupling half

Such requests would require match-boring of all coupling bolt holes on a particular coupling. In addition to extended execution times, this would entail significant extra work and effort. If BFW must match-bore, the standard price per hole as indicated will be increased by 20%.

Project Duration

BFW will work to a total retrofit time equal to a maximum of 2 hours per hole based on the above noted conditions. It should be noted that sometimes the actual average time taken to accomplish these tasks may be as quick as 60 minutes per bolt/hole. The duration of the operation will be calculated from the time that the BFW begins the hole preparation until it has been completed. The operation will include the bore preparation, hydraulic bolt sleeve machining using a full-size lathe and hydraulic bolt installation.

This proposal is based on BFW working 12-hour shifts, 7 days per week. Normal delays are accounted for in this estimate. Unfortunately, extensive delays caused by circumstances beyond BFW's control, such as the inability to have the coupling turned when required or, access to the coupling being impaired, may hamper a rapid operation and, therefore, cannot be included in this estimate.

Pricing

Item	Installation & Machining	Qty		
1.1.1.0	BFW System bore preparation for the "B" coupling	14		
1.1.1.1	Final-size machining of conventional coupling bolts for the "B" coupling	14		
1.1.2.0	BFW System bore preparation for the "C" coupling	14		
1.1.2.1	Final-size machining of Hydraulic Bolt Sleeve for the "C" coupling	14		
1.2	*OR* BFW System bore preparation to ensure matched *per coupling* hole sizes	OPEN		
1.3	Removal of more than 0.100" of material	OPEN		
1.4	Installation of Hydraulic Bolts Note: If installation is performed in conjunction with the hole preparation there will be no charge. If BFW is required to remain on-site after the hole preparation is complete or return to the site at a later date in order to install the hydraulic coupling bolts normal supervision rates will be charged.			
1.5	Spotface repairs as required Note: Customer must advise if they feel this will be required prior to mobilization or additional freight costs may occur.	OPEN		
1.6	Machining of piloted / spigotted nut	OPEN		

Estimated Expenses

Item	Description		Total
2.1	Technician Travel Time Based on 4 Technicians Minimum 10 hours per day per technician		
2.2	Equipment Transport		
2.3	Airfare		
2.4	Vehicle Rental		
2.5	Airport Shuttle (Fixed cost no receipt)		
2.6	Lodging		
2.7	Per Diem		
2.8	COVID Testing pre / post project (Fixed cost no receipt)		
		Estimated Total for the Project	**$124,415.00**

Standby and Extras

This proposal is based on BFW working 12 hour shifts, 7 days per week. Concurrent access to the bores is required in order to minimize impact to the Critical Path. Delays caused outside BFW's control or by other parties which impede continuous project completion will incur applicable standby charges. In cases where BFW has been contracted to provide simultaneous machining of two couplings, a daily machine stand-by cost will be charged if one machine remains idle if, for example, the second coupling has not been made available to BFW.

Extended standby periods could impact BFW's ability to uphold similar commitments made to other clients. At such times it may be necessary to demobilize some of the company's Technicians who are on Stand-By. Efforts will be made to return these same Technicians once the Stand-by period is finished. However, this may not always be possible. In those cases, other BFW Technicians will be sent to the site. All related mobilization costs incurred are at the responsibility of our customer.

Item	Description	Price
3.1	Technician and Equipment Stand-by 13 hours per day per shift on-site 10 hours per day per shift off site	$210.00 per hour per technician
3.2	Overtime Technician and Equipment Stand-by (weekend and Holidays) 13 hours per day per shift on-site 10 hours per day per shift off site	$240.00 per hour per technician
3.3	Equipment Release Delay Charge Only applied if the equipment is not released from site within a reasonable period	$2,280.00 per day per machine
3.4	Technician Surcharge For on-site hours worked weekends and holidays	$65.00 per hour per technician
3.5	Site Training (when necessary) Minimum 10 hours per day per technician	$130.00 per hour per technician

Customer Responsibilities

- Customer must provide coupling drawings to ensure proper equipment is mobilized
- Coupling concentricity established complete with a minimum number of temporary clamp bolts to ensure that concentricity is maintained during rotation
- Rotation of coupling when required by BFW
- BFW Coupling Line Boring Machine maximum 30 amp, 220, 380, 480 or 600-volt 3 phase electric supply
- Lathe for machining Hydraulic bolt sleeve of conventional bolts maximum 30 amp, 220, 380, 480 or 600-volt 3 phase electric supply – or – maximum 30-amp, 240-volt single phase (dependent on lathe shipped to site)
- 110-volt electric supply
- 60-100 psig plant air supply
- Lifting devices for unpacking and placing BFW equipment on coupling
- Chip and debris containment/cleanup
- Sufficient 4' X 12' workspace for tool layout and 6' X 12' space for lathe laydown
- Removal of temporary clamp bolts as required
- Removal of existing coupling bolts if applicable
- Site-specific access training and security checks for BFW personnel as is necessary.
- Provision of a safe work area including flooring around the profile of the coupling to eliminate gaps and holes
- Setting and Tensioning specifications for Hydraulic Coupling Bolts if applicable
- Machining mandrels for the coupling bolt sleeves as supplied by the manufacturer

Terms and Conditions

Payment	Net 30 days to BFW Coupling Services Limited 960 Atkin Avenue, Sarnia, Ontario N7W 1A7 *A charge of 2.5% of the invoice may be charged monthly for late payments*
Currency	All prices quoted in USD
Taxes, Duties & Bonds	Extra as applicable
Validity	Prices valid for 30 days
Availability	BFW Service based on prior availability

End of P21-4215-CM

Thank you very much for your consideration.
We truly appreciate the opportunity and look forward to contributing to the success of your outage.

MD&A Parts Division
A Division of Mechanical Dynamics & Analysis LLC

MD&A Parts Division
767 Pierce Road
Suite #2
Clifton Park, NY 12065
UNITED STATES

Phone: (518) 885-3199
Fax: (518) 885-3072
E-mail: parts@mdaturbines.com

Quote Number: 260932
Quote Date: 22-Sep-2021

Privileged and Confidential

QUOTE

Quote To:

Puerto Rico Electric Power Authority: South Coast
Road 127, Km 15.7
Guayanilla PR 00656

Phone: 787-521-5205 **Fax:**
Email: desembolsos@prepa.com cc Plant Mgr & Buyer

Date: 22-Sep-2021
Expires: 22-Oct-2021
Reference:
Sales Person: Jeff Simkins
jsimkins@mdaturbines.com
Terms & Cond.: See attached.
Warranty: See attached.
Payment Terms: Due Upon Receipt

Thank you for your inquiry.
Please note that all lead times are quoted in *calendar* days (ARO).
Freight and delivery not included in quoted price (unless otherwise stated).
Please provide shipping instructions at time of PO.

All rings will be manufactured with zero butt gap, integral teeth and concentric round bores, unless otherwise specified by customer or part number. Manufacturing of inserted teeth, offset bores, or elliptical bores would be extra. All bronze rings will be manufactured from CDA 973 Modified and all steel rings will be manufactured from 400 series stainless steel, unless otherwise specified by customer.

US Dollars

Line	Part Number	Description	Lead Time (days)	Qty	Unit Price	Net Price
1	LOT PRICE	CONVENTIONAL PACKING RINGS & SPILL STRIPS	28	1	121,000.00	121,000.00

Estimated turnaround: 21-28 days.

Pricing for (15) packing rings and (12) spill strips for the LPB turbine section:

Includes packing rings, springs and spring retainers. Any additional hardware would be extra.

MD&A requires packing ring samples, hook fit diameters, rotor diameters & desired radial clearance at several locations to manufacture by. Delivery based upon receipt of information.

2	LOT PRICE	VORTEX SHEDDER TIP SEALS ADDER	28	1	22,770.00	22,770.00

Includes upgrade of (12) rows of tip seals to MD&A's Advanced Vortex Shedder Spills. Vortex Shedder shape can only be applied to new seals that have a minimum radial height of 0.200 inches. The Vortex Shedder shape will be applied to the first row in each diaphragm. Premeasure and installation by MD&A are mandatory with Vortex Spill Strips.

3	FIRM PRICE	PREMEASURE		1	6,750.00	6,750.00

MD&A On-site Seal Services will provide One Lead Technician & One Seal Technician to take disassembly seal measurements needed to verify component design and take critical component distortion measurements required to improve fit of replacement seals. The premeasure activity will help reduce the amount of custom fitting of packing during final assembly. Premeasure work will take place immediately following the removal of all packing.

Following seal removal by others, MD&A recommends bolting the UH and LH seal holders together, to most accurately determine if custom machining will be required to optimize replacement seals during manufacture, due to out of roundness. Component assembly to be performed by customer, with bolted roundness measurements made by MD&A On-site Seal Services. Recommendations and any associated extra costs would be reviewed with customer prior to manufacturing.

Any Stand-by, extras, etc. due to no fault of MD&A will be invoiced per MD&A rate sheet in effect for year work is performed.

4	FIRM PRICE	PACKING INSTALLATION		1	32,500.00	32,500.00

MD&A Parts Division
A Division of Mechanical Dynamics & Analysis LLC

MD&A Parts Division
767 Pierce Road
Suite #2
Clifton Park, NY 12065
UNITED STATES

Phone: (518) 885-3199
Fax: (518) 885-3072
E-mail: parts@mdaturbines.com

Quote Number: 260932
Quote Date: 22-Sep-2021

Privileged and Confidential

MD&A On-site Seal Services offers a custom fit seal installation, including the trimming of end gap (butt) clearances, as well as exact radial and axial adjustments, based on unit alignment and component distortion, to optimize closing clearances. MD&A's team of highly trained technicians will measure and adjust each individual packing ring on-site, using a portable machine shop, to achieve the proper fit. Failure to make final radial and axial adjustments can lead to rubs during startup and operation, reducing the effectiveness of the newly installed seals.

Installation of (15) rows of packing rings and (12) rows of spill strips

Price Includes:
* One lead and one seal technician and associated per diem.
* Portable machine shop rental and expendables.
* Includes unpacking, inspection and deburring packing fits, installation of new packing rings including measurements and required machining to set packing butt clearances.
* Packing radial clearance measurements will be taken and provided to customer once rotor is installed.
* Any custom fitting and adjustment of radial or axial clearances will be considered extra work and will be performed on a ring by ring basis as needed, and billed per MD&A published rates at time of service.

Any stand-by, extras, etc. due to no fault of MD&A will be invoiced per MD&A rate sheet in effect for the year work is performed.

5	T&M	MOBILIZATION ESTIMATE	1	1	20,700.00	20,700.00

Mobilization Time & Material Estimate

Price estimate includes:

*All travel time, expenses and per diem for seal technicians to complete premeasurement and installation activities.
*Freight in/out for container - Round trip shipment of the Portable Machine shop.

Any Stand-by, extras, etc. due to no fault of MD&A, will be invoiced per M&DA rate sheet in effect for year work is performed.

Freight and delivery not included in quoted price (unless otherwise stated).
Please provide shipping instructions at time of PO.

Misc. Charge Total:	$0.00
Goods Total:	$203,720.00
Grand Total:	**$203,720.00**

Unless otherwise stated, this quotation expires in 30 days from its date and may be modified or withdrawn by MD&A prior to acceptance. All communications should refer to the quotation number and be addressed to the MD&A Parts Division office. Please note all prices are based on quantity quoted. Ordering a different quantity may require a price requote. Stock items are subject to prior sales. The sale of any parts covered by this quotation is expressly conditioned on the customer's assent to the additional or different terms and conditions contained herein (including those attached to this quotation). Any additional or different terms and conditions proposed by the customer are expressly objected to and will not be binding upon Seller unless specifically assented to in writing by the Seller. Any order for or any statement of intent to purchase parts shall constitute assent to the Seller's terms and conditions.

MD&A TERMS AND CONDITIONS
SERVICES AND PARTS

NOTICE: Sale of any services and/or parts ordered by Customer is expressly conditioned on Customer's assent to the additional or different terms contained herein, including MD&A's quotation. Any additional or different terms proposed by Customer are expressly objected to and will not be binding upon MD&A unless specifically assented to in writing by MD&A. Any order for, or any statement of intent to purchase services/parts, or any direction to perform work and MD&A's performance, shall constitute assent to MD&A's terms and conditions. MD&A's quotation is valid for 90 days, unless withdrawn prior to receipt of Customer's acceptance.

1. WARRANTY.

a. Services and Parts. Services performed on Customer's equipment by MD&A and any parts supplied by MD&A are warranted to conform to the Contract specifications and to be free from defects in workmanship, material and title for a period of twelve months following the equipment's return to service, or eighteen months following completion of work or delivery of the part, whichever occurs first. If any services or parts fail to meet the foregoing warranty, at MD&A's option, MD&A shall correct such failure, (a) by reperforming any portion of the nonconforming services or repairing or replacing any nonconforming or defective parts; or (b) by making available Ex Works MD&A's facility (Incoterms 2010), any necessary repaired or replacement parts. Where a nonconforming or defective part cannot be corrected by MD&A's reasonable efforts, the parties will negotiate an equitable adjustment in price. All costs and risks of access to the equipment, disassembly, and reassembly associated with the corrective action shall be borne by Customer, if not included in the original work scope. The supply of repaired or replacement parts, or reperformed services shall not extend the duration of the warranty period.

b. Rentals. With respect to rental services, MD&A warrants only that rental equipment when delivered is in good operating condition. If the equipment rented hereunder is not in good operating condition due to no fault of Customer and Customer notifies MD&A promptly, MD&A shall thereupon (at its option) either repair the equipment or rent replacement equipment, subject to availability.

c. Exclusive. The preceding paragraphs set forth the exclusive remedies for claims (except as to title) based on failure to conform to the Contract specifications or defects in workmanship, material, parts or services, or professional errors or omissions which may be asserted under any theory including, for example, breach of contract, indemnity, warranty, tort (including MD&A's negligence), strict liability or otherwise. Upon the expiration of the warranty period, all such liability shall terminate and Customer shall have a reasonable time, within ten (10) days after the warranty period, to give written notice of any nonconformance or defects that appear during the warranty period. Except as set forth in Article 6, the foregoing warranties are exclusive and in lieu of all other warranties, whether written, oral, implied or statutory. NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE SHALL APPLY.

d. Limits. MD&A's obligations under this Article 1 shall not apply to any part or portion thereof, which (a) is nonconforming or defective due to normal wear and tear including that due to environment or operation, or (b) has a normal life inherently shorter than the warranty period, or (c) is not properly stored, installed, used or maintained other than pursuant to MD&A's written instructions or approval, or (d) has been subjected to any other kind of misuse or detrimental exposure or has been involved in an accident. In addition, this warranty shall be void if (a) Customer makes any repairs to, or effects any changes in, parts or any portion thereof, which have not been authorized by MD&A in writing, or (b) MD&A is not promptly notified of any failure in writing or has not been given prompt and complete access to the failed parts or equipment including full access to all diagnostic and repair efforts.

The conditions of any acceptance and other tests shall be mutually agreed upon and MD&A shall be notified of, and may be represented at all tests.

e. Latent Defects. In no event shall MD&A be liable for any loss or damage whatsoever arising from its failure to discover or repair latent defects or defects inherent in the design of parts or equipment serviced or caused by the use of parts by Customer against the advice of MD&A.

2. LIMITATIONS OF LIABILITY.

a. In no event, whether as a result of breach of contract, indemnity, warranty, tort (including MD&A's negligence), strict liability or otherwise, shall MD&A's liability to Customer, its subsidiaries and affiliates, successors or assigns, or its insurers for any loss or damage arising out of, connected with, or resulting from the Contract, or from MD&A's performance or breach, or from any parts or services covered by or furnished under the Contract or any extension or expansion thereof (including remedial warranty efforts), exceed the Contract price.

MD&A and Customer expressly agree that under no circumstances, including indemnity obligations, shall MD&A be liable to Customer for any of the following:

i. Loss of profits, whether direct or indirect
ii. Loss of revenues, whether direct or indirect
iii. Cost of purchased power
iv. Cost of replacement power
v. Downtime costs

Customer recognizes that MD&A's insurance will not cover all risks that Customer may be exposed to as a result of this Contract, specifically the exclusions listed directly above (numbered 1-5), for which MD&A excludes all liability. Customer has reviewed MD&A's insurance coverages, as outlined in Article 5, and Customer agrees that it shall take all reasonable efforts to procure insurance to protect against any risks and damages that it may incur which are not insured for by MD&A, and for which MD&A shall not be liable as a result of this Article 2.

Except as to title to any parts furnished, all such liability shall terminate upon the expiration of the warranty period specified in Article 1. Any such claim of liability must be commenced in no event later than one year from the termination of the warranty period in accordance with Article 17. This limitation of liability shall not apply to the indemnity for bodily injury or death as set forth in Article 4.

b. If MD&A furnishes Customer with advice or assistance concerning any part supplied hereunder or any part, system or equipment in which any such part may be installed and which is not required pursuant to this Contract, the furnishing of such advice or assistance will not subject MD&A to any liability, whether as a result of breach of contract, indemnity, warranty, tort (including MD&A's negligence), strict liability or otherwise.

c. Customer waives all rights of recovery against MD&A and all rights of subrogation, whether Customer's claim is brought under breach of contract, indemnity, warranty, tort (including MD&A's negligence), strict liability or otherwise, for loss or damage to the property of Customer to the extent such claim is covered by insurance maintained by Customer. For the purposes of Articles 2 and 3, the term "MD&A" includes MD&A and its subcontractors, suppliers, subsidiaries and affiliates, their directors, officers, agents, employees, successors and assigns and authorized representatives.

3. CONSEQUENTIAL DAMAGES. Notwithstanding anything else contained in this Contract, in no event, whether as a result of breach of contract, indemnity, warranty, tort (including MD&A's negligence), strict liability or otherwise, shall MD&A be liable to Customer or its subsidiaries and affiliates, successors or assigns, or its insurers for any special, incidental, exemplary, indirect or consequential damages, including, without limitation, loss of profits or revenues, loss of use of any property, parts or any associated equipment, damage to associated equipment, cost of capital, cost of purchased power, cost of substitute equipment, facilities, parts, services or replacement power, downtime costs or claims of customers of Customer for such damages and Customer will indemnify MD&A against any such claims from Customer's customer.

4. INDEMNITY. MD&A and Customer each agree to defend, indemnify, and hold harmless the other party, including the other party's subcontractors, suppliers, subsidiaries and affiliates, their directors, officers, agents, employees, successors and assigns and authorized representatives, from and against any claim, loss, damage or expense for all bodily injury or death, but only to the extent that such bodily injury or death is caused by the indemnifying party's negligence. In the event that such bodily injury or death is caused by the joint or concurrent negligence of MD&A and Customer, the claim, loss, damage or expense shall be borne by each party in proportion to its own negligence.

5. INSURANCE. MD&A, at its expense, shall procure and maintain in effect without interruption during the term of this Contract, policies of insurance providing the coverages and limits specified, and complying with the other requirements stated below (all amounts below are stated in US dollars):

a. Worker's Compensation in statutory amounts and Employer's Liability with a minimum limit of $1,000,000 each accident, $1,000,000 Disease - each Employee, $1,000,000 Disease Policy Limit.

b. Commercial General Liability on an Occurrence Basis, with the following coverages and limits:

i.	Per Occurrence	$1,000,000
ii.	General Aggregate	$1,000,000
iii.	Products-Completed Operations Aggregate	$1,000,000
iv.	Personal & Advertising Injury Each Occurrence	$1,000,000

c. Automobile Liability covering automobiles of MD&A, including owned, hired and non-owned automobiles, for Bodily Injury and Property Damage with a combined single limit of $1,000,000 each Occurrence.

d. Excess Liability in Umbrella Form with a limit of $4,000,000 each Occurrence, $4,000,000 Aggregate.

6. PATENTS. MD&A warrants that parts furnished hereunder shall be delivered free of any rightful claim of any third party for infringement of any U.S. patent. If notified promptly in writing and given authority, information and assistance, MD&A shall defend, or may settle, at its expense, any suit or proceeding against Customer so far as based on a claimed infringement which would result in a breach of this warranty and MD&A shall pay all damages and costs awarded therein against Customer due to such breach. In case any part is in such suit held to constitute such an infringement and the use for the purpose intended of said part is enjoined, MD&A shall, at its expense and option, either procure for Customer the right to continue using said part, or replace same with a noninfringing part, or modify same so it becomes noninfringing, or remove the part and refund the Contract price. The foregoing states the entire liability of MD&A for patent infringement.

The preceding paragraph shall not apply to any parts specified by Customer or manufactured to Customer's design, or purchased from other sources, or to the use of any parts furnished hereunder in conjunction with any other parts in a combination not furnished by MD&A as part of this Contract. As to any such parts, or use in such combination, MD&A assumes no liability whatsoever for patent infringement and Customer will hold MD&A harmless against any infringement claim arising therefrom.

In the case of rental equipment MD&A may, at any time after it becomes aware of a possible infringement, elect to require that the equipment be returned and excuse Customer from further rental payments. This paragraph contains the entire liability of MD&A for patent infringement by rental equipment.

7. DELIVERY. Completion dates are approximate and are based upon prompt receipt of the equipment and all necessary information from Customer, or ready access to same if work is to be done at Customer's facility. Unless otherwise specified by MD&A, all shipments of parts are Ex Works MD&A's facility (Incoterms 2010), shipping and insurance prepaid by Customer. In the case of rental equipment, shipping dates quoted are based on rental stocks available at the time of quotation and are, therefore, subject to prior rentals.

8. EXCUSABLE DELAYS. MD&A shall not be liable for any delay in delivery or performance, or for any failure to manufacture, deliver, or perform due to (a) any cause beyond its reasonable control; or (b) any act of God, act of Customer, act of civil or military authority, government priority, fire, severe weather condition, earthquake, strike or other labor disturbance, flood, epidemic, war (declared or undeclared, including civil unrest), riot, terrorist act, delay in transportation or car shortage; or (c) act (or omission) of Customer, including failure to promptly: (i) provide MD&A with information and approvals necessary to permit MD&A to proceed with performance immediately and without interruption, (ii) comply with the terms of payment, or (iii) provide MD&A with such evidence as MD&A may request that any export or import license or permit has been issued; or (d) inability on account of any cause beyond the reasonable control of MD&A to obtain necessary materials, components, services or facilities. The date of delivery or of performance shall be extended for a period equal to the time lost by reason of delay, plus such additional time as may be reasonably necessary to overcome the effect of such excusable delay. MD&A shall notify Customer, as soon as practicable, of the revised date of delivery or of performance. If MD&A is delayed by acts or omissions of Customer, or

by the prerequisite work of Customer's other contractors or suppliers, MD&A shall also be entitled to an equitable price adjustment.

9. PAYMENTS AND FINANCIAL CONDITION. Unless otherwise specified by MD&A in its quotation, payments under the Contract shall be either (a) received in MD&A's account, or (b) secured by a letter of credit satisfactory to MD&A, before MD&A has any obligation to begin performance under the Contract. If a letter of credit is utilized, payment(s) shall be made upon presentation of documents (mutually agreed to in advance by the parties) against a confirmed irrevocable letter of credit issued or confirmed by MD&A authorized bank. The letter of credit shall (a) be established by the Customer, at Customer's expense (including confirmation, amendments and maintenance charges), and (b) remain in effect for a period of three months after the last item of the scope of work is scheduled to be performed under the Contract. The letter of credit shall provide for partial payments pro rata on partial performance and partial shipments from MD&A's facility and for the payment of any charges for storage (including storage at MD&A's facility), price adjustments, cancellation or termination, and all other payments due from Customer under the Contract against MD&A's presentation of documents, and will otherwise be acceptable to MD&A. Customer will increase the amount(s) or extend the validity period(s) and make appropriate modifications to any letter of credit within ten (10) days of MD&A's notification that such is necessary to provide for payments to become due. If MD&A consents to delay shipments, payment shall become due on the date when MD&A is prepared to make shipment. Parts held for Customer shall be at the risk and expense of Customer.

If Customer fails to fulfill any condition of its payment obligations, MD&A may suspend performance and delivery. Any cost incurred by MD&A in accordance with such suspension, including storage costs (including storage at MD&A's facility), shall be payable by Customer upon submission of MD&A's invoices.

Any order for services/parts by Customer shall constitute a representation that Customer is solvent. If the financial condition of Customer at any time does not, in the judgment of MD&A, justify continuance of MD&A's obligations hereunder on the terms of payment agreed upon, MD&A may require full or partial payment in advance or shall be entitled to terminate the Contract and receive termination charges. In the event of bankruptcy or insolvency of Customer or in the event any proceeding is brought against Customer, voluntarily or involuntarily, under the bankruptcy or any insolvency laws, MD&A shall be entitled to cancel any order then outstanding at any time during the period allowed for filing claims against Customer and shall receive reimbursement for its proper cancellation charges. MD&A's rights under this Article 9 are in addition to all rights available to it at law or in equity.

MD&A shall have a lien on and may retain possession of equipment repaired, modified, inspected, tested, maintained or serviced under this Contract until its charges for such services are paid. If such charges are not paid within ninety (90) days following completion of the work and invoicing Customer, MD&A may, upon not less than seven (7) days written notice by certified mail to Customer at Customer's last known address, sell the equipment at public or private sale and apply the net proceeds to MD&A's charges.

10. TERMINATION.

a. By Customer. Customer shall be entitled to terminate the Contract in the event MD&A fails to commence reasonable cure within thirty (30) days after notice from Customer specifying a material default. MD&A's liability for material default shall be limited to the direct costs that Customer must pay a third party to correct the default, but in no event shall exceed the Contract price. MD&A shall be entitled to recover reasonable termination charges on any order that is terminated unless MD&A is in prior material breach of these Terms and Conditions. Termination of an order shall not relieve either party of any obligation arising prior to termination.

b. By MD&A. If Customer fails to fulfill any condition of its payment obligations and does not correct such failure in the manner and time satisfactory to MD&A, then MD&A may, terminate the Contract in respect to the portion of the parts not delivered and work not yet performed. Customer shall pay MD&A its reasonable and proper termination charges in the event of such termination, in addition to the amounts owed up to the date of termination.

11. TITLE. Title to parts not yet incorporated into Customer's equipment will pass to Customer upon MD&A's receipt of all payments for the parts/services under this Contract. Title and right of possession of equipment repaired, modified, inspected, tested, or maintained under this Contract shall remain with Customer, subject to any applicable lien rights of MD&A and to its right of sale in the event of nonpayment as provided in Article 9. Title to all rental equipment shall remain with MD&A.

12. TAXES. In addition to any price specified herein, Customer shall pay the gross amount of any present or future sales, use, excise, value-added, withholding, or other similar tax applicable to the price, sale, or delivery of any parts or services furnished hereunder or to their use by MD&A or Customer, or Customer shall furnish MD&A with a tax exemption certificate acceptable to the taxing authorities.

13. SOFTWARE. Unless otherwise agreed in writing, no software rights are granted to Customer under this Contract. In the event that Customer desires to license any software used by MD&A, Customer must contact the owner of such software to negotiate a software license agreement with such owner in order to use such software. MD&A makes no representation that it is the owner or licensee of any software, or that it has any right to sell, or grant any license to Customer to use, any software.

14. PROHIBITION ON NUCLEAR USE.

a. Parts, materials, equipment and services provided hereunder, are not intended for and shall not be used in connection with any nuclear facility or activity. Customer represents and warrants that it shall not use them or permit others to use such materials, equipment or services for any such purpose, and that it will not transfer or permit to be transferred any parts, materials, equipment and services provided hereunder to any third party without having first obtained the agreement of such third party or parties not to use them for any such purpose.

b. Notwithstanding the foregoing, if any parts and materials sold, equipment rented and services provided by MD&A to Customer under the Contract, shall be used at Customer's commercial nuclear power station[s] identified in the Contract and located within the USA (hereinafter, the "Plant[s]"), the following terms and conditions shall apply:

i. Customer shall, without cost to MD&A, obtain and maintain insurance to cover "public liability" arising out of a "nuclear incident" (as those terms are defined in the Atomic Energy Act of 1954, as amended, hereinafter referred to as the "Act") at, or arising out of, the operation of the Plant[s], the policy to be provided by American Nuclear Insurers/Mutual Atomic Energy Liability Underwriters. This insurance shall cover the liability of Customer, MD&A, and any other person or organization that may have legal responsibility for public liability arising out of a nuclear

incident. The limits shall be in the amounts required to meet financial protection requirements by the Act, and applicable regulations of the U. S. Nuclear Regulatory Commission ("NRC").

ii. Customer shall also enter into the governmental indemnity agreement required by the Act, and applicable regulations of the NRC, with coverage and limits as may be required by the NRC.

iii. In the event the nuclear liability protection system in effect on the effective date of the Contract expires or is repealed, changed or modified, Customer shall, without cost to MD&A, obtain and maintain liability protection provided through government indemnity, limitation of liability and/or liability insurance to the extent available and consistent with customary industry practice in the United States. Such substitute liability protection shall not result in a material impairment of the protection afforded MD&A by such nuclear liability protection system and this Article 14.

iv. Customer hereby waives all rights of recourse and subrogation which it may have or acquire against MD&A with respect to liability for nuclear damage.

v. MD&A shall not have any liability to Customer or its insurers for nuclear damage to any property located at the site of or used in connection with the Plant[s] or any other nuclear plant of Customer. To the extent reasonably available, Customer shall, at no cost to MD&A, obtain and maintain insurance against loss or destruction of or damage to Customer's property within the Plant[s] site boundaries arising out of or resulting from a nuclear incident. Such insurance shall have limits of coverage not less than $500 million. Customer shall indemnify MD&A, its suppliers and its directors, officers and employees for any and all liability that they may have to third parties, including Customer's insurers and other financial guarantors, for physical loss or destruction of or damage to the property of third parties that is located within the Plant[s] site boundary and used in the operation of the Plant[s], to the extent that such physical loss, destruction or damage results from or arises out of a nuclear incident or otherwise.

vi. In the event of a nuclear incident at or arising out of the operation of the Plant[s], Customer waives and will require its insurer to waive all rights of recovery against MD&A, its subcontractors and suppliers of any tier, whether in contract, warranty, indemnity, tort (including MD&A's negligence), strict liability or otherwise, for (1) physical damage to or loss or destruction of any Customer property, (2) third-party claims, and (3) any and all costs or expenses incurred by MD&A in investigation, settlement and defense of any claims arising out of such incident, including attorneys' and experts' fees, settlement awards and costs, court costs, disbursements, and internal expenses resulting from such claims.

vii. Customer shall not transfer or use, or permit the transfer or use of, any parts, materials, equipment and services provided under this Contract at any nuclear power plant other than the Plant[s] specified in this Contract. In the event of such transfer or use, MD&A shall have no liability whatsoever for any nuclear or other damage, injury or contamination. In addition to any other legal or equitable rights of MD&A, Customer shall indemnify MD&A against any such liability, and shall reimburse MD&A for any and all costs or expenses incurred by MD&A in investigation, settlement and defense of any claims arising out of such use, including attorneys' and experts' fees, settlement awards and costs, court costs, disbursements, and internal expenses resulting from such claims.

viii. Any decontamination necessary for MD&A's performance (including remedial warranty efforts) shall be performed by Customer without cost to MD&A. Any of MD&A's parts, materials or equipment which become contaminated (including becoming radioactive) at the work site shall, at MD&A's option, be decontaminated or purchased by Customer without cost to MD&A.

ix. For purposes of this Article 14, the following definitions apply:
"liability" means liability of any kind at any time whether in contract, warranty, indemnity, tort (including negligence), strict liability or otherwise;
"nuclear damage" means any loss, damage, or loss of use, which in whole or in part is caused by, arises out of, results from, or is in any way related, directly or indirectly, to the radioactive properties or a combination of radioactive properties with toxic, explosive or other hazardous properties of source, special nuclear or byproduct material, as those materials are defined in the Act, including any loss of life or personal injury (including to Customer's employees), or any loss of, loss of use of, or damage to, property of Customer or others, on or off the site, including the Plant[s].
"site" or "plant site" means the area identified as the Plant location in either (a) the nuclear liability insurance policy or (b) the governmental agreement of indemnity issued pursuant to the Act, whichever is more inclusive.

x. Customer's obligations under this Article 14 shall be effective through the decommissioning of the Plant[s] and any other nuclear plant or plants to which they apply.

15. COMPLIANCE WITH LAWS. All transactions hereunder shall at all times be subject to and conditioned upon compliance with all applicable export control laws and regulations of the U.S. Government and any amendments thereof. Customer agrees that it shall not, except as said laws and regulations may expressly permit, make any disposition by way of transshipment, re-export, diversion or otherwise, of U.S. origin goods and technical data (including computer software), or the direct product thereof, supplied by MD&A hereunder. The obligations of the parties to comply with all applicable U.S. export control laws and regulations shall survive any termination, or discharge of any other contract obligations.

Customer undertakes to keep fully informed of, and to comply with, the export control laws and regulations of the U.S. Government and any amendments thereof. Customer certifies that the parts, materials, services, technical data, software or other information or assistance furnished by MD&A under the Contract will not be (a) used by any individual or entity listed as a prohibited party on any list of the U.S. Government of prohibited or denied parties, (b) sent to any party in a country listed as a prohibited country by the U.S. Government, or (c) used in the design, development, production, stockpiling or use of chemical, biological, or nuclear weapons either by Customer or by any entity acting on Customer's behalf.

Notwithstanding any other provisions herein, Customer shall be responsible for timely obtaining any required authorization, such as an export license, import license, foreign exchange permit, work permit or any other governmental authorization, even though any such authorization may be applied for by MD&A. Customer and MD&A shall provide each other reasonable assistance in obtaining required authorizations. MD&A shall not be liable if any authorization is delayed, denied, revoked,

restricted or not renewed and Customer shall not be relieved thereby of its obligations to pay MD&A for its parts or services or any other charges which are the obligation of the Customer hereunder.

16. RESERVATION OF RIGHTS. MD&A Reserves the right to make copies, prepare derivative works of, or reverse engineer any portion of the components, parts, materials or other information supplied or created under the Contract. Such copies, derivative works or reverse engineering information and data shall be the sole property of MD&A, the use of which shall not be restricted in anyway by Customer. MD&A reserves the right to use any portion of the components, parts, materials or other information supplied or created under the Contract in the development of any other products or intellectual property of any kind, the ownership of which shall vest exclusively in MD&A. The work performed by MD&A shall not be considered "work for hire." Any and all information related to, or arising out of, MD&A's Intellectual Property or Improvements is deemed to be the information of MD&A. Customer agrees that it will not use any information of MD&A or any Improvement made by either party as a basis for the design or creation of any item, application or software. All right, title and interest in and to the Intellectual Property of MD&A and all Improvements shall remain with, and vest exclusively in MD&A. If any such right, title or interest becomes vested in Customer by operation of law or otherwise, Customer will do everything necessary, to vest all such right, title and interest in MD&A. Customer will execute such further and other documents and do such further and other things as may be necessary to carry out and give effect to the obligations contained in this paragraph, provided however, neither party is obligated to enter into a further business relationship with the other party.

17. DISPUTE RESOLUTION. All disputes arising in connection with the Contract shall be settled, if possible, by amicable negotiation of the parties. In the event of any dispute, controversy or claim arising out of, connected with, or relating to this Contract, within 30 days of notice of such dispute, the Parties agree to arrange a face-to-face meeting between their respective senior executive officers or their designated representatives to resolve such dispute.

For services performed or parts sold within the United States of America, if the matter is not resolved by negotiations, either party shall have the right to pursue any legal remedy available.

For services performed or parts sold outside of the United States of America, if the matter is not resolved by negotiations, the dispute or controversy shall be referred to arbitration without recourse to any court. The notice shall identify the name and address of the arbitrator appointed by the party giving notice and the points of dispute.

Within thirty (30) days after receipt of such notice, the other party shall give notice to the first party of the appointment and name and address of the second arbitrator. Within thirty (30) days after appointment of the second arbitrator, the arbitrators so appointed shall appoint an additional arbitrator to serve as chairman of the arbitration tribunal. If the second party fails to appoint its arbitrator within thirty (30) days after receipt of notice of the appointment of the first arbitrator, or, if the arbitrators appointed by the parties fail to appoint an arbitrator to serve as chairman within sixty (60) days after the appointment of the first arbitrator, then the President of the International Court of Arbitration of the International Chamber of Commerce shall have the power, on the request of a party, to make appointments which have not been made. The seat of arbitration shall be in Albany, New York U.S.A., and the arbitral award shall be made in Albany. The arbitration shall be conducted in English and in accordance with the Rules of Conciliation and Arbitration of the International Chamber of Commerce. The parties shall have the right to present documentary evidence and witnesses and shall also have the right to cross examine witnesses.

The arbitration decision shall be decided by majority vote, provided that in the event of a tie vote on any matter, the chairman of the arbitration shall have a second or casting vote on that matter. In arriving at their decision, the arbitrators shall consider the pertinent facts and circumstances and be guided by the terms of this Contract; and, if a solution is not found in the terms of this Contract, the arbitrators shall apply the provisions of the applicable laws governing this Contract under Article 18. The arbitrators are precluded from considering or awarding punitive, consequential or exemplary damages to any party in any arbitration conducted pursuant to this Article 17.

The parties agree that any arbitral award shall be final and binding, that this Contract and the resulting obligations are commercial and that the United Nations Convention on the Recognition and Enforcement of Foreign Arbitral Awards (the "New York Convention") applies to this Contract and to any award or order resulting from any arbitration conducted hereunder. Except for initiating actions to obtain a judgment recognizing or enforcing an arbitral award or order, the parties agree not to commence or otherwise be involved in any court action or proceeding concerning a dispute arising out of this Contract and hereby irrevocably waive and exclude all rights of appeal, challenge, or recourse to any court from any arbitral award or order resulting from any arbitration conducted under this Article 17.

Reasonable expenses of the arbitration shall be shared equally. On request of any party, a transcript of the hearings shall be prepared and made available to the parties.

18. GENERAL. The provisions of this Contract are for the benefit of the parties hereto and not for any other party or person except as specifically provided herein.

Any services furnished by MD&A hereunder will be performed in compliance with the Fair Labor Standards Act of 1938, as amended and applicable. MD&A will comply with applicable federal, state, and local laws and regulations as of the date of any quotation which relate to (a) equal employment opportunity (including the seven paragraphs appearing in Section 202 of Executive Order 11246, as amended); (b) workers' compensation; and (c) the performance of any services in MD&A's facilities. Price and, if necessary, delivery will be equitably adjusted to compensate MD&A for the cost of compliance with any other laws or regulations.

The delegation or assignment by Customer of any or all of its duties or rights hereunder without MD&A's prior written consent shall be void. Any representation, promise, warranty, course of dealing or trade usage not contained or referenced herein will not be binding on MD&A. MD&A reserves the right to assign any portion of the Contract or work to any affiliated entity, division or subsidiary within the Mitsubishi Hitachi Power Systems, Ltd. corporation.

The 18 Articles in these Terms and Conditions, including MD&A's quotation, collectively referred to herein as the "Contract", contain the entire and only agreement between Customer and MD&A respecting the terms and conditions and supersedes and cancels all previous negotiations, agreements, commitments, representations and writings in respect thereto. No modification, amendment, rescission, waiver or other change shall be binding on MD&A unless agreed to in writing by MD&A's authorized representative.

The validity, performance, and all matters relating to the interpretation and effect of this Contract and any amendment hereof shall be exclusively governed by the law of the State of New York without giving effect to any conflicts of laws or choice of law rules that would apply the law of another jurisdiction. The United Nations Convention on Contracts for the International Sale of Goods shall not apply. The invalidity, in whole or part, of any of the articles or paragraphs in these Terms and Conditions will not affect the remainder of such article or paragraph or any other article or paragraph. Nothing in this Contract shall be construed to impose any overall "system responsibility" on MD&A. When used in this Contract, the terms (a) "including" and "includes" mean "including but not limited to" the specifically enumerated things, states, or actions that follow such terms, and (b) "or" means "one or the other or all" of the specifically enumerated things, states, or actions that follow such term.

Any information, suggestions or ideas transmitted by the Customer to MD&A are not to be regarded as secret or submitted in confidence, unless agreed to by MD&A in writing.

The following Articles shall survive termination of this Contract: Article 1 (Warranty), Article 2 (Limitation of Liability), Article 3 (Consequential Damages), Article 4 (Indemnity), Article 6 (Patents), Article 12 (Taxes), Article 14 (Prohibition of Nuclear Use), Article 15 (Compliance with Laws), Article 16 (Reservation of Rights), Article 17 (Dispute Resolution), Article 18 (General) and any remaining payment obligations of Customer.

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

REPAIR WORKS SPARE LPB ROTOR FOR SOUTH COAST UNIT 6
REQUISITION 251225, PROJECT TS-M20-2021

Spare LPB Inspections & Recommendations, MD&A 515210-1-1

Item	Repair Works Scope According to MD&A Insp. & Recommendations Report
TE Coupling	As recommended. PREPA provides Fit Measurements
T5 Journal	As recommended.
Stage 13	As recommended.
Stage 14-17	As recommended.
Stage 18 GE	As recommended. Includes Option of HVOF coated w/chromium carbide.
Stage 18 TE	Replace 6 buckets, including titanium notch.
Stage 18 TE (L-1)	Option of HVOF coated w/chromium carbide.
T6 Journal	As recommended.
GE Coupling Rabbet Fit	As recommended. PREPA provides Fit Measurements
Spare LPB Rotor	High Speed Balance

Authorize by

Jaime A. Umpierre Montalvo
Superintendent
Engineering and Technical Services Division

Angel Pérez Carrasquillo
Chief of Operations
South Coast Power Plant

Miguel A. Beauchamp Ramos
Plant Manager, Interim
South Coast Power Plant

Date: October 13, 2021

Government of Puerto Rico

Puerto Rico Electric Power Authority

Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Palo Seco Steam Plant Fuel Tanks Level Measurement System

1/13/2022

Introduction

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

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

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

The sections included in this document are:

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

Document Revision History

Version	Date	Summary of Changes
v.1	01/13/2022	

Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Palo Seco Steam Plant – Fuel Tanks Level Measurement System
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

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

Program Manager: ***<Name>***

<Insert title here>

PREPA Project Sponsor: ***<Name >***

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Palo Seco Steam Plant Fuel Tanks Level Measurement System	[redacted]

Note: *GPS coordinates are required for all facilities.*

2.2. Facilities Description

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

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Palo Seco Steam Plant has a variety of tanks that store and supply fuel to steam units. The current measurement system for fuel storage measurement its unreliable and obsolete. These conditions generate destructive conditions for the operation process such as putting at risk transfer pumps because of low product levels or experiencing spillage during fuel transfers. The daily inventory is also affected because it does not consider factors such as tank condensation and the variation in volume due to fuel temperature. The calculations of total volume stored and supplied according to API (*American Petroleum Institute*) standards, management of mass balance and creating automatic reports of the batch's internal and external transfers are not being able to be performed with the current system.

Acquiring an integrated measurement system of fuel tank levels that considers all of the above mentioned will result in a more efficient and reliable operation. Fuel storage and management is the factor that impact most the service costs. In addition, not having a reliable and safe control when transferring fuel could result in fuel overflow affecting the flora and fauna. This could result in a violation of permits and cause expensive fines.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for Palo Seco Steam Plant Fuel Tanks Level Measurement System will consist of the following:

- Supply, deliver, install and commission (turn-key) custody-transfer Rosemount Automatic Tank Gauging Equipment for seven (7) fuel storage tanks at the Palo Seco Steam Plant facility in Cataño, as follows:
  - (4) Bunker C Reserve tanks (1 to be converted to Diesel)
  - (3) Bunker C Service tanks
  - (0) Diesel tanks (future phase)
  - (7) tanks in total

A. ATG Equipment

1. Radar Level gauges (all tanks) – 7 ea.

   i. P/N 5900S, +/-0.5 mm, single radar, FM-US intrinsically safe, 10 Ghz FMCW radar.
   ii. Custody Transfer Approval
   iii. Ready for 2:1 (ready to add 2nd level transmitter in the same housing, shares same antenna)
   iv. 17” Parabolic antennas (stainless steel) – for the (6) Reserve and Service tanks
   v. 8” Combination gauge hatch/still pipe array antenna – for (1) diesel tank

2. Still pipe – 1 (Diesel tank)

   i. 8”- Sch. 40 Aluminum still pipes with 10”-150# mounting flange (roof connection) and 8”-150#
   top flange for radar antenna. Per API standards.

3. Tank Hubs (all tanks) – 7 ea.

   i. P/N 2410 Tank Hub, single tank, Intrinsically Safe FOUNDATION Fieldbus (IEC 61158),
   ii. Smart Wireless HART 7 (IS); 48-240 VAC at 50/60 Hz, 24-48 VDC, FM-US Explosion Proof,
   iii. Custody Transfer Approval.
   iv. IS 4-20 output for existing DCS level input.
   v. Ready for upgrade to relay outputs (optional) for shutdown

4. Local displays – 7 ea.

   i. P/N 2230 Graphical Field Display, Bus Powered 2-Wire FOUNDATION Fieldbus (IEC 61558),
   ii. FM-US Intrinsic Safety, Mounting Kit Pipe and Wall Installation.

5. Temperature transmitters & multi-spot probe with water level sensor – 7 ea.

i. Up to (8) 3-wire RTD spot elements
ii. Digital water Level Sensor
iii. Bus powered 2-wire FOUNDATION FieldBus
iv. FM-US Instrinsic Safety Certification

6. Smart Wireless THUM Adapter – 7 ea.

i. Smart Wireless HART THUM adapter 775 and Junction box for wireless mesh network
ii. FM Intrinsically Safe, Non-Incendive, Operating frequency: 2.4GHz,
iii. Omnidirectional Antenna, connection to 2410 Tankhub

7. Wireless Hart repeater with battery module – 1 ea. (optional, if required)

8. Wireless Network Gateway – 1 ea.

i. 1410 Wireless Network Gateway (data concentrator), 24VDC power - 500mA,
ii. 2.4GHz DSSS, Dual Ethernet connection, WirelessHART protocol;
iii. Serial Modbus RTU& Ethernet TCP/IP, OPC & AMS
iv. FM-US certified, with Field Link

9. Tankmaster Software Package - 20 tanks license

i. Allows operation, service and calibration of the Rosemount TankRadar system.
ii. Displays level, temperature & all optional sensors for each tank.
iii. Performs inventory calculations according to API:
    1. Gross & Net Volumes, Leak Alarms, Hi & Hi-Hi or Operational set-points;
    2. Includes bar graphs, trends, reports, alarm functions, and configuration
    3. Allows host communications (OPC & MODBUS) & (1) TM Network Client.

10. Workstation – 1ea.

i. Server Class personal workstation (tower) PC with 24”LCD monitor

11. TankMaster.Net software Site License: 3-user license

i. Up to three (3) concurrent users
ii. Inventory control available 24 hours a day at any location
iii. Web version of TankMaster, improved reporting of trends and events, asset control and overview
iv. Includes virtually all monitoring functions from TankMaster
v. Suppliers, customers & management get automatic real-time inventory overview via Internet or
intranet;

12. Includes power wiring from control room UPS to ea. tank, as follows:

i. Main UPS feeder - Will run new feeder over existing cable tray@ control room, thru existing 3”
conduits and junction boxes all the way to a junction box located just outside the dike of the
service tanks, right next to the pump gallery.

ii. Will install new conduits & wiring from existing junction box outside the dike, to each tank, each
branch protected by dedicated breaker.

1. Branch #1 – 3 tanks
2. Branch #2 – 3 tanks
3. Branch #3 – 1 tanks

3.2. Type of Project

Indicate whether the intended plan is a(n):

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

Choose One (Restoration, Improved or Alternate) *If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

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

3.3. Preliminary Architectural and Engineering (A&E)

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

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

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

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
• (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
• 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount ($M)
Lump-sum BUDGET price (installed)	$550,000.00
Total Project Estimated Cost	**$550,000.00**

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

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

Section 7. EHP Requirements

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

Section 8. Program Manager Lead Certification

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

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments

<Insert any comments here>

PREPA Project Sponsor's Printed Name _____ Date _____

Title _____ Signature _____

Section 10. Attachments

10.1. Project Detailed Cost Estimates

- Please see attached to executed Quotation and Technical specifications included in PREPAs Fund certifications

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures

10.4. Other: (Please Describe)

N/A

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

9 de diciembre de 2017

Edgardo Díaz Reyes
Jefe División de Suministros, Interino

Héctor Cañón Abuchar, Jefe
Central Generatriz
División Central Palo seco

Sistema de Medición Nivel Tanques de Combustible, Proyecto Nuevo

La Central Palo Seco cuenta con varios tanques para almacenar y suplir el combustible a las unidades a vapor. El sistema para medir las cantidades de combustible que se almacena es obsoleto y poco confiable. Esta condición genera condiciones desfavorables para la operación, como poner en riesgo las bombas de transferencia por bajos niveles de producto o incurrir en derrames durante las trasferencias del combustible. Además, el inventario diario de nuestras reservas no es preciso, ya que no toma en cuenta varios factores importantes como lo son condensaciones en el tanque y la variación en el volumen por temperatura del combustible. El sistema actual es incapaz de realizar cálculos del volumen total almacenado y suplido de acuerdo a los estándares de API (*American Petroleum Institute*), realizar manejo de balance de masa o crear reportes automáticos del lote de las transferencias internar y externas.

El adquirir un sistema integrado de medición de nivel de tanques de combustible que tome en cuenta todo lo antes mencionado redunda en una operación más confiable y eficiente. El almacenado y manejo del combustible es el factor que más impacta los costos de servicio que ofrecemos. En adición el no tener un control confiable y seguro al momento de las transferencias de combustible podría traer como consecuencia desborde de combustible al terreno afectando la flora y fauna. Esto resultaría en violaciones al permiso expedido a la central y provocaría multas costosas.

De necesitar información adicional favor de comunicarse al 7002.

TECHNICAL SERVICES, S.E.

PO BOX 361040
SAN JUAN, PR 00936
Tel (787) 754-7025
Fax (787) 764-2707

TS16-269 R1
November 30, 2017

Puerto Rico Electric Power Authority
Palo Seco Steam Plant
Cataño, Puerto Rico

Attn: Eng. Roberto Rosario, Maintenance Manager

Re: Rosemount ATG equipment for seven (7) fuel storage tanks at PSSP – B U D G E T

Eng. Rosario:

For your review and consideration, please find below our lump-sum budget price to supply, deliver, install and commission (turn-key) custody-transfer Rosemount Automatic Tank Gauging Equipment for seven (7) fuel storage tanks at the Palo Seco Steam Plant facility in Cataño, as follows:

(4) Bunker C Reserve tanks (1 to be converted to Diesel)
(3) Bunker C Service tanks
(0) Diesel tanks (future phase)
(7) tanks in total

Brief technical description of the proposed system

The *instrument* accuracy is +/- 0.5mm using FMCW radar technology. The 5900S Tank Gauging System exceeds the global standard OILM R85 Ver. 2008 and API recommendations of 1/8" *installed* accuracy. Along with the 5900S gauge, we are also offering the 2240S Multiple Temperature Transmitter & probe, with eight (8) RTD spot locations with integrated water level sensor, to ensure the highest level of accuracy for the product temperature and water cut in the tank. A graphical field display (LCD) will also be provided for local level and temperature indication (at the tank).

These instruments will provide automatic tank measurements via Wireless-Hart links to the *Tank Master* software, which will then automatically calculate "Standard Volumes" for each tank, generate reports, and provide alarm capabilities, among other functionalities. This will allow PREPA to fully service & maintain the Tank Gauging System, and utilize the required measurements from each tank. With the *Tankmaster.Net* software tank inventories can be monitored and reports generated from a central location, such as Monacillos or Santurce, for example, by providing web connectivity via Internet and/or Intranet.

El Dorado Technical Services and *Emerson Puerto Rico* are looking forward in answering any questions or concerns regarding the acquisition, installation and maintenance of this best-in-class automatic tank gauging equipment.

A. ATG Equipment

1. *Radar Level gauges (all tanks) – 7 ea.*
   i. P/N 5900S, +/-0.5 mm, single radar, FM-US intrinsically safe, 10 Ghz FMCW radar.
   ii. Custody Transfer Approval
   iii. Ready for 2:1 (ready to add 2nd level transmitter in the same housing, shares same antenna)
   iv. *17" Parabolic antennas* (stainless steel) – for the (6) Reserve and Service tanks
   v. *8" Combination gauge hatch/still pipe array antenna* – for (1) diesel tank

(Cont.)

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2. *Still pipe – 1* (Diesel tank)
    i. 8”- Sch. 40 Aluminum still pipes with 10”-150# mounting flange (roof connection) and 8”-150# top flange for radar antenna. Per API standards.

3. *Tank Hubs (all tanks) – 7 ea.*
    i. P/N 2410 Tank Hub, single tank, Intrinsically Safe FOUNDATION Fieldbus (IEC 61158),
    ii. Smart Wireless HART 7 (IS); 48-240 VAC at 50/60 Hz, 24-48 VDC, FM-US Explosion Proof,
    iii. Custody Transfer Approval.
    iv. IS 4-20 output for existing DCS level input.
    v. Ready for upgrade to relay outputs (optional) for shutdown

4. *Local displays – 7 ea.*
    i. P/N 2230 Graphical Field Display, Bus Powered 2-Wire FOUNDATION Fieldbus (IEC 61558),
    ii. FM-US Intrinsic Safety, Mounting Kit Pipe and Wall Installation.

5. *Temperature transmitters & multi-spot probe with water level sensor – 7 ea.*
    i. Up to (8) 3-wire RTD spot elements
    ii. Digital water Level Sensor
    iii. Bus powered 2-wire FOUNDATION FieldBus
    iv. FM-US Instrinsic Safety Certification

6. *Smart Wireless THUM Adapter – 7 ea.*
    i. Smart Wireless HART THUM adapter 775 and Junction box for wireless mesh network
    ii. FM Intrinsically Safe, Non-Incendive, Operating frequency: 2.4GHz,
    iii. Omnidirectional Antenna, connection to 2410 Tankhub

7. *Wireless Hart repeater with battery module – 1 ea. (optional, if required)*

8. *Wireless Network Gateway – 1 ea.*
    i. 1410 Wireless Network Gateway (data concentrator), 24VDC power - 500mA,
    ii. 2.4GHz DSSS, Dual Ethernet connection, WirelessHART protocol;
    iii. Serial Modbus RTU & Ethernet TCP/IP, OPC & AMS
    iv. FM-US certified, with *Field Link*

9. *Tankmaster Software Package - 20 tanks license*
    i. Allows operation, service and calibration of the Rosemount TankRadar system.
    ii. Displays level, temperature & all optional sensors for each tank.
    iii. Performs inventory calculations according to API:
        1. Gross & Net Volumes, Leak Alarms, Hi & Hi-Hi or Operational set-points;
        2. Includes bar graphs, trends, reports, alarm functions, and configuration
        3. Allows host communications (OPC & MODBUS) & (1) TM Network Client.

10. *Workstation – 1ea.*
    i. Server Class personal workstation (tower) PC with 24”LCD monitor

[Cont.]

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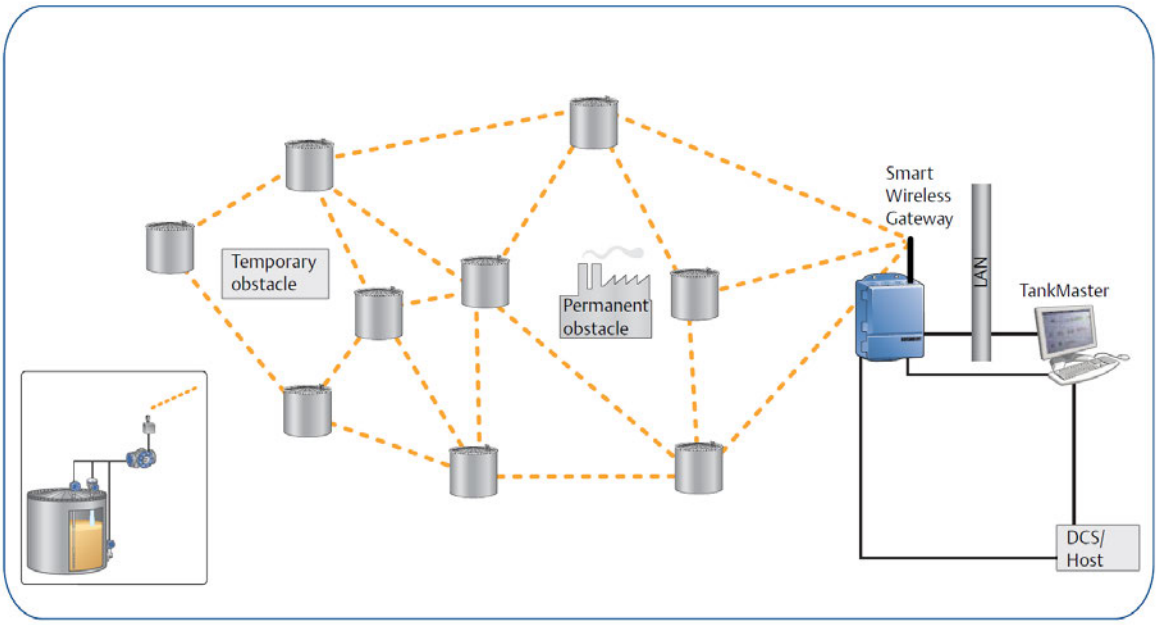
11. *TankMaster.Net software Site License: 3-user license*
    i. Up to three (3) concurrent users
    ii. Inventory control available 24 hours a day at any location
    iii. Web version of TankMaster, improved reporting of trends and events, asset control and overview
    iv. Includes virtually all monitoring functions from TankMaster
    v. Suppliers, customers & management get automatic real-time inventory overview via Internet or intranet;

12. Includes power wiring from control room UPS to ea. tank, as follows:
    i. Main UPS feeder - Will run new feeder over existing cable tray @ control room, thru existing 3" conduits and junction boxes all the way to a junction box located just outside the dike of the service tanks, right next to the pump gallery.
    ii. Will install new conduits & wiring from existing junction box outside the dike, to each tank, each branch protected by dedicated breaker.
        1. Branch #1 – 3 tanks
        2. Branch #2 – 3 tanks
        3. Branch #3 – 1 tanks



All wireless devices communicate with the host system through the Wireless Gateway. A Rosemount Tank Gauging System can consist of both wired and wireless networks.

[Cont.]

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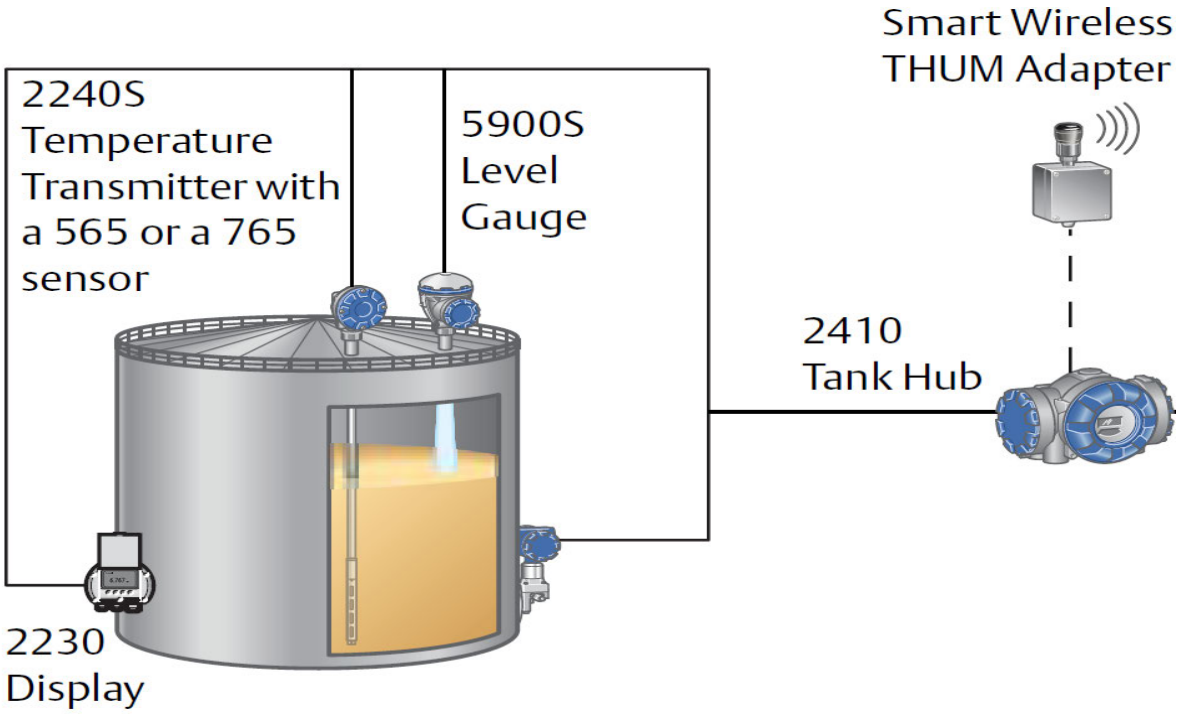

B. Terms:

1) Lump-sum BUDGET price (installed): *$ 550,000.00*
2) Equipment lead times: 10 - 12 weeks A.R.O.
3) Warranty - 18 months, F.O.B. Houston, TX. after delivery date.
4) Pricing F.O.B. Cataño, P.R.
5) IVU included
6) UPS protected 120 Vac power available at control room

El Dorado Technical Services has installed and commissioned Rosemount Tank Gauging equipment in many fuel terminals in P.R. and the USVI. Among these:

1. Puma Energy Caribe – Bayamon terminal (Liquid fuels and LPG)
2. Puma Energy Caribe – San Juan Airport terminal
3. Puma Energy Caribe – St. Thomas terminal
4. Total Petroleum PR Corp. – Guaynabo Bulk Terminal
5. Total Petroleum PR Corp. – San Juan Airport terminal
6. Total Petroleum PR Corp. – St. Thomas Airport terminal
7. Peerless Oil & Chemicals – Peñuelas, PR
8. Buckeye Caribbean – Yabucoa
9. Tropigas – Dominican Republic
10. Propagas - Dominican Republic
11. Coastal Petroleum - Dominican Republic

[Cont.]

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In addition, *Rosemount Tank Gauging* has an installed base of over 20,000 radar level gauges and associated equipment at other sites in the U.S.A. A visit can be arranged to one of the sites in P.R. so that you can witness a "live" installaton and get familiarized with the equipment, the software and its features. Let me know if you are interested.

Thanks for the opportunity to present this proposal.

Nerdy A. Cruz, P.E.

Nerdy A. Cruz, P. E.
Project Engineer

Cc: Prospective work / Seq. file

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

Proveer toda la labor, materiales y equipo para la instalación, y puesta en servicio de un Sistema de Medición Automática de Nivel Tanques de Combustible

Especificaciones;

1. **TANQUES INCLUIDOS EN ESTE CONTRATO;**
   - **a.** BUNKER C;
     - RESERVA #1
     - RESERVA #2
     - RESERVA #4
     - SERVICIO #1
     - SERVICIO #3
     - SERVICIO #4
   - **b.** DIESEL;
     - RESERVA #3

2. **EL SISTEMA DEBE INCLUIR LOS SIGUIENTES EQUIPOS PARA LOS TANQUE DE ALMACENAMIETO DE COMBUSTIBLE BUNKER C; RESERVA DE #1, #2, #4;**
   - **a.** RADAR LEVEL GAUGES
     - P/N 5900S, +/-0.5mm, single radar. FM-US intrinsically safe, 10Ghz FMCW radar.
     - Custody Transfer Approval.
     - Ready for 2;1 (ready to add second level transmitter in the same housing, shares same antenna).
     - 17" parabolic antennas (Stainless Steel).
   - **b.** Tank Hub;
     - P/N 2410 tank hub. Single tank, intrinsically safe foundation fieldbus (iec 61158).
     - Smart wireless hart 7 (IS); 48-240 vac at 50/60Hz, 24-48 vdc, FM-US explosion proof.
     - Custody Transfer approval.
     - IS 4-20 output for existing DCS level input
     - Ready for upgrade to relay outputs (optional) for shutdown.
   - **c.** Local Display
     - P/N 2230 Graphical Field Display, bus powered 2-wire foundation fielbus (IEC 61558).
     - FM-US intrinsically safe, mounting kit pipe and wall installation.
       1. Pipe coating anti-corrosion.
   - **d.** Temperature Transmitter & multi-spot probe with water level sensor.
     - Up to (8) 3-wire RTD spot elements.

- Digital water level sensor.
- Bus powered 2-wire foundation fielbus
- FM-US intrinsically safe certification

e. Smart Wireless THUM adapter;

- Smart Wireless hart THUM adapter 775 and junction box for wireless mesh network.
- FM intrinsically safe, non-incendive, operating frequency: 2.4Ghz.
- Omnidirectional antenna, connection to 2410 tankhub.

3. EL SISTEMA DEBE INCLUIR LOS SIGUIENTES EQUIPOS PARA LOS TANQUE DE ALMACENAMIETO DE COMBUSTIBLE BUNKER C; SERVICIO #1, #3, #4

a. RADAR LEVEL GAUGES

- P/N 5900S, +/-0.5mm, single radar. FM-US intrinsically safe, 10Ghz FMCW radar.
- Custody Transfer Approval.
- Ready for 2;1 (ready to add second level transmitter in the same housing, shares same antenna).
- 17” parabolic antennas (Stainless Steel).

b. Tank Hub;

- P/N 2410 tank hub. Single tank, intrinsically safe foundation fieldbus (iec 61158).
- Smart wireless hart 7 (IS); 48-240 vac at 50/60Hz, 24-48 vdc, FM-US explosion proof.
- Custody Transfer approval.
- IS 4-20 output for existing DCS level input
- Ready for upgrade to relay outputs (optional) for shutdown.

c. Local Display

- P/N 2230 Graphical Field Display, bus powered 2-wire foundation fielbus (IEC 61558).
- FM-US intrinsically safe, mounting kit pipe and wall installation.
    1. Pipe coating anti-corrosion.

d. Temperature Transmitter & multi-spot probe with water level sensor.

- Up to (8) 3-wire RTD spot elements.
- Digital water level sensor.
- Bus powered 2-wire foundation fielbus
- FM-US intrinsically safe certification

e. Smart Wireless THUM adapter;

- Smart Wireless hart THUM adapter 775 and junction box for wireless mesh network.

- FM intrinsically safe, non-incendive, operating frequency: 2.4Ghz.
- Omnidirectional antenna, connection to 2410 tankhub.

4. **EL SISTEMA DEBE INCLUIR LOS SIGUIENTES EQUIPOS PARA EL TANQUE DE ALMACENAMIETO DE COMBUSTIBLE DIESEL; RESERVA #3**
    - **a.** RADAR LEVEL GAUGES
        - P/N 5900S, +/-0.5mm, single radar. FM-US intrinsically safe, 10Ghz FMCW radar.
        - Custody Transfer Approval.
        - Ready for 2;1 (ready to add second level transmitter in the same housing, shares same antenna).
        - 17" parabolic antennas (Stainless Steel).
    - **b.** Tank Hub;
        - P/N 2410 tank hub. Single tank, intrinsically safe foundation fieldbus (iec 61158).
        - Smart wireless hart 7 (IS); 48-240 vac at 50/60Hz, 24-48 vdc, FM-US explosion proof.
        - Custody Transfer approval.
        - IS 4-20 output for existing DCS level input
        - Ready for upgrade to relay outputs (optional) for shutdown.
    - **c.** Local Display
        - P/N 2230 Graphical Field Display, bus powered 2-wire foundation fielbus (IEC 61558).
        - FM-US intrinsically safe, mounting kit pipe and wall installation.
            1. Pipe coating anti-corrosion.
    - **d.** Temperature Transmitter & multi-spot probe with water level sensor.
        - Up to (8) 3-wire RTD spot elements.
        - Digital water level sensor.
        - Bus powered 2-wire foundation fielbus
        - FM-US intrinsically safe certification
    - **e.** Smart Wireless THUM adapter;
        - Smart Wireless hart THUM adapter 775 and junction box for wireless mesh network.
        - FM intrinsically safe, non-incendive, operating frequency: 2.4Ghz.
        - Omnidirectional antenna, connection to 2410 tankhub.

    - **f.** Still pipe

- 8”-Sch-40 aluminum still pipe with 10”-150# mounting flange (roof connection) and 8”-150# top flange for radar antenna. Per API standar.

5. EL SISTEMA DEBE INCLUIR LOS SIGUIENTES EQUIPOS PARA EL NETWORK;

a. Wireless hart repeater with battery module.

b. Wireless network gateway

- 1410 wireless network gateway (data concentrator), 24vdc power-500ma.
- 2.4Ghz DSSS RTU & Ethernet TCP/ip, OPC & AMS
- FM-US certified, with field link.

c. Tankmaster software packages;

- 20 tanks license
- Allow operation, services & calibration of the rosemount tank radar system.
- Display level, temperature & all optical sensors for each tank.
- Performs inventory calculation according to API;
    1. Gross & net volumens, leak alarms, hi & hi-hi or operational set-points.
    2. Includes bar graphs, trends, reports, alarm functions & configuration.
    3. Allows host communications (OPC & MODBUS) and 1 TM network client.

d. Workstation;

i. Dell precision 490 mini tower dual core xeon proc 5160 3.00Ghz, 4MB L2 Cache 133Mhz, 8NJ75C1, BNJ75C1.
ii. 1GB, DDR2 ECC SDRAM MEMORY 533MHZ, 2X512MB,DELL PRECISION 690/490, FACTORY INSTALL.
iii. ENTRY LEVEL USB NO HOT KEYS KEYBOARDS DELL PRECISION WORKSTATION.
iv. 128MB PCle x 16nVidia, Quadro NVS 285, DUAL DVI OR VGA GRAPHICS CARD, DEL PRECISION X90.
v. 160GB SATA 3.0Gb/S 7200RPM NCQ HARDDRIVE WITH 8MB DATA BURST CACHE DELL PRECISION 490.
vi. C4 ALL SATA HARDDRIVES RAID 1 FOR 2 HARDRIVES DELL PRECISION 690.
vii. WINDOWS XP PRO SP2 WITH MEDIADELL PRECISION ENGLISH FACTORY INSTALL.
viii. DELL USB 2 BUTTON ENTRY MOUSE WITH SCROLL FOR DELL PRECISION.
ix. 16X DVD+/-RW w/CYBERLINK POWER DVD ROXIO DIGITAL CREATOR DELL EDITION DEL PRECISION X90.

x. RESOURCE CD CONTAINS DIAGNOSTICS AND DRIVERS FOR DELL PRECISION 490.
xi. TWO 24" LCD MONITORS.

e. Tankmaster net software site license;

- Three users licenses
    1. Inventory control available 24 hours a day at any location.
    2. Web version of tankmaster, Improved reporting of trend and events, asset control and overwiew.
    3. Includes virtually all monitoring function from tankmaster.
    4. Suppliers, customers & management get automatic real time inventory overwiew via internet or intranet.

6. **EL SISTEMA DEBE INCLUIR LOS MATERIALES**;

a. El contratista tiene que instalar conductos y conductores en todos los tanques, estos a su vez tienen que cumplir con todas las reglamentaciones estatales y federales que apliquen en un área de almacenamiento de combustibles y se hara según manufacturero del equipo.

b. De existir materiales existentes, que se puedan re-usar, estos tienen que ser inspeccionados y aprobados por el personal autorizado de la Central Palo Seco.

c. Todas las cajas de conexiones (junction box o pull boxes) tienen que ser Stainless Steel.

d. Todos los equipos deben estar debidamente conectados a ground según las especificaciones del manufacturero.

Government of Puerto Rico

Puerto Rico Electric Power Authority

Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Rehabilitation and Repair of Water Retention Tank Num. 3- Palo Seco

1/20/2022

Introduction

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

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

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

The sections included in this document are:

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

Document Revision History

Version	Date	Summary of Changes
v.1	01/20/2022	

Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Rehabilitation and Repair of Water Retention Tank Num. 3-Palo Seco
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

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

Program Manager: ***<Name>***

<Insert title here>

PREPA Project Sponsor: ***<Name >***

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Palo Seco Steam Plant Rehabilitation and Repair of Water Retention Tank Num. 3- Palo Seco	[redacted]

Note: *GPS coordinates are required for all facilities.*

2.2. Facilities Description

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

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Water retention tanks have a fundamental importance in the treatment of water resulting from the washing process of boilers and preheaters of generation units, as well as in the treatment of the water that get to the unit's washing toilet bowl. These tanks receive the surplus water from toilet bowls which is then retained for two important purposes: storing to avoid spilling and neutralizing the PH out of parameter.

A greater retention capacity in the Treatment Plant will result in a greater protection of the plant by avoiding law contamination violations and the washing process will be faster, saving time and money.

The plant currently has three tanks for the above-mentioned purposes, two of these tanks are in poor conditions, yet both could be restored if impacted on time. Among them is the retention tank num. 3, being the biggest, with a total storage capacity of 403,368 gallons. This water tank is not on service due to its condition resulting in a reduction by 1/3 of the total capacity and affecting adversely the efficiency of the Treatment Plant.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the rehabilitation and life extension of the Palo Seco Steam Plant retention tank num. 3 will consist of the following:

- The job includes providing engineering, design, labor, supervision, materials, equipment, inspection, and everything necessary to complete the rehabilitation and approval by AEE of the water tank #3. Rehabilitation will consist of welding and repairing the wall and the metallic floor of the tank with suitable means. The report of visual and ultrasound inspection by Team Industrial Services of January 16, 2019 will be used as reference to identify areas to be repaired, but will not be considered as conclusive in terms of damages.
- All mechanical work for the rehabilitation of the tank should be finalized prior to internal and external coating work. Paint jobs should start with the interior of the tank once interior and exterior mechanical work is all completed.
- An anticorrosive coating “lining” system will be installed in the interior and exterior of the indicated tank and approved by AEE. This includes primer application, painting / coating of walls and floor or sections of these, plumbing support, connections, and welding of affected tank due to repairs. Installation is subject to PREPA’s approval. Restoration costs of external and internal coating including, but not limited to, coating, equipment, scaffolding and labor will be part of the bidding.
- The scope of work for the tank’s exterior includes surface preparation and anticorrosive coating application to surface areas such as: covering, hallways, handrails, rails, platforms, hatchway, nozzle, windgirders, patches, scrapping, angular, supports, pipping support and all structural elements.
- The scope of work for the tank’s interior includes surface preparation and anticorrosive coating “ceramic lining” application to entire floor area, covering, and all plumbing support of the mixing system and every structural including but not limited to: surface preparation, hatchways anticorrosive coating, hatchway gate, nozzles, saddles, reinforcement plates, screws, base plates, angular, clips, wear plates, patches, welding and all tank reparations, etc.

3.2. Type of Project

Indicate whether the intended plan is a(n):

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

Choose One (Restoration, Improved or Alternate) *If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

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

3.3. Preliminary Architectural and Engineering (A&E)

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

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

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

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
• (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
• 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount ($M)
Water Retention Tank Num. 3 (Rehabilitation $ Coating)	$800,000.00
Total Project Estimated Cost	**$800,000.00**

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

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

Section 7. EHP Requirements

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

Section 8. Program Manager Lead Certification

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

Program Manager's Printed Name	Date
Title	Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name	Date
Title	Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

- Please see attached to Proposal, Anex, Justification Memo and Technical specifications included in PREPAs Fund Certification.

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures

10.4. Other: (Please Describe)

N/A

CN 078-04479
Rev. 11/17

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

28 de julio de 2020

Neftalí González Cruz, Jefe
División de Suministros

28/julio/2020

Antonio J. Kalil Carrión, Jefe
División Central Palo Seco

Justificación para Reparación y Rehabilitación del Tanque de Retención #3 en la Planta de Tratamiento de la Central Palo Seco

Los tanques de retención tienen una importancia fundamental en el tratamiento de las aguas resultantes de los procesos de lavado de pre-calentadores y calderas de las unidades generatrices, así como en el tratamiento de las aguas que llegan hasta las pocetas de lavado de las unidades por cualquier otra razón. En estos tanques se recibe el agua excedente de estas pocetas y es retenida con dos propósitos importantes; almacenar el agua excedente de las pocetas de lavado para evitar que estas se desborden y neutralizar el PH que esté fuera de los parámetros para disposición.

Mientras mayor capacidad de retención tenemos en la Planta de Tratamiento, mayor es la protección de la central para evitar violaciones por contaminación en este aspecto y con más rapidez se realizan los procesos de lavado, ahorrando tiempo y dinero.

Actualmente en la central tenemos tres tanques para este propósito, de los cuales dos están en malas condiciones, pero ambos son restaurables si se impactan a tiempo. Entre ellos está el Tanque de Retención 3, que es el de mayor tamaño, con una capacidad total de almacenaje de 403,368 galones. Por su condición este tanque no está en servicio, reduciendo nuestra capacidad de retención en más de 1/3 parte de la capacidad total y afectando adversamente la eficiencia de la Planta de Tratamiento.

Por lo antes expresado y por los mejores intereses de la Autoridad, solicitamos la aprobación para los servicios de reparación y rehabilitación del tanque, de acuerdo con los requerimientos, condiciones y alcance de trabajo indicados en la requisición.

De necesitar más información, favor de comunicarse con el Químico Luis Carrillo Nieves o con el Ingeniero Héctor Rodríguez Moctezuma por el 7029, 7032 o 7033.

Coordinado

Daniel Hernández Morales
Director de Generación

PROPOSAL: HRC-025

July 22, 2020

PREPA Puerto Rico Electric Power Authority
Eng. Héctor Rodríguez Moctezuma
Palo Seco Power Plant – Toa Baja PR

Re: Tanque de Retención 3

HOMECA RECYCLING INC is pleased to submit the following proposal for the structural rehabilitation, the installation of the tank exterior anticorrosive Coating system and the tank interior Lining coating system at the Puerto Rico Electric Power Authority Palo Seco Power Plant facilities.
This proposal considers all the SOW scope of work specified by PREPA for the rehabilitation of the tank and its structural components. The proposal include the management and disposal of any material and / or waste generated in the project. The proposal include PREPA terms and conditions required in the contract.

Proposal Breakdown:

ITEM	DESCRIPTION	COST
1	Tanque de Retención 3 (Rehabilitación & Recubrimiento)	
	PREPA - Palo Seco Power Plant	
	TOTAL OF PROPOSAL >>>>>>>>>>>>>>>>>>>>>>>>>>>>	$800,000.00

HOMECA INC appreciates the opportunity to submit this proposal. If you need more information please contact us by email at carirmasanchez.homeca@gmail.com or call us at 787-595-7715.

Cordially,

Carirma L. Sánchez López
Project Manager / NACE Inspector
carirmasanchez.homeca@gmail.com
787-595-7715

ESPECIFICACIÓN RECUBRIMIENTO ANTICORROSIVO TANQUE

RETENCIÓN 3 CENTRAL PALO SECO

INTRODUCCIÓN

Estas especificaciones proveen al Licitador (Contratista) con la información necesaria para rehabilitar y extender la vida útil del Tanque de Retención #3 en la Planta de Tratamiento de la Central Palo Seco de la AEE, localizada en la carretera PR-165, KM. 31.8, Toa Baja, Puerto Rico 00949.

La subasta consistirá en la rehabilitación del Tanque de Retención #3 a través de mejorar los drenajes del tanque, restauración de las paredes internas y externas, limpieza del piso, corrección de las condiciones metálicas internas y corregir las condiciones de las cubiertas protectoras internas y externas.

DESCRIPCIÓN DEL EQUIPO

Tanque de Retención #3

- Diseñado por: P.T.C.
- Erigido por: El Dorado Technical Services
- Servicio = Tanque de Retención de Agua.
- Año de Construcción = 2007
- Altura Nominal = 16'-3"
- Diámetro Nominal = 65'-0"
- Capacidad Nominal = 403,368 Gals.
- Gravedad Especifica = 1 (tomada de la placa)
- Joint Efficiency = 1 (de la tabla 4.2 de API 653 para Basic Standard)
- Shell Courses Material:
- Shell Course 1 = A36, 0.250"
- Shell Course 2 = A36, 0.250"
- Piso = 0.3125" (provisto por cliente)

ALCANCE GENERAL DEL TRABAJO:

1. El trabajo incluye proveer la ingeniería, diseño, labor, supervisión, materiales, equipo, inspección y todo lo necesario para completar la rehabilitación, y aceptación por parte de la AEE, del Tanque de Retención #3. La rehabilitación consistirá de reparar con soldadura la pared y el piso metálico del tanque por los medios más adecuados identificados por el Contratista y aprobados por la AEE. El reporte de inspección visual y de ultrasonido realizado por Team Industrial Services del 16 de enero de 2019 será utilizado como referencia para identificar las áreas a reparar, pero no se considerará como concluyente en términos de daños.
2. Todos los trabajos mecánicos para la rehabilitación del tanque deberán ser finalizados previo a comenzar los trabajos de recubrimiento en el interior y exterior del tanque. Los trabajos de pintura deberán comenzar en el interior del tanque una vez completado todos los trabajos mecánicos (interior y exterior).

3. Se instalará un sistema de recubrimiento anticorrosivo (pintura)- "Lining" en todo el interior y todo el exterior del tanque indicado y aprobado por la AEE. Esto incluye la aplicación del imprimante (primer), recubrimiento o pintura a las paredes y piso, o secciones de los mismos, soportes de tuberías, conexiones y soldaduras del tanque afectadas por las reparaciones. La instalación estará sujeta a la aceptación por parte de la AEE. El costo total de la restauración del recubrimiento interno y externo, incluyendo, pero no limitándose a, cubiertas de revestimiento (coatings), equipo, andamios y mano de obra capacitada para esta labor, formaran parte de del paquete ofrecido en esta licitación.
4. El alcance del trabajo en el exterior del tanque incluye la preparación de superficie y aplicación de recubrimiento anticorrosivo (Coating) a toda el área de superficie del envolvente, pasillos, pasamanos, barandas, plataformas, escotillas, boquillas, windgirders, parches, chime, angulares, soportes, soportes de las tuberías y todo elemento estructural.
5. El alcance del trabajo en el interior del tanque incluye la preparación de superficie y aplicación de recubrimiento anticorrosivo "Ceramic Lining" a toda el área de superficie del piso, todo el envolvente y todos los soportes de las tuberías del sistema de mezcla ("Mixing System") y todo elemento estructural que incluye pero no se limita a: la preparación de la superficie y el recubrimiento anticorrosivo de los escotillas, compuertas de las escotillas, boquillas, bridas, "saddles", placas de refuerzo, tornillos, "base plates", angulares, clips, "wear plates", tuberías, soporte de las tuberías y bases, angulares circunferenciales del tope de las paredes, parches, soldaduras, todas las reparaciones del tanque, etc..

REQUERIMIENTOS A LOS LICITADORES

1. El Licitador deberá presentar junto con los documentos de la subasta la siguiente información:
    - Los Contratistas o Subcontratistas deberán tener como mínimo:
        - Tres (5) años de experiencia en trabajos relacionados y similares en recubrimiento con sistemas anticorrosivos en tanques, utilizados para el almacenamiento de combustible, agua o ácidos.
        - Haber aplicado los sistemas de recubrimiento anticorrosivos "coatings" a (100,000) cien mil pies cuadrados de área de superficie en tanques.
        - Haber aplicado sistemas de recubrimiento "Epoxy Ceramic Reinforced Coating-Linings" a (10,000) diez mil pies cuadrados de área de superficie en tanques, tuberías, condensadores, cajas de agua de condensadores y/o sus componentes.
        - Se deberá presentar junto con los documentos de la subasta toda la documentación que evidencie todos los trabajos realizados, así como las personas de contacto para la verificación por parte de la AEE.
        - El Licitador deberá presentar junto con los documentos de la subasta las garantías de los manufactureros de pintura firmados por su representante. (Ver Anejos)
        - Solo se deberá presentar firmada la hoja y /o documento por el Representante del manufacturero del producto especificado titulada como "PRE-BID COATING SYSTEM MANUFACTURER AGREEMENT". (Ver Anejos)
2. Se coordinará una reunión pre subasta en la central, la cual será compulsoria. Todo licitador que no asista a la reunión pre subasta será declarado no respondiente.

3. Los Licitadores serán responsables de concertar una cita con el personal de la AEE asignado a este proyecto y realizarán una inspección interna y externa del tanque para identificar los daños asociados con el informe de Team Industrial Services del 16 de enero de 2019. También identificarán los daños adicionales que hayan surgido después de la inspección realizada por Team. Estos serán incluidos dentro del precio ofrecido por el Licitador y serán identificados en la propuesta de manera gráfica a través de un plano de localización. Será responsabilidad de la AEE vaciar y limpiar el interior del tanque para la inspección del Licitador.
4. El Licitador confeccionará y someterá con su propuesta una tabla con las tarifas de "Tiempo y Material" (Time & Material) para cualquier trabajo adicional o tiempo de inactividad en este proyecto.
5. Excepciones o exclusiones al trabajo indicado en estas especificaciones deben ser establecidas por el Licitador en su propuesta y ser sometidas a la AEE al momento de la subasta.
6. El Licitador debe establecer claramente en su propuesta la aceptación de todo lo establecido en el alcance de estas especificaciones. Si el Licitador no se expresara al respecto, su silencio se entenderá como una total aceptación de todo el alcance de trabajo y sus términos. El rechazo o no aceptación de esta cláusula será motivo para el rechazo de la propuesta del Licitador.
7. El Licitador tendrá como requisito cotizar con los productos especificados por la AEE.
8. Para todo licitador, cualquier marca y/o modelo de producto especificado en esta subasta, se entenderá que son iguales o aprobados iguales a los productos bases utilizados en la referencia técnica.
9. El Licitador entregará con su propuesta todos los documentos relacionados a las especificaciones de procedimientos de soldadura (WPS) y el expediente de calificación del procedimiento (PQR) de acuerdo con la sección IX del código de ASME (American Society of Mechanical Engineers).
10. El Licitador entregará con su propuesta todos los documentos relacionados a la calificación de los soldadores (WPQ) de acuerdo con la sección IX del código de ASME (American Society of Mechanical Engineers), la Certificación del Inspector API 653 y la Certificación del Inspector CWI.

REQUERIMIENTOS AL CONTRATISTA

1. El contratista cumplirá con todas las fianzas, permisos y seguros, tales como fianza de ejecución, fianza de pago, seguro de compensación para accidentes en el trabajo, seguro de responsabilidad patronal, seguro de responsabilidad general y cualquier otro cargo requerido por la Autoridad antes de comenzar la movilización de personal y equipo al área de trabajo.
2. El Contratista seleccionado someterá un programa de trabajo al Oficial encargado de la AEE, en el que se expongan las tareas generales y la duración del proyecto para completar el alcance de trabajo indicado. Los trabajos que envuelvan el retiro de equipos operacionalmente, deben ser coordinados con el oficial a cargo de la AEE para asegurar el retorno del sistema a servicio, a tiempo. Este programa también incluirá las actividades necesarias y las fechas programadas para el recibo de los materiales requeridos para completar el proyecto. El mismo estará sujeto a la aprobación del Oficial de la AEE a cargo del proyecto.
3. El Contratista coordinará con el Oficial de la AEE a cargo, el itinerario de trabajo a seguir para completar el trabajo especificado. Los trabajos no pueden interferir con la operación normal de las facilidades de la central y los proyectos en curso que se estén realizando, por lo que el Contratista considerará esto en su oferta.

4. El Contratista someterá al Oficial de la AEE a cargo un procedimiento escrito de las pruebas no destructivas y la calificación del personal a realizar las pruebas.
5. El Contratista someterá al Oficial de la AEE a cargo la calificación de los soldadores, procedimiento y cualificación de los procedimientos de las soldaduras a realizarse en el proyecto.
6. El Contratista someterá al Oficial de la AEE a cargo las pruebas de molino de las planchas de acero a utilizar para la reparación del tanque.
7. El Contratista someterá al Oficial de la AEE a cargo dibujos/Planos de Taller ("shop drawings") de trabajos nuevos en acero a realizar en el tanque.
8. El Contratista coordinará con el Oficial de la AEE a cargo el uso de electricidad, aire o agua de la central, necesario para la realización del trabajo. Cualquier equipo para llevar estos servicios al área de trabajo son responsabilidad y a costo del Contratista.
9. El Contratista seleccionado proveerá el equipo y/o maquinaria (montacargas, elevadores, patecas, etc.) necesario y requerido para este proyecto. Maquinarias o equipos de potencia necesarios para trabajos en las partes elevadas será responsabilidad del Contratista. El personal que opere estos equipos debe estar debidamente certificado. El contratista presentará las certificaciones de los operadores antes de movilizarse.
10. El Contratista seleccionado suplirá bombas, mangueras, válvulas, accesorios y guarniciones (fittings), según se requiera para drenar el tanque. El Contratista se comunicará con el Oficial de la AEE a cargo para determinar el lugar apropiado para la descarga de los fluidos del tanque de acuerdo con los permisos NPDES del área.
11. El Contratista podrá someter para evaluación productos alternos a los especificados si incluye la información técnica y los SDS de estos. Los productos alternos tienen que someterse para evaluación en los 5 días consecutivos posteriores a la orden de proceder. No se aceptarán productos alternos que se sometan posterior a esta fecha. De ser necesario la AEE solicitara "samples & Test panels" y se realizara un Coating Survey a los productos alternos. Los costos relacionados al "Coating Survey, samples & Test panels" serán cubiertos en su totalidad por el contratista. ***No se concederá tiempo adicional al establecido en el contrato del proyecto para este estudio*.** Los productos alternos o sustitutos a los aprobados serán considerados siempre y cuando estos cumplan con todas las siguientes condiciones:
    - Igual composición física o química, incluyendo aditivos tales como pigmentos anticorrosivos, fibra, etc.
    - Igual o mayor contenido de sólidos por volumen y refuerzos de cerámica.
    - Semejante capacidad de curado.
    - Igual o mayor capacidad de adhesión bajo condiciones de prueba estándares (ASTM) idénticas.
    - Igual clasificación por el estándar de (ISO12944 y NORSOK M501) para el sistema.
    - Igual o mayor capacidad de resistencia a la abrasión bajo condiciones de prueba estándares (ASTM) idénticas.
    - Igual o mayor rango de temperatura en inmersión o seco, dependiendo de la aplicación.
    - Igual o mayor rango de temperatura en la superficie durante la aplicación.
    - Igual o mayor capacidad de resistencia a la humedad bajo condiciones de prueba estándares (ASTM) idénticas.

- Igual o mayor capacidad de resistencia a impacto bajo condiciones de prueba estándares (ASTM) idénticas.
- Igual o mayor capacidad en prueba ASTM G8 “Cathodic Disbondment Test - for not less than 60 days”.
- Igual o mayor capacidad en prueba ASTM C 868 “Test Corrocell @ 110^{o}F – exposed to demineralized wáter for a minimun period of 6 months. Final test results show No blisters”.

12. Será requerimiento del Contratista la certificación como instalador cualificado por parte del manufacturero del sistema de recubrimientos propuesto.
13. El Contratista será responsable de verificar las dimensiones y de hacer los cómputos de área para el recubrimiento de pintura. Las dimensiones aproximadas del Tanque son: Diámetro: 65’-0” & Altura: 16’-3”.
14. El Contratista deberá proveer un inspector certificado por “NACE” (National Association of Corrosion Engineers) NIVEL 2 como mínimo, para estar a cargo del control de calidad. Los reportes generados por el inspector “NACE” serán entregados al Oficial de la AEE a cargo del proyecto. Los reportes deberán incluir fotos de todas las etapas del proyecto. El inspector deberá estar presente en todas las etapas del proyecto. El inspector deberá realizar el control de calidad de acuerdo al “NACE Coating Inspector’s Condensed Logbook”.
15. El Contratista deberá establecer coordinado con la AEE un programa de control de calidad. Todos los documentos serán certificados por el personal responsable del QC del Contratista y entregados al Oficial de la AEE a cargo como parte de los requerimientos de este contrato en base diaria o semanal según sea coordinado con antelación.
16. Todas pruebas a realizarse en el proyecto tienen que tomarse en presencia del Oficial o inspector de la AEE a cargo. El cual certificará las mismas.
17. El Contratista proveerá los recibos de compra de pintura si estos son requeridos por el Oficial de la AEE a cargo.
18. El Contratista llevará un registro diario de las condiciones en el campo y de las pruebas necesarias para asegurar que el trabajo se realice según las especificaciones y recomendaciones del manufacturero del sistema de pintura.
19. Todos los instrumentos de inspección deben estar calibrados y serán manejados por personal debidamente certificado para el propósito de la inspección a realizar. El Contratista entregará copia de los documentos de inspección y calibración de los instrumentos y de la certificación de los operadores para operar los mismos (vigentes), al Oficial de la AEE a cargo.
20. El personal que realizará las pruebas no destructivas (NDT) deberán presentar su cualificación de acuerdo al ASNTSNT-TC-1A (The American Society for Nondestructive Testing).
21. Los procedimientos de inspección para las pruebas no destructivas (NDT) “Nondestructive Examination” deberán cumplir con la sección V del código de “ASME” (American Society of Mechanical Engineers).
22. Todos los métodos para la construcción, rehabilitación o remplazo tienen que realizarse en cumplimiento con los códigos API 650 y API 653 para tanques de combustible o agua. Los defectos de las soldaduras nuevas y la reparación de estas serán determinados siguiendo los criterios del estándar 653 de API.

23. En el caso de tener tubería, líneas eléctricas o cualquier otra utilidad o equipo que haya que ser removido para la realización de este trabajo, será responsabilidad del Contratista el removerlas, reinstalarlas y/o relocalizarlas según requerido por el Oficial de la AEE a cargo.
24. Todo conducto, verja, tuberías, alambrado, etc., utilidades o facilidades en general, que no tengan que ser removidas dentro del área del proyecto se mantendrán adecuadamente protegidas para evitar daños.
25. Todo conducto, verja, tuberías, alambrado, etc., utilidades o facilidades en general, que no tengan que ser removidas dentro del área del proyecto, y que resulte averiada, dañada o pintada durante el proceso de ejecución del mismo, tiene que ser reparada por el Contratista y llevada a su condición original a satisfacción de la AEE, sin costo adicional.
26. El Contratista dispondrá de materiales, escombros y todo residuo generado en el proceso, incluyendo el manejo y disposición de todo material, producto, etc., fuera de los predios de la AEE.
27. El Contratista proveerá en el lugar de trabajo un área para la colección de basura y residuos de material durante la ejecución de las labores para su disposición.
28. Es responsabilidad del Contratista el mantener las áreas de trabajo limpias y en orden, así como disponer de todos los escombros, materiales removidos, usados y sobrantes. El contratista suplirá el contenedor de basura para la recolección y disposición fuera de los predios de la central.
29. El Contratista seleccionado será responsable de la remoción de todo el equipo, componentes, tuberías, soportes metálicos y desechos o escombros de construcción asociados a este proyecto. La AEE suplirá los contenedores para depositar los metales desechados y dispondrá de estos de acuerdo al contrato de disposición de metales de la central. El Contratista será responsable de proveer los contenedores necesarios para disponer de los desperdicios no metálicos generados durante el proyecto y de la disposición de los mismos.
30. El Contratista será responsable de dejar el área limpia de todo elemento sobrante y basura al momento de terminar el proyecto. La etapa de desmovilización del Contratista incluirá el recogido de los materiales sobrantes, herramientas y equipo relacionado a la ejecución del proyecto, la limpieza del área y la aprobación del trabajo por el Oficial de la AEE encargado del trabajo. Este requerimiento será tomado en cuenta dentro de los requerimientos para el pago por desmovilización.

REQUERIMIENTOS DE SEGURIDAD

1. La AEE será responsable de verificar e indicar al Licitador si las cubiertas actuales (internas y externas) están libres de plomo antes de la licitación. De esa forma se hará el ajuste necesario en precio para cualquier trabajo de pulido, corte o soldadura.
2. El Contratista y su personal tomarán las charlas de seguridad provistas por la central, antes de comenzar las labores en el campo. El Contratista coordinará con el Oficial de la AEE a cargo, la fecha, hora y lugar para las mismas.
3. El Contratista someterá al Oficial de la AEE a cargo del proyecto su programa de Salud y Seguridad Ocupacional que incluya entre otros, los controles para exposición a plomo.
4. Los trabajos no comenzarán hasta tanto el Oficial a cargo o asignado de la AEE aísle cualquier equipo asociado al tanque y presente las evidencias de acuerdo con el procedimiento de LOGO establecido en la central.

5. El Contratista proveerá toda la información de los SDS para todos los químicos a utilizarse en el proyecto, previo a la utilización de los mismos. Estos serán evaluados por la oficina de Salud y Seguridad de la AEE, la cual aprobará o desaprobará los mismos. En caso de no aprobarse, será responsabilidad del Contratista suplir un producto alterno que cumpla con lo deseado y que sea aprobado por la AEE. El Contratista será responsable de remover de las facilidades todo producto químico, residuo químico o mezcla de desperdicios que sobraran o resultaran del proyecto, a menos que la AEE solicite retenerlos.
6. El Contratista tendrá disponible toda la información de los SDS en un lugar previsto del área de trabajo. La misma debe estar accesible para todos los empleados en todo momento.
7. El Contratista es responsable de proveer todo el equipo de protección necesario para que su personal realice la totalidad de las tareas indicadas en este contrato y de acuerdo con todos los requerimientos de los SDS.
8. El Contratista designará al lugar del proyecto, una persona competente (en cumplimiento con las normas de OSHA) por parte de su organización, quien estará a cargo de la implantación del Programa de Seguridad, de la prevención de accidentes y de la coordinación de los aspectos de seguridad del proyecto con el Oficial de Seguridad designado por la AEE. Se deberá someter a la AEE para evaluación el plan de emergencia, salud y seguridad específico para el proyecto.
9. El Contratista será responsable de suplir las facilidades de oficina y descanso, así como áreas de lavado y facilidades sanitarias, para su personal. Estas cumplirán con el reglamento en vigor del Departamento de Salud y con los requisitos de OSHO.
10. El Contratista seleccionado proporcionará soporte temporal a la tuberías o elementos metálicos, pasillo superior del tanque (catwalk), y restituirá cualquier elemento que sea removido para facilitar la restauración de cualquier sección de la pared o del piso. Estos elementos serán manejados de acuerdo con esta especificación y todos los dibujos, croquis, diagramas, códigos, estándares y regulaciones mencionadas en esta especificación.
11. De requerirse andamios, el Contratista utilizará un contratista de andamios certificado, que debe ser aprobado por el Oficial de la AEE a cargo. El contratista de andamios proveerá el andamio (construcción y remoción) y realizará las inspecciones y verificaciones de seguridad que se le requieran.
12. Todos los trabajos se harán estrictamente de acuerdo con las normas y regulaciones federales, estatales y locales, vigentes. Se aplicarán todos los códigos de fabricación y construcción relacionados al tipo de bienes que será suplido e instalado en este contrato.
13. El Contratista tomará todas las medidas necesarias para asegurar que las áreas de almacenamiento estén protegidas contra incendios, derrames ocasionados por el mal manejo y acumulación de gases tóxicos y/o explosivos por evaporación de los productos.
14. El Contratista será responsable por cualquier daño hacia el personal y/o a la estructura, equipos, instrumentos, líneas eléctricas, etc., o que afecte la operación de la central por causa de accidentes relacionados con el almacenaje de estos productos.
15. El trabajo tiene que estar orientado a mantener la seguridad de los empleados y del público en general en todo momento.
16. El trabajo se realizará siguiendo el protocolo de protección ambiental establecido por la AEE.
17. El Contratista realizará la identificación y segregación de cualquier material peligroso antes de disponer del mismo, de acuerdo a las regulaciones de reciclaje de material peligroso de la Agencia

de Protección Ambiental (EPA), la Junta de Calidad Ambiental (JCA), los procedimientos de disposición de la Autoridad y cualquier otra regulación que aplique.

18. Será responsabilidad del contratista de exigir y mantener, de acuerdo con las condiciones existentes y al progreso del proyecto, todas las salvaguardas necesarias para la protección de la seguridad, incluyendo letreros de precaución y supervisión general de control de acceso a las áreas de trabajo en progreso.
19. El trabajo de limpieza, preparación del área y aplicación de los productos en la estructura del tanque se realizará de una forma segura al ambiente y que no sea perjudicial a los empleados ni al público en general. En el evento de que se encontrara alguna actividad imprevista durante la ejecución del trabajo que fuese peligrosa para el ambiente, la vida o seguridad de los empleados o del público en general, se suspenderá inmediatamente la labor y se notificará al Oficial de la AEE a cargo del proyecto.
20. El Contratista seleccionado proveerá Protocolo de COVID-19 y la Auto Certificación antes de que se realice el trabajo.

APROBACIONES, EXCEPCIONES Y/O SUSTITUCIONES

1. De requerirse algún trabajo adicional durante los trabajos de esta especificación, y que no se haya incluido en el alcance de trabajo inicial, el Contratista deberá preguntar al Oficial de la AEE a cargo, para la cotización y aprobación del mismo, previo a su realización.
2. Los documentos técnicos y enmiendas a estas especificaciones solo serán válidas si son autorizadas por un Oficial autorizado de la AEE.
3. Es responsabilidad del Contratista certificar por escrito cuando someta documentos para aprobación, que dichos documentos, o parte de estos, no constituyen desviación o cambios a las especificaciones del contrato. Cualquier desviación o cambio a las especificaciones del contrato, no certificado por escrito por el Contratista, invalida automáticamente el sello de aprobación de la AEE, aplicado a cualquier documento relacionado con dicha desviación o cambio.
4. De ser necesario adquirir cualquier material fuera del Alcance de Trabajo incluido en este Proyecto, el Contratista podrá adquirirlo con autorización del oficial autorizado de la Autoridad. Tendrá que mostrar la factura del material adquirido y le podrá añadir un margen de beneficio (mark-up) de hasta 15%.

CÓDIGOS Y REFERENCIAS

1. Todos los trabajos bajo estas especificaciones se harán de manera segura y profesional, y en estricta conformidad con todas las reglas locales, y regulaciones y ordenanzas de las agencias gubernamentales que tengan jurisdicción sobre este tipo de trabajo. En adición a cualquier otro estándar y requerimiento técnico establecido en otra parte de este documento y a menos que se especifique lo contrario en las especificaciones, el equipo se diseñará, manufacturará, probará e instalará de acuerdo a los últimos estándares de las siguientes entidades, asociaciones o institutos:
    - American Society of Mechanical Engineers (ASME B31.1)
    - Boiler and Pressure Vessel Code, ASME, Section VIII
    - American Petroleum Institute Standard (API 653)

- National Association of Corrosion Engineers (NACE)
- The Society of Protective Coatings (SSPC)
- International Organization for Standardization (ISO)
- American National Standards Institute (ANSI)
- National Electrical Manufacturers Association (NEMA)
- Underwriters Laboratories (UL)
- National Fire Protection Association (NFPA)
- Environmental Protection Agency (EPA)
- Occupational Safety and Health Office (OSHO)
- American Society of Civil Engineers (ASCE)
- American Society of Testing Materials (ASTM)
- The American Society for Nondestructive Testing (ASNT)
- International Conference Building Officials (ICBO)
- National Electric Code (NEC)
- National Pollutant Discharge Elimination System (NPDES)
- Puerto Rico Water Quality Standards Regulations (PRWQS)
- Cualquier otro Código o especificación local y estatal con jurisdicción.

PENALIDADES POR ATRASOS

1. El tiempo de entrega será de 150 días consecutivos, a partir de la fecha de ser movilizados por la AEE.
2. El día utilizado como base para determinar la penalidad por atraso, si aplicara, será el día de comienzo de los trabajos especificado en la carta de movilización.
3. Si el Contratista no cumple con la fecha de entrega de la reparación total establecida en la orden, el Contratista entregará el equipo o completará la instalación más tarde, en cuyo caso el Contratista pagará a la AEE una penalidad del uno por ciento del total de la orden (1%), por cada día calendario en demora en la entrega del tanque terminado, hasta un máximo de veinte por ciento (10%) del precio total de la orden. El Contratista y sus aseguradoras serán legalmente responsables por esta misma cantidad. El Contratista no será responsable legalmente por esa suma cuando el atraso en la entrega e instalación sea debido a causas imprevistas fuera de su control y sin falta o negligencia de su parte, incluyendo, pero no limitándose a; Actos de Dios o de un enemigo público, fuegos no generados por el Contratista, huracanes, inundaciones no creadas por el Contratista, epidemias, restricción por cuarentenas, huelgas, embargo de cargamento, o demoras de sus subcontratistas debido a estas causas , o a causa del incumplimiento en las obligaciones por parte de la AEE. En estos casos el Contratista notificará por escrito la causa de la demora en un término dentro de diez días (10) desde el comienzo de la misma, al Oficial de la AEE a cargo, quien verificará los hechos y eliminará el tiempo por demora, extendiendo el tiempo para entrega cuando a su juicio los hechos justifiquen una extensión. En estos casos el Contratista no podrá hacer ninguna reclamación contra la AEE, sus agentes, contratistas, subcontratistas, empleados, sucesores, cesionarios, o por cualquier otra causa, durante el progreso de cualquier porción del trabajo que abarca esta orden. Cualquier daño causado por las demoras u obstáculos creados por la AEE se considerarán completamente compensados por la extensión del tiempo de

la orden como se indica anteriormente. Si las causas para la demora no son razonables o aceptadas, la AEE hará los ajustes apropiados en el pago del Contratista. Si las causas para la demora son razonables y aceptadas por la AEE, el Contratista tendrá derecho a un ajuste equitativo. El Contratista acepta que dicha sanción no estará sujeta a reducción, moderación o modificación en los trabajos, ya que esta sanción es un castigo material o pecuniario por el retraso y no una liquidación de daños.

El Licitador debe establecer claramente en su propuesta la aceptación de esta cláusula, sin embargo, el silencio del licitador con respecto a ésta se entenderá como una total aceptación de la cláusula y todos sus términos. El rechazar o no aceptar esta cláusula será razón para rechazar la propuesta del licitador.

El Contratista debe enviar a la AEE un acuse de recibo por escrito de la orden o solicitud. En caso de que el Contratista no envíe el acuse de recibo, esta cláusula se activará, comenzando dos semanas (2) desde la fecha en que la AEE envió la solicitud u orden escrita.

Las fechas en el matasellos del correo de los Estados Unidos, o cualquier otro medio de conocimiento aprobado por la AEE, se utilizarán en la determinación del periodo de tiempo establecido en esta cláusula.

TRAMITES DE INFORMACIÓN

1. Un reporte escrito del proyecto del Tanque de Retención 3 que incluya la información técnica para la instalación, reparación, y pruebas de los equipos, será entregado a la AEE al completarse el proyecto. Una copia digital de estos manuales será provista en formato USB “pen drive”.
2. Todos los cambios de campo necesarios para completar este proyecto deben someterse por escrito al Oficial de la AEE a cargo. Una resolución aprobada por la AEE deberá revisarse y documentarse antes de comenzar el cambio en el campo.

PAGOS

Se aplicará el siguiente desglose de pagos:

1. 5% Movilización – Instalarse en el área de trabajo para preparar la misma para comenzar los trabajos de reparación y preparación de superficies para aplicación de cubiertas protectoras.
    - El Contratista entregará el plan detallado de reparación con el alcance del mismo, incluyendo las fechas de las diferentes fases del proyecto, hasta finalizar y entregar el mismo a satisfacción de la AEE.
    - El Contratista entregará los diagramas o planos de reparación de los elementos que así lo requieran en el tanque.
2. 40% Al completar los trabajos de reparación de los componentes metálicos (externos e internos) del tanque que así lo requieran. Incluye soldaduras y cualquier tipo de prueba a los mismos.
3. 40% Al terminar la preparación de superficies y aplicación de los recubrimientos internos y externos.

4. 10% Al realizar todas las pruebas de las cubiertas de manera exitosa y aceptación del sistema por parte de la AEE.
5. 5% Desmovilización

GARANTIÁS

1. El Contratista garantizará que el Tanque de Retención 3 de la Planta de Tratamiento de la Central Palo Seco, está libre de defectos en materiales o mano de obra. La garantía mínima será de tres (3) años en la totalidad de lo antes expuesto, y diez años prorrateados después de completar la rehabilitación del tanque y que se ponga en servicio según aceptado por la AEE.
2. Durante el periodo de los primeros tres años de garantía total, el Contratista o Suplidor, mediante notificación escrita de la AEE, corregirá en su totalidad y libre de costos para la AEE, todos los defectos que surjan en los materiales, piezas y reparaciones hechas, siempre que hayan sido correctamente mantenidos y operados dentro de sus parámetros específicos.
3. El Contratista deberá proveer una garantía mínima en los sistemas de recubrimiento anticorrosivo de tres años en el interior (3) y tres años en el exterior (3). La garantía será un acuerdo conjunto "joint agreement" entre el Contratista y el manufacturero del producto seleccionado. El documento en original de la garantía será entregado al Oficial de la AEE a cargo del proyecto. El documento se incluye en los anejos como: (PROTECTIVE COATINGS CORROSION WARRANTY & Pre-bid Coating System Manufacturer Agreement) términos y condiciones generales para el "joint agreement".

ALCANCE ESPECÍFICO DEL TRABAJO

1. **<u>Área interior del tanque</u>**: (Se incluye reporte de inspección del Tanque realizado por TEAM Industrial Services, Inc.)
   - Reparación de (40) cuarenta zonas con picadura en el área del piso y área del envolvente (paredes) del tanque mediante la aplicación de soldadura y puliendo el exceso para obtener una superficie lisa. El trabajo requiere inspección realizando pruebas no destructivas de líquidos penetrantes, inspección visual por un inspector CWI y prueba de caja de vacío en todas las soldaduras de acuerdo a los estándares de API. Las áreas serán seleccionadas por la AEE.
   - Reparación de soldaduras en (10) diez zonas con picadura en el área del piso, área del envolvente, componentes y/o elementos estructurales del tanque mediante la aplicación de soldadura. Se deberá considerar (25) veinticinco pies lineales de soldadura. El trabajo requiere inspección realizando pruebas no destructivas de líquidos penetrantes, inspección visual por un inspector CWI y prueba de caja de vacío en todas las soldaduras de acuerdo a los estándares de API. Las áreas serán seleccionadas por la AEE. ***Este alcance incluye el área interior y exterior del tanque.***
   - Reparación de defecto de soldadura en parcho de piso existente #10 según reporte API 653 TEAM Industrial Services. El trabajo requiere inspección realizando pruebas no destructivas de líquidos penetrantes, inspección visual por un inspector CWI y prueba de caja de vacío en todas las soldaduras de acuerdo a los estándares de API. Las áreas serán seleccionadas por la AEE.
   - Reparación de zonas con picadura, áreas de pérdida de las soldaduras circunferenciales y lineales en el interior de la escotilla (manhole) del tanque mediante la aplicación de soldadura. El trabajo requiere inspección realizando pruebas no destructivas de líquidos penetrantes, inspección visual

por un inspector CWI en todas las soldaduras de acuerdo a los estándares de API. Las áreas serán seleccionadas por la AEE.

- Remplazo de (85) ochenta y cinco angulares L-Shape, ASTM A36 de 3”x3”x ¼” thk. x 12” de largo cada uno. Estos forman parte de los soportes de la tubería del sistema de aireación en el interior del tanque. La remoción de los angulares existentes deberá realizarse cortando el angular a nivel de la placa de desgaste existente. Los angulares deberán ser instalados por medio de soldadura continua tipo Fillet Weld de ¼” en ambos lados del mismo, creando un sello total entre los elementos estructurales. Los angulares deberán ser preparados al grado de NACE No.1 y cubiertos con el sistema anticorrosivo de Lining Epoxico Cerámico según las especificaciones técnicas de la AEE. El trabajo requiere inspección realizando pruebas no destructivas de líquidos penetrantes, inspección visual por un inspector CWI en todas las soldaduras de acuerdo a los estándares de API.

2. <u>Cubierta interior del tanque</u>

- La preparación de superficie en todo el interior del tanque sobre el recubrimiento existente-Fiber Reinforced Thick Lining, será al grado de NACE No.4 / SSPC-SP7 “Brush-Off Blast Cleaning” con perfil de anclaje mínimo de 3.0-5.0mils.
- El alcance del trabajo en el interior del tanque incluye la preparación de superficie a un área adicional de setecientos pies cuadrados (700 p^2) al grado de “NACE NO.1 - White Metal Blast Cleaning”. Las áreas serán seleccionadas por el Inspector Certificado por NACE (National Association of Corrosion Engineers) de la AEE.
- El alcance del trabajo en el interior del tanque incluye la preparación de superficie y aplicación de recubrimiento para la protección de “UV light” el producto “Sherwin Williams Sher-Loxane 800 / Finish Top Coat” a toda el área de la anilla superior del envolvente y todo el angular de tope circunferencial. Área aproximada de la superficie es mil setecientos pies cuadrados (1700 p^2).

3. <u>Cubierta exterior del tanque</u>

- El alcance del trabajo en el exterior del tanque incluye la aplicación de recubrimiento anticorrosivo y la preparación de superficie a un área adicional de quinientos pies cuadrados (500 p^2) al grado de “Commercial Wet Abrasive Blast Cleaning / SSPC-SP 6 (WAB)/NACE WAB-3” con un grado de Flash Rust no mayor de NACE WAB-3 L (Light). Las áreas serán seleccionadas por el Inspector Certificado por NACE (National Association of Corrosion Engineers) de la AEE.
- El alcance del trabajo incluye aplicar en diez pies cuadrados (10 p^2) de área de superficie el producto “Steel Seam FT910”- “epoxy patching and surfacing compound” de Sherwin Williams. El espesor para la evaluación de rendimiento del producto a utilizar será de 1/8” (pulgada). Las áreas serán seleccionadas por el Inspector Certificado por NACE (National Association of Corrosion Engineers) de la AEE.
- El alcance del trabajo incluye proveer y aplicar el producto “Sikaflex 1a" del manufacturero SIKA® a todo el espacio entre la anilla circunferencial de piso proyectada al exterior del tanque y la anilla base de concreto (“Chime & Annular Ring”).
- Se incluye la aplicación de recubrimiento anticorrosivo y la preparación de superficie a la fundación del tanque (anilla-base de concreto) al grado de NACE No.4.

4. **<u>Pruebas mínimas requeridas en procedimiento de aplicación de cubiertas</u>**
   - El programa de control de calidad establecido por el Contratista debe incluir como mínimo las siguientes pruebas:
     - Prueba de contaminantes no visibles en la superficie (sales/iones)-SSPC Guide15/ Método: A2
       - ✓ Se realizarán las pruebas en el interior y en el exterior del tanque antes de cada aplicación.
       - ✓ La prueba se realizará cada 500 pies cuadrados de área de superficie.
       - ✓ Las superficies con las siguientes concentraciones se considerarán como contaminadas
         - ❖ Cloruro > 5 ppm (µg/cm²)
         - ❖ Nitrato > 10 ppm (µg/cm²)
         - ❖ Sulfato > 10 ppm (µg/cm²)
       - ✓ En el caso de contaminación en la superficie se utilizará lavado con agua a una presión mínima de (4,000psi) con solución de CHLOR*RID®. La razón de disolución o mezcla con agua será de 1:50, la aplicación se realizará siguiendo las especificaciones del manufacturero.
       - ✓ La prueba será realizada antes y después de la preparación de superficie especificada y entre cada capa de pintura, antes de ser aplicada.
       - ✓ Si han transcurrido más de 24 horas entre la preparación de la superficie y la aplicación de pintura, será compulsorio y responsabilidad del Contratista limpiar la misma nuevamente.
     - Corroborar el perfil de anclaje cada veinticinco pies cuadrados (25p²) de área de superficie y el pH en cada limpieza WAB-3L.
       - ✓ Para esta prueba se deberá utilizar el Micrómetro y el Equipo DeFelsko Positector RTR-P: ADV 3D images.
     - Prueba de partículas contaminantes (Dust Tape Test Kit) ISO 8502-3/ se deberá utilizar el “Elcometer 142”
     - Previo a la aplicación de cada capa de pintura se realizará una limpieza (SSPC-SP1) con solvente: Área Interior & Área Exterior “SW Laquer Thinner 120” y luego una limpieza con alcohol 98%-99% “Isopropyl” a todas las superficies del interior y exterior del tanque. También se verificarán y documentarán las siguientes condiciones:
       - ✓ Temperatura aire (ambiente)
       - ✓ Temperatura superficie (substrato)
       - ✓ Humedad Relativa
       - ✓ Punto de rocío “Dew point”
       - ✓ Razón de mezcla de las partes de las pinturas, tiempo de mezcla y tiempo de reposo.
     - Verificar los espesores húmedos. Producir documentación donde se relacione esta data con la localización en la estructura.
     - Verificar los espesores secos. Producir documentación “Lay Out /Mapping” dónde se relacione esta data con localización en la estructura. Esta prueba se realizará siguiendo el estándar de SSPC-PA2. Se tomará como criterio de aceptación el espesor mínimo de las

especificaciones del proyecto y no el método del estándar. El Área de las pruebas será cada cincuenta pies cuadrados (50 p²).

- ✓ La prueba se realizará en cada una de las capas del sistema especificado.
- ✓ Se deberá utilizar el equipo DeFelsko Positector 6000 Advanced Body with FN Probe.
- ✓ Se deberá verificar la calibración del equipo en el proyecto utilizando los estándares de calibración "DeFelsko".

- Prueba de Adhesión: La prueba será realizada por el inspector NACE Nivel 2 del Contratista. Las áreas serán seleccionadas por la AEE. El contratista proveerá todo lo necesario (equipo, materiales, labor, etc.) para reparar las áreas afectadas por las pruebas.
- El Inspector NACE Nivel 2 del Contratista deberá realizar las pruebas de discontinuidad del recubrimiento (Holiday Test) al 100% de la superficie interior y exterior del tanque, siguiendo los estándares de NACE SP 0188-2006 y del manufacturero del producto. El equipo a utilizar para la prueba deberá ser de electrodo de exploración (exploring electrode) o sonda (probe) de contacto continuo sobre la superficie.
  - ✓ Se deberá utilizar para la prueba de "Low Voltage" el equipo Elcometer 270-4 con rango de 90Volts DC.
  - ✓ Se deberá utilizar para la prueba de "High Voltage" el equipo Elcometer 266DC. 100% Interior Coating Lining.
  - ✓ Las pruebas serán realizadas en presencia del inspector "NACE" de la AEE.

- Todas las pruebas realizadas durante todo el proceso de Control de Calidad QC y Aseguramiento de la Calidad QA, deberán ser documentadas y presentadas en dibujos-esquemáticos "LayOuts / Mapping" con la localización y referencias exactas en la estructura del tanque. *Se deberán realizar en el programa AutoCad.*

5. Pintura (Coatings)

- Esta sección incluye los métodos y requerimientos para preparar las superficies y pintarlas.
- Si el color o acabado no se ha designado, el Ingeniero de la AEE seleccionará de los colores estándares o los acabados disponibles.
- El color para la capa final en el exterior del tanque será Blanco, SW Sher-Loxane 800 -Ready Mix Manf.
- El color para el barandal, pasamanos, plataforma, etc., será OSHA Safety Yellow - Ready Mix Manf.
- Los productos utilizados para la capa de base, capa intermedia, "spot primer", "stripe coat" y capa final serán del mismo fabricante. *Esto incluye el solvente (Thinner).
  - No diluir la pintura con thinner.
- Sistemas de Pinturas para las superficies:
  - **Interior del Tanque – Lining Coating System X (Immersion)**

Product Description	Coat Type	VS min.	DFT min. (mils)	Coating Specification
SW NOVA-PLATE 325	Stripe Coat	98 %	{5.0}	NOTE *A
SW NOVA-PLATE 325	Full Coat	98 %	25.0	NOTE *B
SW NOVA-PLATE 325	Full Coat	98 %	10.0	NOTE *C
SW SHER-LOXANE 800	Full Coat	90 %	5.0	NOTE *D

TOTAL MINIMUM DRY FILM THICKNESS	30.0 MILS

- ✓ *A- { } DFT: Not included in the DFT column totals.
  - ❖ Additional Stripe Coat shall be applied over all welds seams, corners and edges according to SSPC-PA Guide11 Standard.
- ✓ *B- Full Coat Lining System: Novolac Epoxy, Glass & Ceramic Filled Tank Lining.
  - ❖ (NACE No.1 Areas). For 700sf (square feet). Additional areas selected by PREPA.
- ✓ *C- Full Coat Lining System: Novolac Epoxy, Glass & Ceramic Filled Tank Lining.
  - ❖ (NACE No.4 Areas) 100% interior tank surface areas. Approximated 7,000sf (square feet).
- ✓ *D- Full Coat System: Epoxy Siloxane, high solids finish top coat. White color.
  - ❖ For 1,700sf (square feet): Interior surfaces- Tank Shell Top Ring, Top Circ. Angle & all elements.

NOTES:

1. Products shall be complied with ISO 12944 Standard.
2. All products are from Sherwin Williams Company.

- ➢ **Exterior del Tanque – Coating System External Exposure**

Product Description	Coat Type	VS min.	DFT min. (mils)	Coating Specification
SW Epoxy Mastic Aluminum II	Spot Repair Coat	80 %	{5.0}	NOTE *B; NOTE *C & NOTE *E
SW Epoxy Mastic Aluminum II	Zone Painting Coat	80 %	{5.0}	NOTE *B; NOTE *C & NOTE *E
SW Epoxy Mastic Aluminum II	Stripe Coat	80 %	{5.0}	NOTE *B & NOTE *C
SW Macropoxy 646FF Flake Epoxy	Stripe Coat	72%	{5.0}	NOTE *A & NOTE *B
SW Macropoxy 646FF Flake Epoxy	Full Coat	72%	8.0	NOTE *A
SW SHER-LOXANE 800 Siloxane	Full Coat	90 %	4.0	NOTE *D

TOTAL MINIMUM DRY FILM THICKNESS	12.0 MILS

- ✓ *A- Full Coat: High solids, High Build, fast drying, polyamide epoxy.
  - ❖ For Stripe Coat used Macropoxy 646FF Flake Filled.

- ✓ *B- { } DFT: Not included in the DFT column totals.
  - ❖ Additional stripe coat shall be applied over all welds seams and edges.
- ✓ *C- Spot & Zone Coat & Stripe Coat: High solids, aluminum filled, polyamine bisphenol epoxy.
- ✓ *D- Top Coat: High performance, High solids epoxy siloxane Finish Top Coat.
  - ❖ For all tank exterior surfaces
  - ❖ Apply additional stripe coat 3.0 mils dft over all welds seams and edges.
- ✓ *E- Spot Repair & Zone Painting Coat. Includes WAB-6L areas and all areas of steel exposed to the environment after surface preparation @ PREPA Specifications.
  - ❖ Spot=A procedure entailing surface cleaning of isolated corrosion or paint breakdown areas using appropriated cleaning methods and subsequent coating of these areas.
  - ❖ Zone=A procedure entailing surface preparation using appropriate cleaning methods and painting of a defined area of a structure. Zone painting may involve many spot repairs within a defined area or removal of all coating in a defined area, followed by application of a new coating system to that area.

    Definitions from SSPC: TECHNOLOGY UPDATE No.3: OVERCOATING (SSPC-TU 3)

NOTES:

- Products shall be complied with ISO 12944 C5 Marine Very High Corrosivity Category and **NORSOK** Standard.
- All products are from Sherwin Williams Company.

6. **<u>Ejecución</u>**

- Examinar el substrato y las condiciones bajo las cuales se realizará el trabajo, para verificar que se cumpla con los requerimientos de aplicación de la pintura. No comience a aplicar la pintura hasta que las condiciones no aceptables sean corregidas.
- El proceso de “feathering” será requerido previo a la aplicación de pintura siguiendo los estándares de NACE.
- Preparación de superficie
  - ➢ Antes de la aplicación de la pintura todas las superficies serán preparadas con las siguientes condiciones:
    - ✓ Preparación de superficie interior
      - ❖ Preparación de Superficie: SSPC-SP1, lavado con agua a alta presión (4,000 psi mínima), utilizando equipo de boquilla rotativa (rotating nozzle) para remover todo el material suelto. A todas las superficies se le aplicará un removedor de grasas y aceites, igual o aprobado igual al “PPG- PREP 88 Cleaner, que será removido con el procedimiento de lavado con agua a alta presión.
      - ❖ Este procedimiento deberá realizarse todas las veces necesarias hasta remover completamente todos los contaminantes de la superficie.

- Luego de completar el procedimiento de remover todos los contaminantes se realizará un lavado con agua a alta presión (4,000 psi mínima) con solución de ChloRid, para remover sales.
- Una vez finalizado el procedimiento de la limpieza con agua a alta presión se realizará una limpieza al grado de NACE No.4 / (SSPC-SP7) Brush-Off Blast Cleaning. ***Será mandatorio utilizar en conjunto ambos sistemas en todas las áreas de superficies. La preparación de superficie obtenida será revisada utilizando las guías y referencias fotográficas para aceros preparados por medio de sistemas abrasivos en seco (SSPC-VIS 1).***
- AREA ADICIONAL DE 700 p^2:
    - NACE No.1 White Metal Blast Cleaning: Revisar utilizando las guías y referencias fotográficas (SSPC-VIS 1).
    - Toda la pintura remanente que continúe adherida a la superficie luego de finalizar el proceso de lavado con agua a alta presión y/o limpieza con medios abrasivos se le realizara una limpieza con solvente "SW Laquer Thinner 120" y alcohol 98%-99% "Isopropyl".
    - Se deberá corroborar que no quede en la superficie residuo alguno de entizamiento (chalking coating) y/o polvo antes de la aplicación de la capa de pintura.
    - La razón de dilución o (mezcla) con agua para el PPG-PREP 88 será de 1:2, una (1) parte del concentrado del PREP 88 y dos (2) partes de agua. La aplicación se realizará siguiendo las especificaciones del manufacturero.
- PERFIL DE ANCLAJE:
    - El mínimo perfil de anclaje en la superficie será entre 3.0 @ 5.0 milésimas de pulgada (mils) con rugosidad angular.
    - El perfil de rugosidad de la superficie será revisado según el estándar de ASTM D 4417-B & ASTM D 4417-C
    - Para esta prueba se deberá utilizar el micrómetro y el Equipo DeFelsko Positector RTR-P: ADV 3D images.
    - La prueba de perfil de anclaje en la superficie será realizada cada veinticinco pies cuadrados (25 p^2) de superficie.
    - Producir documentación dónde se relacione esta data con localización en la estructura.
- PRUEBA PARA DETECTAR HIDROCARBUROS, ACEITES Y GRASAS:
    - Previo a la aplicación de la pintura o "lining" se deberá realizar las pruebas para detectar la presencia de hidrocarburos, aceites y grasas contaminantes a toda la superficie interna del tanque. La prueba será realizada por el método de la luz ultravioleta UV (Ultraviolet Light), siguiendo las instrucciones del manufacturero del equipo y el ASTM. El equipo a utilizarse deberá cumplir como mínimo con las siguientes características:

- "UV Light Inspection for Detection of Hydrocarbon, Oil and Grease. Hight intensity, long throw, medium area
- UV search light". "High Output/High Intensity discharge 35W UV bulb with full UV light output".
- En caso de detectar la presencia de hidrocarburos, aceites o grasas en la superficie, el contratista deberá proceder con la limpieza nuevamente de la misma para cumplir con las especificaciones técnicas de la AEE.
- Se deberá entregar Procedimiento y Reporte Final para esta prueba.

✓ PREPARACIÓN DE SUPERFICIE EXTERIOR 100% - Área de superficie del Tanque

- ❖ Preparación de Superficie: SSPC-SP1, lavado con agua a alta presión (4,000 psi mínima) para remover todo el material suelto y entizamiento. A todas las superficies se le aplicará un removedor de aceites y grasas, igual o aprobado igual al "PPG-PREP 88 Cleaner", que será removido con el procedimiento de lavado con agua a alta presión. Luego de este procedimiento se realizará un lavado con agua a alta presión (4,000 psi mínima) con solución de ChloRid, para remover contaminantes.
- ❖ Este procedimiento deberá realizarse todas las veces necesarias hasta remover completamente todos los contaminantes de la superficie.
- ❖ Toda la pintura remanente que continúe adherida a la superficie luego de finalizar el proceso de lavado con agua a alta presión se le realizara una limpieza con solvente "SW Laquer Thinner 120" y alcohol 98%-99% "Isopropyl".
- ❖ Se deberá corroborar que no quede en la superficie residuo alguno de entizamiento (chalking coating) antes de la aplicación de la capa de pintura.
- ❖ La razón de dilución o (mezcla) con agua para el PPG-PREP 88 será de 1:2, (1) parte del concentrado del PREP 88 y (2) partes de agua. La aplicación se realizará siguiendo las especificaciones del manufacturero.
- ❖ Área Adicional de quinientos pies cuadrados (500 p^2) "Wet Abrasive Blast Cleaning" WAB-3L
  - Una vez finalizado el procedimiento de la limpieza con agua a alta presión, se realizará una preparación de superficie "Wet Abrasive Blast Cleaning" al grado de (SSPC-SP6 / NACE NO.3) "Commercial Blast Cleaning" con un grado de "Flash Rust" no mayor WAB-3 L. L= (Light Flash Rust)
  - La preparación de superficie obtenida será revisada utilizando las guías y referencias fotográficas para aceros preparados por medio de sistemas abrasivos en húmedo (SSPC-VIS 5 / NACE VIS 9).
- ❖ PERFIL DE ANCLAGE
  - El mínimo perfil de anclaje en la superficie será entre 2.0 @ 3.0 milésimas de pulgada (mils)

- con rugosidad angular.
- El perfil de rugosidad de la superficie será revisado según el estándar de ASTM D 4417-B & ASTM D 4417-C.
- La prueba de perfil de anclaje en la superficie será realizada cada veinticinco pies cuadrados (25 p^2) de superficie limpia al grado de NACE WAB-3L.
- Producir documentación dónde se relacione esta data con localización en la estructura.

- SOBRE RECUBRIMIENTO EN EL ÁREA INTERIOR Y ÁREA EXTERIOR DEL TANQUE
  - De exceder el tiempo máximo permitido de sobre-recubrimiento (overcoating interval & overcoat window) del producto, será compulsorio realizar la preparación de superficie al grado de NACE No.4 / SSPC-SP7 "Brush-Off Blast Cleaning" con perfil de anclaje mínimo de 3.0-5.0 mils, previo a la aplicación de las siguientes capas al 100% de la superficie.
  - Luego se realizará una limpieza de la superficie al grado de SSPC-SP1, lavado con agua a alta presión (4,000 psi mínima) seguido por una limpieza con alcohol 98%-99% a toda la superficie. Se deberá realizar la prueba de contaminantes a la superficie siguiendo las especificaciones técnicas de la AEE.
- TANK – STEEL STRUCTURE PITTING CORROSION REPAIRS SYSTEM (Interior & Exterior Areas)

PRODUCT DESCRIPTION	**COAT TYPE**	**VS min. %**	**DFT min. (mils)**	**COATING SPECIFICATIONS**
SW STEEL -SEAM FT910	EPOXY FILLER	100	PDS	EPOXY PATCHING

  - El contratista aplicara el producto siguiendo las especificaciones técnicas establecidas por el manufacturero.
  - El alcance del trabajo incluye aplicar en diez pies cuadrados (10pc) de área de superficie el producto Steel-Seam FT910 del manufacturero Sherwin Williams.
  - El espesor para la evaluación de rendimiento del producto a utilizar será de 1/8" (pulgada).
    - ✓ La preparación de superficie, será NACE WAB-3L.
  - Las áreas serán seleccionadas por el Inspector Certificado por NACE "National Association of Corrosion Engineers" de la Autoridad de Energía Eléctrica.
- Anilla Circunferencial de Piso "*Chime & Annular Ring*":
  - El alcance del trabajo incluye proveer y aplicar el producto "Sikaflex 1a / color White" del manufacturero SIKA® a todo el espacio entre la anilla circunferencial de piso proyectada al exterior del tanque y la anilla base de concreto.
  - Se deberá remover todo material existente entre el chime y la anilla de concreto previo a la instalación del Sikaflex 1a.
  - Se deberá sellar completamente el área para evitar la intrusión de agua o algún otro contaminante del ambiente.
  - Se aplicará siguiendo las especificaciones técnicas del producto, establecidas por el manufacturero.
  - Se deberá aplicar como mínimo 1" hacia el interior del "chime".

7. Aplicación

- El Contratista deberá cumplir con las reglamentaciones aplicables para salud y seguridad, así como para el control de contaminantes y polvo fugitivo, durante todas las etapas del proyecto.
- Aplicar la pintura de acuerdo a las direcciones del fabricante y al estándar SSPC-PA1. Utilizar técnicas y equipo adecuados para el substrato y el tipo de material a ser aplicado. La pintura será aplicada mediante el método de rolo.
    - Se utilizará Microfiber Roller para el Epoxy y MoHair Roller para el Epoxy Siloxane Top Coat.
    - El uso de brocha se permitirá en las áreas inaccesibles para la aplicación por medio de Spray, Rolo y áreas de stripe coat.
    - El rolo o brocha a utilizar no podrá liberar partículas que produzca discontinuidad en el recubrimiento aplicado, el mismo deberá ser sometido para la evaluación y aceptación por parte de la AEE, previo a ser utilizado.
- De ser necesario el contratista tomará las medidas necesarias para que la aplicación de pintura no se afecte por polvo fugitivo o por otras emanaciones del lugar de trabajo.
- No se pintará sobre superficies sucias, mohosas, grasa, aceite, humedad, laminaciones, etc.
- El Contratista deberá remover toda salpicadura de soldadura, escoria remanente, exceso de soldaduras remanentes durante la fabricación original del tanque, etc., previo a la preparación de la superficie especificada.
    - Aplica a todas las áreas del interior y exterior del tanque dónde se aplicará el nuevo recubrimiento anticorrosivo.
- El espesor de la película requerido será el mismo independientemente del método de aplicación. No se aplicarán capas subsiguientes hasta que la capa previa se haya curado tal como indique la literatura del fabricante.
- No se aplicará Sher-Loxane 800 sobre superficies que excedan los 110^{o}F de Temperatura.
- No se aplicará Epoxy Mastic Aluminum II sobre superficies que excedan los 110^{o}F de Temperatura.
- No se aplicará Macropoxy 646FF sobre superficies que excedan los 110^{o}F de Temperatura.
- No se aplicará Nova-Plate 325 Ceramic Epoxy Lining sobre superficies que excedan los 95^{o}F de Temperatura.
- En la superficie interior y exterior del tanque se requerirá una capa de pintura adicional de 5 milésimass en seco “stripe coat” previo a la aplicación del sistema especificado.
    - Las áreas incluyen, pero no se limitan a: los bordes, las esquinas y las soldaduras.
    - Esta aplicación se realizará en cumplimiento con el estándar SSPC-PA Guide11.
- El acabado final deberá presentar uniformidad en el color.
    - No se permitirá sombras, manchas, sags, overspray, colored translucency, etc.

8. <u>ROTULACIÓN DEL TANQUE</u>

- El contratista proveerá e instalará la rotulación del Tanque. Se requerirá solamente (1) una rotulación.
- La AEE seleccionará el área donde será instalada.
- El contratista deberá remover toda la rotulación existente en el tanque.

- El Tanque se identificará de la siguiente forma:

  - El volumen del tanque se representará numéricamente. volumen del tanque (GALS)
- El alcance incluye proveer e instalar el Diamante de Comunicación de Riesgo en los (4) puntos cardinales. (NFPA DIAMOND HAZARD LABELING WITH NUMBERS)
  - Las dimensiones mínimas del diamante serán de 16” x 16”.

  - La leyenda numérica del interior del diamante será seleccionada por la AEE.
- La rotulación del Tanque tendrá las siguientes características:
  - El material deberá ser igual o aprobado igual al ORACAL 951 PREMIUM CAST.
  - El color de las letras será seleccionado por la AEE. Se deberá presentar carta de Colores.
  - El tipo de letra será Arial.
  - El tamaño de las letras será de 10” pulgadas de alto y el logo de 14”. Largo de cada Rotulo 12’pies.
  - El ancho de las líneas que componen cada letra será de 3” pulgadas.
  - El material de las letras será de incomparable durabilidad, conformabilidad y estabilidad dimensional.
  - Espesor del material de las letras será de 2 milésimas (milésimas de pulgada).
  - La durabilidad del material expuesto al exterior (outdoor) deberá ser de 10 años.
  - El adhesivo será solvente de poliacrilato permanente (Solvent Polyacrylate).
- El contratista deberá someter una muestra del material a utilizarse para la evaluación y aceptación por la AEE.
- El contratista deberá someter el Arte creado para la evaluación y aceptación por la AEE.
- Se incluye Logo AEE que será incorporado como parte del Arte en la rotulación del tanque.

9. Informe Final de los trabajos realizados

- El Informe final de los trabajos de rehabilitación estructural deberá incluir lo siguiente:
  - Documentación de los procedimientos de soldadura y cualificación de los soldadores.
  - Procedimientos de pruebas no destructivas y certificación del personal que las realizara.
  - Reportes de pruebas realizadas e inspección por el inspector de soldadura CWI.
  - Reporte de inspección por el Inspector API 653, certificando los trabajos realizados.
  - Dibujos / Layouts / As-Builts: Se deberán realizar dibujos, "layouts" y "As-Builts" de todo lo realizado. Todo dibujo deberá ser sometido a la AEE para la evaluación y aprobación correspondiente. Los dibujos deberán ser realizados en el programa "AutoCad". El informe Final se deberá presentar y entregar a la AEE en formato impreso y digital "PDF" en un "flash drive".

10. ENTREGA, MANEJO Y ALMACENAMIENTO

- Los productos se entregarán en el proyecto, propiamente identificados con toda la información necesaria para su identificación. Se incluirán los SDS de los materiales.
- El contratista será responsable de la entrega, descarga, almacenamiento, vigilancia y manejo de los materiales o equipo a utilizar en el proyecto y de mantenerlos en condiciones óptimas, en cumplimiento con las condiciones establecidas por el manufacturero del sistema seleccionado. El área de almacenamiento para los productos (pintura, etc.) deberá tener un acondicionador de aire para el control de la temperatura.
- Todo producto a utilizarse en el proyecto estará aprobado por la AEE antes de entrar a los predios de la misma.

ANEJOS – Ver sección de anejos.

Anejo1

PRE-BID COATING SYSTEM MANUFACTURER AGREEMENT

Property: WTP RETENTION TANK No.3

Owner: AEE / PREPA-Puerto Rico Electric Power Authority

Location: PALO SECO POWER PLANT, TOA BAJA, PR

Job Type: Tank Rehabilitation / As PREPA Coating Technical Specifications

Coating System Manufacturer: _____

Contractor: _____ Subcontractor: _____(*If it is applied)

PRE-BID COATING SYSTEM MANUFACTURER AGREEMENT

1. We the coating system manufacturer visit and inspect the area where the coating system is intended to be applied.

2. We the coating system manufacturer certify that our product can be applied as required on bid documents (plans, specifications, etc.) without any additional requirement.

3. We the coating system manufacturer will provide physical presence through our technical representative which is an employee of our company.

4. Our technical representative will provide weekly or as requested physical presence during the coating system installation and provide written report of each visit to the project contractor, inspector and owner.

5. Our company have technical representative personnel available all year around physically in Puerto Rico.

6. Our company will provide written approval to proceed with the installation of each stage of the coating system including the existing substrate inspection.

7. Our company will provide the manufacturer material warranty as required on bid documents.

8. Our coating system comply with all the requirements of this bid documents.

9. The contractor and subcontractor mentioned above is an approved installer by our company and have the knowledge and experience in the type of work request on bid documents.

Notes: Submit this document with signature

** If this document is not granted by the coating system manufacturer the bid will not be considered **

COATING MANUFACTURER REPRESENTATIVE:

Signed: _____ Title: _____

By: _____ _____ _ Date: _____ _____ __

ANEJO 2

3-YEARS LIMITED WARRANTY

PROTECTIVE COATINGS CORROSION WARRANTY

INTERIOR-LINING COATING SYSTEM

Coating System Manufacturer: XXXXXXXXXXXXXXXXX

Completion Date: XXXXXXXXXXXXXXXXX

Applicator/Contractor: XXXXXXXXXXXXX (hereinafter the "Contractor")

Building Owner: Puerto Rico Electric Power Authority (AEE/PREPA) (hereinafter the "Owner")

Building Name: REHABILITATION RETENTION TANK No.3 (hereinafter the "Building").

Building Address: PREPA – PALO SECO- POWER PLANT

City/Sate/Province: TOA BAJA, PR

Type of Construction: Steel

Use of Building: Puerto Rico Electric Power Authority – SERVICE WATER STORAGE RETENTION TANK No.3

Product Used: [Coating System]

- XXXXXXXXXXXXXXXXXXX **(AS PREPA TECHNICAL SPECIFICATIONS)**
  - XXXXXXXXXXX

LIMITED WARRANTY

COATING MANUFACTURER warrants to the undersigned Building Owner that for a Warranty Period of **3 years from The Warranty at set forth below**, **COATING MANUFACTURER** paints will be free of defected resulting in more than minimal peeling, blistering, chalking or loss of adhesion or other than gradual fading. The degree of ay expected fading will be directly related to the depth and shade of color, environment and exposure.

Any claim hereunder must be presented during the warranty period and within sixty (60) days after any Covered Condition has occurred; by sending written notice to **COATING MANUFACTURER** failure to give notice within the specified time shall discharge **COATING MANUFACTURER** from any obligations under this warranty.

THE LIMITED WARRANTY WILL APPLY ONLY IF THE FOLLOWING ARE ADHERED TO:

All applications and repairs of **COATING MANUFACTURER** Paint must be performed strictly in accordance with written specifications supplied by the **COATING MANUFACTURER**.

Also, prior to any application the undersigned Owner, together with the contractor and representative of the **COATING MANUFACTURER** must observe and approve and application of **COATING MANUFACTURER** to a limited portion of the surface to be coated. The procedure followed in conducting this limited application will serve as the job standard for the remainder of the application.

It is the responsibility of the Contractor to strictly follow both the job standard and the written specifications supplied by the **COATING MANUFACTURER** if the owner causes the **COATING MANUFACTURER** Paint to be painted or coated over at any time during the Warranty Period, this limited Warranty will remain in effect only if the painting or over coating is performed strictly in accordance with written specifications provided by the **COATING MANUFACTURER**.

WHAT THIS LIMITED WARRANTY DOES NOT COVER:

Excluded from coverage under this Limited Warranty are water intrusion, peeling, blistering, chalking, fading and loss of adhesion, resulting, directly or indirectly, from causes other than defects in the **COATING MANUFACTURER** Paint, or from causes beyond the control of **COATING MANUFACTURER** such as, but not limited to: excessive heat or moisture, hail, floods, hurricanes, windstorms and other Acts of God, improper cleaning or maintenance, mechanical or electrical damage, abrasion, collision, environmental pollution, condensation or other moisture under or from within the building or surface, settling or movement of the building, job field conditions, improper job preparation, delaminating of existing materials, structural defects or damage, seepage or leakage through uncoated areas of the building, any application of the coating to areas so located as to make effective application difficult or impossible, or any failure to strictly follow the procedures and specification provided by **COATING MANUFACTURER**.

This Limited Warranty does not extend to the workmanship or conduct of any Contractor and **COATING MANUFACTURER** will not be responsible for correcting failures causes by faulty workmanship. **EXCEPT AS SET FORTH IN THIS LIMITED WARRANTY, COATING MANUFACTURER MAKES NO WARRANTIES WITH RESPECT TO COATING MANUFACTURER PAINT, OR OTHERWISE.** Nothing in this Limited Warranty shall be deemed to extend or limit the duration provided by law of any implied warranty of merchantability or any other implied warranty.

WHAT COATING MANUFACTURER WILL BE LIABLE FOR

If a breach of this Limited Warranty or any implied warranty occurs during the Warranty Period, **COATING MANUFACTURER** will at its option, either provide free of charge all **COATING MANUFACTURER** Paints materials, or refund the portion of the purchase price attributable to such defective **COATING MANUFACTURER** Paint. The Contractor will be responsible for all materials, tools, equipments and labor expenses necessary to repair or replace any defective **COATING MANUFACTURER** Paint during the Warranty Period.

The foregoing shall be **COATING MANUFACTURER** sole liability and Owner's sole and exclusive remedy with respect to or arising out of **COATING MANUFACTURER** Paint, or any defect, deterioration or failure of **COATING MANUFACTURER** Paint. **COATING MANUFACTURER SHALL NOT BE LIABLE, WHETER IN EXPRESS OR IMPLIED WARRANTY, CONTRACT, TORT OR OTHERWISE, FOR ANY DAMAGES TO ANY PART OF THE BUILDING, OR ANY OTHER DAMAGES, WHETHER DIRECT, INCIDENTAL. CONSEQUENTIAL OR**

OTHERWISE. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

Coating Manufacturer Representative:

Signed: _____

By: _____ _____

Title: _____

Date: _____

Owner: Puerto Rico Electric Power Authority

Signed: _____

By: _____

Title: _____

Date: _____

Contractor: XXXXXXXXXXXX

Signed: _____

By: _____

Title: _____

Date: _____

ANEJO 3

3-YEARS LIMITED WARRANTY

PROTECTIVE COATINGS CORROSION WARRANTY

EXTERIOR-LINING COATING SYSTEM

Coating System Manufacturer: XXXXXXXXXXXXXXXXX

Completion Date: XXXXXXXXXXXXXXXXX

Applicator/Contractor: XXXXXXXXXXXXX (hereinafter the "Contractor")

Building Owner: Puerto Rico Electric Power Authority (AEE/PREPA) (hereinafter the "Owner")

Building Name: REHABILITATION RETENTION TANK No.3 (hereinafter the "Building").

Building Address: PREPA – PALO SECO- POWER PLANT

City/Sate/Province: TOA BAJA, PR

Type of Construction: Steel

Use of Building: Puerto Rico Electric Power Authority – SERVICE WATER STORAGE RETENTION TANK No.3

Product Used: [Coating System]

- XXXXXXXXXXXXXXXXXXX **(AS PREPA TECHNICAL SPECIFICATIONS)**
  - XXXXXXXXXXX

LIMITED WARRANTY

COATING MANUFACTURER warrants to the undersigned Building Owner that for a Warranty Period of **3 years from The Warranty at set forth below**, **COATING MANUFACTURER** paints will be free of defected resulting in more than minimal peeling, blistering, chalking or loss of adhesion or other than gradual fading. The degree of ay expected fading will be directly related to the depth and shade of color, environment and exposure.

Any claim hereunder must be presented during the warranty period and within sixty (60) days after any Covered Condition has occurred; by sending written notice to **COATING MANUFACTURER** failure to give notice within the specified time shall discharge **COATING MANUFACTURER** from any obligations under this warranty.

THE LIMITED WARRANTY WILL APPLY ONLY IF THE FOLLOWING ARE ADHERED TO:

All applications and repairs of **COATING MANUFACTURER** Paint must be performed strictly in accordance with written specifications supplied by the **COATING MANUFACTURER**.

Also, prior to any application the undersigned Owner, together with the contractor and representative of the **COATING MANUFACTURER** must observe and approve and application of **COATING MANUFACTURER** to a limited portion of the surface to be coated. The procedure followed in conducting this limited application will serve as the job standard for the remainder of the application.

It is the responsibility of the Contractor to strictly follow both the job standard and the written specifications supplied by the **COATING MANUFACTURER** if the owner causes the **COATING MANUFACTURER** Paint to be painted or coated over at any time during the Warranty Period, this limited Warranty will remain in effect only if the painting or over coating is performed strictly in accordance with written specifications provided by the **COATING MANUFACTURER**.

WHAT THIS LIMITED WARRANTY DOES NOT COVER:

Excluded from coverage under this Limited Warranty are water intrusion, peeling, blistering, chalking, fading and loss of adhesion, resulting, directly or indirectly, from causes other than defects in the **COATING MANUFACTURER** Paint, or from causes beyond the control of **COATING MANUFACTURER** such as, but not limited to: excessive heat or moisture, hail, floods, hurricanes, windstorms and other Acts of God, improper cleaning or maintenance, mechanical or electrical damage, abrasion, collision, environmental pollution, condensation or other moisture under or from within the building or surface, settling or movement of the building, job field conditions, improper job preparation, delaminating of existing materials, structural defects or damage, seepage or leakage through uncoated areas of the building, any application of the coating to areas so located as to make effective application difficult or impossible, or any failure to strictly follow the procedures and specification provided by **COATING MANUFACTURER**.

This Limited Warranty does not extend to the workmanship or conduct of any Contractor and **COATING MANUFACTURER** will not be responsible for correcting failures causes by faulty workmanship. **EXCEPT AS SET FORTH IN THIS LIMITED WARRANTY, COATING MANUFACTURER MAKES NO WARRANTIES WITH RESPECT TO COATING MANUFACTURER PAINT, OR OTHERWISE.** Nothing in this Limited Warranty shall be deemed to extend or limit the duration provided by law of any implied warranty of merchantability or any other implied warranty.

WHAT COATING MANUFACTURER WILL BE LIABLE FOR

If a breach of this Limited Warranty or any implied warranty occurs during the Warranty Period, **COATING MANUFACTURER** will at its option, either provide free of charge all **COATING MANUFACTURER** Paints materials, or refund the portion of the purchase price attributable to such defective **COATING MANUFACTURER** Paint. The Contractor will be responsible for all materials, tools, equipment and labor expenses necessary to repair or replace any defective **COATING MANUFACTURER** Paint during the Warranty Period.

The foregoing shall be **COATING MANUFACTURER** sole liability and Owner's sole and exclusive remedy with respect to or arising out of **COATING MANUFACTURER** Paint, or any defect, deterioration or failure of **COATING MANUFACTURER** Paint. **COATING MANUFACTURER SHALL NOT BE LIABLE, WHETER IN EXPRESS OR IMPLIED WARRANTY, CONTRACT, TORT OR OTHERWISE, FOR ANY DAMAGES TO ANY PART OF THE BUILDING, OR ANY OTHER DAMAGES, WHETHER DIRECT, INCIDENTAL. CONSEQUENTIAL OR**

OTHERWISE. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

Coating Manufacturer Representative:

Signed: _____

By: _____ _____

Title: _____

Date: _____

Owner: Puerto Rico Electric Power Authority

Signed: _____

By: _____

Title: _____

Date: _____

Contractor: XXXXXXXXXXXX

Signed: _____

By: _____

Title: _____

Date: _____

Government of Puerto Rico

Puerto Rico Electric Power Authority

Hurricane Maria DR-PR-4339

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

Boiler's Refractory, Insulation, Scaffolding and Painting

Palo Seco Steam Plant, U.4

1/20/2022

Introduction

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

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

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

The sections included in this document are:

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

Document Revision History

Version	Date	Summary of Changes

Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Palo Seco Steam Plant, U.4 – Boiler's Refractory, Insulation, Scaffolding and Painting
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

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

Program Manager: ***<Name>***

<Insert title here>

PREPA Project Sponsor: ***<Name >***

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Palo Seco Steam Plant, Unit 4	[redacted]

Note: *GPS coordinates are required for all facilities.*

2.2. Facilities Description

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

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Rehabilitation work is needed at Unit 4 Boiler of Palo Seco Steam Plant, due to environmental maintenance. Boiler rehabilitation includes refractory, insulation, scaffolding and painting. This work will allow the unit to be reincorporated into service, and will provide greater reliability and stability to power generation in the northern area of the island.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the Boiler's refractory, insulation, scaffolding and painting of unit 4 at the Palo Seco Steam Plant will consist of the following:

A. The Contractor shall inspect, install, rehabilitate and repair **Refractory** in:
   - ducts, lobby, chimneys, and other boiler areas
   - inspect chimney top rings and submit drawings with their measurements, if required
   - paint chimneys and related structures
   - rehabilitate and repair air navigation lights on boilers

B. The Contractor shall inspect, install, rehabilitate and repair **Insulation** in:
   - any required area

3.2. Type of Project

Indicate whether the intended plan is a(n):

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

Choose One (Restoration, Improved or Alternate) *If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

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

3.3. Preliminary Architectural and Engineering (A&E)

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

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

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

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
• (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
• 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount ($)
Inspection, Installation, Rehabilitation and Repair	$700,000.00
Total Project Estimated Cost	**$700,000.00**

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

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

Section 7. EHP Requirements

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

Section 8. Program Manager Lead Certification

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

_____	_____
Program Manager's Printed Name	Date
_____	_____
Title	Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

_____	_____
PREPA Project Sponsor's Printed Name	Date
_____	_____
Title	Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

Please see attached the following:

- Justification_Contract Req. 244594
- Technical Specifications
- Painting Specifications

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures

10.4. Other: (Please Describe)

N/A

CN 078-04479
Rev 11/17

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

Neftalí González Cruz, Jefe Interino
División de Suministros

Antonio Kalil Carrión, Jefe
Central Generatriz Palo Seco

SOLICITUD AUTORIZACIÓN PARA APROBACION CONTRATO TRABAJOS REFRACTARIO, PINTURA< AISLACION UNIDAD 4 EN LA **CENTRAL GENERATRIZ PALO SECO CR 244594**

La caldera de la Unidad 4 de la Central Palo Seco, está programada para salida ambiental entre próximamente. Esto último, conforme a dispensa solicitada a la EPA para realizar el mantenimiento ambiental de la Unidad. Los trabajos programados permitirán reincorporar la Unidad al servicio que ofrecemos, dotará de mayor confiabilidad y estabilidad a la generación de energía en el área norte de la isla; contribuyendo a la disminución de los costos de generación de energía.
Se realizarán trabajos de rehabilitación de la Unidad 4 y estructuras relacionadas, alguno de los trabajos de rehabilitación lo son: penthouse, vestíbulos, conducto de aire y gases, chimeneas interior y exterior, paredes y losas de la caldera, ductos y envolventes de abanicos, doghouse, líneas de alta energía, líneas de fluidos y vapores relacionadas a la unidad generatriz. Estos trabajos están contemplados por área en la Unidad 4 pero interesamos que sea mejor administrado por cumplimiento de tiempo y material. También hay otras posibles áreas que puedan surgir según se estén desarrollando los trabajos de rehabilitación de la Unidad. El monto de la orden será de $700,000.00.
Para la rehabilitación de la caldera 3, nos encontramos en el proceso de solicitud de estimado de construcción. Cualquier duda o pregunta favor de llamar al Ing. Rolando Davila al 787-521-7020,7006.

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

ORDEN DE SERVICIO PARA TRABAJOS REFRACTARIO, PINTURA Y AISLACION EN LAS UNIDADES GENERATRICES Y ESTRUCTURAS RELACIONADAS EN LA CENTRAL PALO SECO

CONDICIONES ESPECIALES Y ESPECIFICACIONES TÉCNICAS

ARTÍCULO 1. Los requisitos

a. El Contratista vendrá obligado a suministrar toda la mano de obra, materiales, herramientas, equipo, cualquier facilidad que la Autoridad no provea, supervisión, administración y superintendencia requerida por el trabajo, todo esto en la medida que lo solicite la Autoridad, y realizará todo el trabajo real de inspección, rehabilitación, reparación y pintura de chimeneas y conductos de calderas prontamente y a entera satisfacción del Ingeniero. El trabajo se llevará a cabo a tenor con estas Especificaciones Técnicas, según indicaciones del Ingeniero y como se describe en el *Artículo 2, Alcance de los trabajos*.

b. Todo trabajo realizado bajo estas Especificaciones se hará en forma segura y esmerada y en estricta conformidad con todas las reglas, reglamentos, ordenanzas, etc., locales de las agencias gubernamentales con jurisdicción sobre el tipo de trabajo que se va a realizar, incluyendo el Instituto Americano de Normas Nacionales (**American National Standards Institute, ANSI**), la Sociedad Americana de Ingenieros Mecánicos (**American Society of Mechanical Engineers, ASME**), la Agencia de Protección Ambiental (**EPA**, por sus siglas en inglés), los requisitos de la Oficina de Salud y Seguridad en el Trabajo (**OSHA**, por sus siglas en inglés) y la edición más reciente de cualquier otro código o norma aplicable.

c. El Contratista someterá al Ingeniero o su representante, cuando éste lo estime necesario, un informe semanal con un resumen de las diferentes divisiones del trabajo objeto del Contrato, en el cual indicará la condición actual de las mismas, el ritmo de progreso, el tiempo estimado para su conclusión y la causa de demoras, si alguna. El Contratista asistirá a las reuniones de proyecto a requerimiento del Ingeniero o su representante.

d. Concurrentemente con cada trabajo, el Contratista someterá un informe escrito sobre las condiciones encontradas, el trabajo realizado, aprobaciones y resultados de pruebas. Se someterá un informe final dentro del término de las ocho (8) semanas posteriores a la conclusión del trabajo.

e. El Contratista demarcará el perímetro de las unidades bajo contrato en la forma aprobada por el Jefe de Conservación de la Central en representación de la Autoridad, para aislarlas y diferenciar el área de trabajo del de otras
unidades en operación. Deberá instruirse al personal del Contratista para que se mantenga dentro de dicho perímetro.

ARTÍCULO 2. Alcance de los Trabajos

El Contratista tiene que proveer toda labor, supervisión, herramientas, equipo, seguros, fianzas y desempeñará todo el trabajo requerido para inspeccionar, instalar, rehabilitar, reparar refractario en conductos, vestíbulos, chimeneas, otras áreas de las calderas, inspeccionar anillas superiores de chimeneas y someter dibujos con medidas de las mismas (de ser requeridas), pintar las chimeneas y estructuras relacionadas y rehabilitar y reparar las luces de navegación aérea en las calderas de las unidades de todas las Centrales Generatrices. Tambien tiene que proveer toda labor, supervisión, herramientas, equipo, seguros, fianzas y desempeñará todo el trabajo requerido para inspeccionar, instalar, rehabilitar, reparar todo tipo de aislacion en las areasque sean requeridas en la Central. Todo en estricta conformidad con este Contrato, las Condiciones Especiales y Especificaciones Técnicas y la Propuesta, todas las que aquí forman parte de éste.

CLÁUSULA 3. Para ser Suministrado por el Contratista

A. Toda labor, supervisión, administración y personal requerido, de acuerdo al Alcance del Trabajo, para realizar el mismo.

B. Herramientas y equipo necesario para realizar el trabajo, tales como elevadores, taladros, esmeriladoras, neumáticos, grúas, montacargas, izadores de cadena, gatos hidráulicos y neumáticos, máquinas de soldar, escaleras, andamios (trabajos programados), equipo de soldar, compresores de aire, máquinas para expandir y cortar tubos e inhibidor corrosivo.

C. Facilidades de oficina(s) de campo para el personal del Contratista.

D. Facilidades de primeros auxilios para su personal. Estos arreglos deberán coordinarse con el Jefe de Conservación de la central por la Autoridad y recibir su aprobación.

E. Equipo de seguridad, tal como capacetes, chalecos para soldadores, gafas protectoras, guantes, etc.

F. Identificación debida y adecuada para el personal del Contratista.

G. Materiales y otros artículos, tales como materiales fungibles, por ejemplo, agentes limpiadores, solventes, sellador de roscas y juntas, grasa, paños de limpieza, varilla para soldar, vasos, hielo, papel toalla, papel sanitario, etc.

H. Instalaciones y vigilancia adecuadas en el lugar del trabajo para seguridad de los materiales, herramientas, equipo y piezas de repuesto. El Contratista proveerá guardias para vigilancia adecuada de las áreas de trabajo durante los períodos no laborables.

I. Cualquier otro recurso o actividad que la Autoridad no suministre y que resulte necesaria a tenor con el Alcance de los Trabajos.

J. Transporte de componentes al taller y viceversa.

K. Fabricación y entrega de piezas rotas imposibles de reparar y para las cuales no existen piezas de repuesto.

I. Control de ingeniería para evitar polvos fugitivos en la re-aislación.

CLÁUSULA 4. Para ser Suministrado por la Autoridad

A. Agua y energía eléctrica para herramientas, oficinas y trabajo de reparación.

B. Cualquier dibujo del equipo disponible.

C. Facilidades de estacionamiento, si hay disponibles.

D. Un supervisor para inspección y manejo del proyecto en el lugar.

CLÁUSULA 5. Protección de las Facilidades Existentes

A. Las operaciones del Contratista se llevarán a cabo con sumo cuidado en todo momento para evitar daños a estructuras e instalaciones y para evitar interferir con cualquier unidad en operación en el lugar. El Contratista será responsable por cualquier interferencia con las unidades en operación atribuible a fallas o negligencia de su parte en la realización del trabajo.

B. El Contratista protegerá, a satisfacción del Ingeniero, todas las estructuras y equipos existentes en el lugar. Cualquier daño a dichas estructuras o equipo como resultado de una falla o negligencia, el Contratista lo reparará inmediatamente a sus propias expensas.

C. La Autoridad se reserva el derecho de rechazar cualquier equipo que represente un riesgo de contaminación por escapes de fluidos químicos.

CLÁUSULA 6. Horario y Organización del Trabajo

A. El horario de operación de la Autoridad es de 24 horas diarias, 7 días a la semana y se podrá solicitar los servicios del Contratista a cualquier hora y día dentro de ese horario, previa notificación, según la Cláusula 5 del Contrato.

B.

1. Se tomarán las siguientes consideraciones para evaluar las tarifas aplicables en la facturación por las horas de labor del contratista:

   a. Tiempo Regular - el tiempo trabajado por el empleado en las primeras ocho horas de cada turno o las primeras cuarenta horas regulares trabajadas en una semana (de lunes a sábado).

   b. Tiempo Extra - el tiempo trabajado después de las primeras ocho horas diarias o de cuarenta horas en una semana (de lunes a sábado) o las horas trabajadas en los domingos o días feriados según definidos en estas especificaciones.

CLÁUSULA 7. Requisitos para los Empleados del Contratista

A. Todos los empleados potenciales del Contratista deberán poseer un Certificado de Buena Conducta expedido por la Policía de Puerto Rico durante los últimos seis meses. La Autoridad se reserva el derecho de realizar, con fines de seguridad, una verificación de dichos empleados potenciales antes de contratarlos y, además, al entrar y salir de los predios de la Autoridad. Para dichos fines, el Contratista preparará una lista de empleados con una autorización expresa de cada empleado potencial que permita a la Autoridad realizar la investigación de antecedentes. Dicha lista incluirá el nombre completo, apellidos, número de Seguro Social, fecha y lugar de nacimiento y dirección residencial de cada empleado potencial.

B. Cualquier violación por parte del personal del Contratista de los requisitos antes mencionados o de las medidas de seguridad establecidas será causa para su despido inmediato del trabajo.

C. El Contratista producirá evidencia de que el empleado ha sido evaluado médicamente según lo requiere la reglamentación aplicable, y que está apto para usar el respirador.

D. Poseer los siguientes entrenamientos:

Manejo de elevadores aéreos, herramientas manuales y equipos industriales motorizados.

CLÁUSULA 8. Días Feriados

Los siguientes días aplicarán para la tarifa de Tiempo Extra cuando se requiera que el empleado trabaje:

1. 1 de enero	Año Nuevo
2. 6 de enero	Día de Reyes
3. variable	Viernes Santo
4. último lunes de mayo	Día de la Recordación
5. 4 de julio -	Independencia EE. UU.
6. 25 de julio	Constitución del ELA de Puerto Rico
7. primer lunes de septiembre-	Día del Trabajo
8. cuarto jueves de noviembre-	Día de Acción de Gracias
9. 25 de diciembre	Navidad

CLÁUSULA 9. Adquisiciones por el Contratista

A. La Autoridad podrá autorizar al Contratista a adquirir ciertos materiales, piezas de repuesto, etc,

B. El Contratista no hará ninguna compra en nombre de la Autoridad sin previa autorización escrita de cualquier oficial de la Autoridad.

C. El Contratista cumplirá estrictamente con todas las leyes, reglamentos y procedimientos de la Autoridad al hacer tales compras.

El Contratista obtendrá precios de por lo menos tres suplidores antes de expedir una orden de compra.

CLÁUSULA 10. Facturación por el contratista

El Contratista enviará sus facturas por cada trabajo individual realizado, acompañándolas de la Certificación de Trabajo y Costo, la Carta de Movilización, las hojas de tiempo diarias y cualquier otra evidencia documental *que se* requiera para *sustentar* los *cargos.*

Todas las facturas sometidas por el Contratista contarán con la aprobación de la Autoridad antes de procesarse para pago. El mismo se efectuará en un término de sesenta (60) días posteriores a la fecha de su radicación en la División de

Conservación y Servicios Técnicos de Centrales Generatrices. La fecha de aprobación es aquella en que el Contratista somete la factura con todos los documentos necesarios para procesarse el pago.

Toda factura enviada por el Contratista debe incluir la siguiente Certificación para poder proceder con el pago de la misma. Aquella factura que no contenga la Certificación, no se procesará para pago.

Certificación de ausencia de interés

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o Director de la Autoridad de Energía Eléctrica es parte o tiene algún interés en las ganancias o beneficios producto del Contrato (u Orden) objeto de esta factura y de ser parte o tener interés en las ganancias o beneficios producto del Contrato medió una dispensa previa. Certifico, además, que la única consideración para suministrar los bienes o servicios objeto del Contrato es el pago acordado con el representante autorizado de la Autoridad de Energía Eléctrica.

El importe de esta factura es justo y correcto. Los (trabajos) se realizaron, (los productos) se entregaron o (los servicios) se prestaron y no han sido pagados.

(Firma del Contratista)

_____
Firma del Contratista

CLÁUSULA 11. Orden Ejecutiva Núm. 4385 del 3 de enero de 1985

A tenor con el CLÁUSULA 105 de la Orden Ejecutiva Núm. 4385 del 3 de enero de 1985, el Contratista someterá la siguiente información a la Autoridad:

A. Informes trimestrales (por lo menos un informe en el caso de contratos de menos de tres meses de duración) con la siguiente información:

1. Nombres, edades y títulos de todas las personas empleadas durante el período cubierto por el informe.

2. Nombres y edades de todas las personas cesanteadas durante el período cubierto por el informe, así como la razón en cada caso particular.

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

B. Una relación de todas las plazas disponibles, con los requisitos en detalle
en detalle.

TERMINOS & CONDICIONES:

Proveer todo el equipo, herramienta, labor, supervisión y seguros para realizar el trabajo solicitado en la Central Termoeléctrica de Palo Seco.
La Autoridad será responsable de la ejecución del procedimiento LOTO antes, durante y después del comienzo de los trabajos.
La Autoridad suplirá los servicios de electricidad (120V-208V), aire y agua para realizar las actividades relacionadas a los trabajo.

1 REQUISITOS GENERALES

1.1 El contratista cumplirá con todas las fianzas, permisos y seguros, tales como fianza de ejecución, fianza de pago, seguro de compensación para accidentes en el trabajo, seguro de responsabilidad patronal, seguro de responsabilidad general y cualquier otro cargo solicitado por la Autoridad antes de comenzar la movilización de personal y equipo al área de trabajo.

1.2 Todo personal del contratista tendrá que tomar los adiestramientos y orientaciones de seguridad industrial, ambiental y de seguridad interna (HOMELAND) que ofrece el personal de la central (HIGIENISTAS, COORDINADORES DE NPDES, SPCC, SEGURIDAD INTERNA, ECT.), previo al comienzo de las labores en las facilidades de la central.

1.3 El contratista y sus empleados asignados al proyecto utilizarán, todo el tiempo, el equipo de protección personal y seguridad necesario para el trabajo a realizarse.

1.4 Los empleados del contratista estarán debidamente identificados con tarjetas de identificación de la compañía, con foto debida y adecuada, y visibles en todo momento mientras estén dentro de las facilidades de la central. Adicional a las tarjetas de identificación los empleados de la misma podrán estar identificados con el logo de la compañía en camisas, casco, etc. Estos logos no sustituyen el uso de la tarjeta.

1.5 Una vez finalizado el trabajo el Contratista someterá en original una factura en la División de Tesorería y una copia en la Central Palo Seco. Esta factura deberá contar con la aprobación del Jefe de Conservación de la Central Palo Seco antes de ser procesadas para pago.

2 REQUERIMIENTOS

2.1 El Contratista vendrá obligado a suministrar toda la mano de obra, materiales, herramientas, equipo, cualquier facilidad que la Autoridad no provea, supervisión,

administración y superintendencia requerida por el trabajo, todo esto en la medida que lo solicite la Autoridad, y realizará todo trabajo contenido bajo las especificaciones de este proyecto en la Central Palo Seco.

2.2 Este trabajo deberá completarse en un periodo máximo de _____ días calendarios y se llevará a cabo a tenor con esta especificación.

2.3 Todo trabajo realizado bajo estas Especificaciones se hará en forma segura y esmerada y en estricta conformidad con todas las reglas, reglamentos, ordenanzas, etc., locales de las agencias gubernamentales con jurisdicción sobre el tipo de trabajo que se va a realizar, incluyendo el Colegio de Ingenieros y Agrimensores de Puerto Rico (CIAPR), el Colegio de Químicos de Puerto Rico, el Instituto Americano de Normas Nacionales (American National Standards Institute, ANSI), la Sociedad Americana de Ingenieros Mecánicos (American Society of Mechanical Engineers, ASME), la Agencia de Protección Ambiental (EPA, por sus siglas en inglés), la Junta de Calidad Ambiental (JCA), la Oficina de Salud y Seguridad en el Trabajo (OSHA, por sus siglas en inglés) y la edición más reciente de cualquier otro código o norma aplicable de cualquier agencia o autoridad pública que tenga jurisdicción en Puerto Rico.

2.4 El contratista someterá por escrito, antes de comenzar las labores de cada área, un programa de trabajo detallado con las distintas etapas y duración de las mismas.

2.5 Una vez otorgado la orden, el contratista someterá al oficial autorizado de la AEE la lista del personal específico que realizará cada trabajo en orden alfabético, copia del Programa de Seguridad de la compañía y una lista de los vehículos que son necesarios para la realización del trabajo y copia de sus licencias.

2.6 El contratista demarcará el perímetro de la Unidad 3 bajo este servicio en la forma aprobada por el Jefe de Conservación en representación de la Autoridad, para aislarlas y diferenciar el área de trabajo del de otras unidades en operación. Deberá instruirse al personal del contratista para que se mantenga dentro de dicho perímetro.

2.7 El contratista establecerá y coordinará el acceso de su personal a las facilidades con los oficiales autorizados por la AEE para este proyecto. Este debe asegurarse de que su personal cumpla en todo momento con la reglamentación de la central para evitar ser sancionados o removidos de esta.

2.8 El contratista proveerá toda la información relacionada a la composición química de los productos y sus riesgos a la salud (MSDS) a utilizarse en esta especificación para la aprobación de la oficina de comunicación de riesgo de la AEE previo a su uso.

2.9 El contratista será responsable de proveer facilidades sanitarias portátiles y servicio de primeros auxilios para su personal trabajando en el área.

2.10 El Contratista ofrecerá y documentará una charla de seguridad a su personal diariamente. La misma será ofrecida por una persona competente (como define la EPA y la OSHA) y esta persona deberá estar presente todo el tiempo que haya personal trabajando en el proyecto. Copia de la misma será entregada al oficial autorizado de la AEE a cargo del proyecto.

2.11 Será responsabilidad del contratista el exigir y mantener de acuerdo con las condiciones existentes y al progreso del proyecto, toda la seguridad necesaria para la

protección de empleados y estructuras, incluyendo letreros de precaución y supervisión general de control de acceso a las áreas de trabajo en progreso.

2.12 El contratista será responsable de proveer todo el equipo necesario para realizar el trabajo en las diferentes áreas.

2.13 El contratista será responsable de proveer cualquier aditamento necesario para instalarlo en nuestros sistemas con el fin de realizar los trabajos y será responsable de retornar nuestros sistemas a las condiciones originales de operación.

2.14 El contratista será responsable de suplir cualquier equipo o estructura necesaria para tener acceso a los equipos a impactarse.

2.15 El contratista será responsable de coordinar con un representante de la Autoridad cualquier conflicto que pueda tener en su área de trabajo que afecte la continuidad y desarrollo del proyecto.

2.16 El contratista será responsable de la remoción inmediata de todo el equipo utilizado para realizar el trabajo inmediatamente una vez finalizadas las labores.

3 Protección de las facilidades existentes

3.1 El área de trabajo debe mantenerse limpia y en forma ordenada. El Contratista es responsable de remover de los predios de la planta cualquier basura o escombros que resultaran como producto de los trabajos realizados, en estricta conformidad con los reglamentos establecidos por las agencias locales y federales de protección ambiental. Materiales o piezas que no fuesen utilizados y los cuáles sean propiedad de la Autoridad, deberán ser devueltos al almacén de la planta en coordinación con el jefe de conservación. Después de haber terminado todos los trabajos, el Contratista dejará las áreas de trabajo limpias, libre de posible contaminación.

3.2 Las operaciones del Contratista se llevarán a cabo con sumo cuidado en todo momento para evitar daños a estructuras e instalaciones y para evitar interferir con cualquier unidad en operación en el lugar. El Contratista será responsable por cualquier interferencia con las unidades en operación atribuible a fallas o negligencia de su parte en la realización del trabajo.

3.3 El Contratista protegerá, a satisfacción del oficial autorizado de la AEE, todas las estructuras y equipo existentes en el lugar. Cualquier daño a dichas estructuras o equipo como resultado de una falla o negligencia del Contratista, será reparado inmediatamente por el Contratista a sus propias expensas.

3.4 El contratista almacenará los productos a utilizarse de manera adecuada. El área de almacenamiento debe cumplir con las especificaciones del manufacturero de cada producto y las reglas ambientales y laborables aplicables. El contratista tomará todas las medidas necesarias para asegurar que las áreas de almacenamiento de los productos a utilizarse estén libres de peligros a la salud de los empleados, estén protegidas contra incendios, derrames ocasionados por el mal manejo y acumulación de gases tóxicos y/o explosivos por evaporación de los productos.

3.5 Será responsabilidad del contratista tomar las medidas necesarias para la protección y la seguridad de los materiales, maquinarias, equipos, etc. En los predios de la central durante la duración del proyecto.

SECTION 09900
PAINT_02

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings of the Puerto Rico Electric Power Authority ("The Authority"), general provisions and special conditions.

B. Whenever in these specifications there are listed specific brands and models of products, it will be understood as equal or approved equal to said products.

1.2 SUMMARY

A. This section includes the methods and requirements for surfaces preparation and painting.

B. All exposed surfaces shall be painted, with the exception of those specified. Surfaces that are not mentioned specifically will be painted equal to the adjacent surfaces that are similar. If the finished color has not been designated, the Engineer will select the standard color or available finished.

C. For tanks application the following areas of the interior shall be painted to a 100% of the surface: bottom, roof, columns, rafters, beams, shell and column support components. Tank exterior shall be coated entirely. This shall include manholes, manholes' flanged covers, reinforcing plates, anchors plates, anchors bolts and pipe supports.

D. That equipment that will not be painted includes the parts that have movement, like the equipment that are mentioned ahead and the lights.

1. Valves
2. Fans and Axes of Motors
3. Sensors

E. Labels or Name Plates – All labels, name plates, UL and Factory Mutual labels or any kind of identification shall not be painted.

F. The contractor is responsible in providing all required equipment to make the work, including scaffolds, stairs, etc. The removal of this equipment is

require once is finished the work. Contractor shall provide all required labor, supervision, materials and quality control specialist.

1.3 DEFINITION

A. Paints: coating system (base, intermediate, finished), primers, sealants, enamels, epoxies.

1.4 REQUIRED DOCUMENTS

A. Product Literature: Manufacturer's technical data and instructions of paints to be used.

1. The paintings will be identified with the number and identification name of the manufacturer.

B. Samples for verification: Contractor shall provide samples with each color and material to be applied on representative samples of the present substratum. Each layer shall be defined. Representative colors shall be used when samples for revision are prepared.

C. The contractor shall submit the specific work plan for PREPA's approval before mobilization. This plan shall include the propose coating activities and schedule for delivery of products, equipment and materials.

D. In case of using different products from those specified, the bidders will include in their proposal the technical information of the new product and its Material Data Sheets (MSDS, by its abbreviations in English) for evaluation and approval.

1.5 QUALITY ASSURANCE

A. Responsibility of a single source: To provide the layer for bases, intermediate and final coat, and mixing agents of the same manufacturer.

B. The Contractor shall have a technician from the product's manufacturer to guarantee the fulfillment of all the required conditions before and during the application of the product.

C. Work Coordination: Revised other sections where the base layer is shop applied to guarantee system compatibility.

1. The Engineer shall be notified of any anticipated problems when using the specified materials.

D. Material Quality: Provide the manufacturer's best quality paint equal or similar to those specified.

1. Names used for colors or materials designated by the manufacturer, do not imply that other equivalent products of other manufacturers are excluded.

1.6 GENERAL REQUIREMENT

A. All work related with this specification shall be performed by experience personnel in accordance with the latest edition of the recommended practices by:

1. NACE
2. SSPC
3. EPA
4. OSHA
5. ASTM
6. ISO
7. Local and federal agencies

B. Contractor or sub-contractor shall be certified by the coating manufacturer as an applicator

C. Works with toxic materials shall be done following the actual applicable EPA and OSHA regulations.

D. The Contractor shall coordinate with the Engineer the use of electricity and water of the Power station, necessary to make the work. Any electrical devices or water to the working area is Contractor's responsibility.

E. The Contractor will provide and require to all his personnel the use of security equipment required by: OSHA, the Engineer or any other agency that have jurisdiction, when making the required works in this Specification.

F. All material or work done by the Contractor that differs from the drawings, specifications or contract can be rejected by the Engineer. Cost associated for replacement is at Contractor's responsibility.

G. It is Contractor's responsibility to certify that the documents for approval does not constitute deviation or changes to the specifications of the

contract. Any deviation or change to the specifications of the contract, not certified in writing by the contractor, disabled automatically Authority's seal of approval applied to any document related to this deviation or change.

H. All chemical products shall be approved or conditionally approved by PREPA.

I. Contractor shall be responsible for calculation of working area to determine products quantities.

1.7 DELIVERY, HANDLING AND STORAGE

A. All materials, parts and equipment shall be delivered at project site in its originals manufacturer's packaging, factory sealed and labeled with the following information:

1. Name of the product.

2. Description of the product (generic classification).

3. Number of the general specification, whenever apply.

4. Manufacturer's warehouse number and fabrication date.

5. Volume content.

6. Paints' mixing instructions.

7. Paints' application instructions.

8. Paints' number and color name.

9. MSDS

B. Contractor shall be responsible for the delivery, unpacking, storage, custody and manage of all materials and equipment for the job.

C. Instructions to follow:

1. Storage unused materials in its original package in a dry, closed, ventilated area, following manufacturer's storage recommendations.

2. Keep packages in use in optimal conditions, free from residuals and unrelated storage materials.

3. Keep storage area ordered and clean. Wastes removal shall be daily. The Contractor is responsible for the disposal in an adequate and authorized landfill.

4. Follow any necessary measure to assure the safety of workers and working areas against fire and health hazards, wrong handling during paint mixtures and applications.

D. The available source of electric energy for the Contractor at the project site is 120/208 VAC y 480 VAC, 3ø. It is bidder's responsibility to verify connection point during pre-bid meeting.

1.8 Working Conditions

A. To prevent quick drying, bulges, runny paint, and fast solvent evaporation, where is hazardous in a confined space, surfaces with a temperature over 100° F shall not be painted.

B. To ensure the preceding item, bidders shall visit the job site to verify the working conditions. Their proposals shall include an isolation system (plastic bubble) for exterior surfaces during surface preparation and coating application. For interior surfaces an air conditioning system shall be included in the proposal in case that required conditions (temperature and humidity) are not met during working hours (7:00 a.m. to 5:00 p.m.) or working days.

C. Painting in a rainy day is not permitted.

PART 2 PRODUCT

2.1 GENERAL

A. All products shall be approved by PREPA before entering the premises.

A. Must comply with Volatile Compound Content (VOC's) requierements according to the Clean Air Act.

B. Some of the products indicated in section 2.2 shall be re-evaluated in the "Oficina de Comunicación de Riesgos" if original evaluation was before 1998.

C. ONLY PREPA WILL DETERMINE IF THE ALTERNATE PRODUCT CAN BE CONSIDERED AS EQUAL OR APPROVED EQUAL.

D. Alternate product shall comply with the following conditions:

1. Same chemical and physical composition, including additives such as anticorrosive pigments, flakes, aluminum, etc.

2. Equal or greater solid content per volume.

3. Similar curing characteristics.

4. Equal or greater adhesion capacity under the same ASTM test conditions.

5. Same system classification under ISO 12944 and NORSOK.

6. Equal or greater abrasion resistance under the same ASTM test conditions.

7. Equal or greater temperature range for exposure in a submerged or dry application.

8. Equal or greater temperature range during application.

9. Equal or greater water resistance in 100% humidity under the same ASTM test conditions.

10. Equal or greater impact resistance under the same ASTM test conditions.

1.2 SYSTEMS

A. System 1: Coating system for steel surfaces on a severe environment.

1. Base – Three component, metallic zinc rich epoxy with a minimum of 70% solid content per volume. Approved product: **PPG AMERCOAT 68 HS**.

2. Intermediate – a two component, low VOC, high build, self-priming, surface tolerant, lamellar aluminum flakes reinforced, epoxy mastic with a minimum of 88% solid content per volume. Approved product: **PPG AMERLOCK 400 AL**.

3. Finish – Two component, high solids, low VOC, abrasion resistance, high gloss epoxy siloxane with a minimum of 90% solid content per volume. Approved product: **PPG PSX 700**.

B. System 2: Coating system for steel surfaces on a severe environment where a limited to good surface preparation is required and medium temperature (max 302 °F) exposure.

1. Base: Two components high build surface tolerant epoxy primer pigmented with aluminum and lamellar micaceous iron oxide and 80% solids by volume. Approved product: **INTERNATIONAL INTERPLUS 256**.

2. Intermediate: Two components high build surface tolerant epoxy maintenance coating pigmented with aluminum, NSF certification and 82% solids by volume. Approved product: **INTERNATIONAL INTERSEAL 670HS**.

3. Finish: Two components acrylic polyurethane with 68% solids by volume. Approved product: **INTERNATIONAL INTERTHANE 990HS**.

C. System 3: Lead removal system:

1. Approved product: **ENVIRO-PREP CHEMICAL STRIPPER 33073**

D. System 4: Coating system for fuel tank's interior.

1. Primer: Low viscosity epoxy primer with 100% solid content per volume. Approved product: **INTERNATIONAL CEILCOTE 680 PRIMER**.

2. Finish: Amine cured epoxy, moister tolerant, flake reinforced, room temperature cured with 100% solid content per volume. Approved product: **INTERNATIONAL CEILCOTE 664 CEILGUARD**

E. System 5: Coating system for water tank's interior:

1. Primer: Low viscosity epoxy primer with 100% solid content per volume. Approved product: **INTERNATIONAL CEILCOTE 680 PRIMER.**

2. Base: Heavy duty tank lining with 100% solid content per volume. Approved product: **INTERNATIONAL INTERLINE 925.**

3. Finish: Heavy duty tank lining with 100% solid content per volume. Approved product: **INTERNATIONAL INTERLINE 925.**

F. System 6: Coating system for tank's interior where pH levels fluctuate (2-14 pH) with temperature up to 200°F :

1. Primer: Two component vinyl ester resin peroxide cured with 100% solid content per volume. Approved product: **KCC CORROSION CONTROL P3/P4 PRIMER.**

   Alternate Approved Product: **CEILCOTE 370 HT**

2. Base: Two component novolac vinyl ester resin, special flake filler, peroxide cured polymer system with 100% solid content per volume. Approved product: **KCC CORROSION CONTROL VE 42.**

   Alternate Approved Product: **CEILCOTE 222 HT**

3. Finish: Two component novolac vinyl ester resin, special flake filler, peroxide cured polymer system with 100% solid content per volume. Approved product: **KCC CORROSION CONTROL VE 42.**

   Alternate Approved Product: **CEILCOTE 222 HT**

G. System 7: Repair of Steel in Highly Erosive and Corrosive Submerge Service

1. Filler and Base: Two component, bisphenol A resin with an aliphatic polyamine hardener, rebuilding putty reinforced with aluminum oxide and ceramics with a 100% solid content per volume. Approved product: **DUROMAR SAR CERAMIC PUTTY.**

2. Finish: Two component, bisphenol A resin with a modified aliphatic polyamine hardener, lining reinforced with aluminum oxide and

ceramics with a 100% solid content per volume. Approved product: **DUROMAR EAC CERAMIC LINING**.

H. System 8: Repair of Steel in Highly Pitted and Deteriorated External Surfaces.

1. Filler and Base: Two component, bisphenol A resin with an aliphatic polyamine hardener, rebuilding putty reinforced with aluminum oxide and ceramics with a 100% solid content per volume. Approved product: **DUROMAR SAR CERAMIC PUTTY**.

2. Intermediate: Two component, bisphenol A resin with a modified aliphatic polyamine hardener, lining reinforced with aluminum oxide and ceramics with a 100% solid content per volume. Approved product: **DUROMAR EAC CERAMIC LINING**.

3. Finish: UV stable polyaspartic coating system with an aliphatic isocyanate, zero VOC and 100% solid content per volume. Approved product: **DUROMAR 5610**.

I. System 9: Tanks bottom underside (shop applied):

1. Two component fast curing solvent based inorganic zinc rich ethyl silicate primer with a minimum 63% solid content per volume. Approved product: **INTERNATIONAL INTERZINC 22**.

J. System 10: Concrete Repair and Lining System for Concrete Surfaces with Exposure to Chemicals and Heavy Traffic.

1. Sealer: Multifunctional epoxy with modified cycloaliphatic amine hardener concrete sealer, 100% solid content per volume. Approved product: **DUROMAR HPL-1301**.

2. Rebuild Vertical and Horizontal Surfaces: Epoxy grout, 100% solid content per volume, mixed in a ratio of 60 lbs of aggregate (30 lbs of washed fine sand and 30 lbs of ¼" pea gravel) per gallon of product for a concrete consistency. **Only** for heavy damaged areas and ultra-protection when specify. Approved product: **DUROMAR DUROFIL**.

3. Resurface Horizontal Surfaces: Two component epoxy novolac material, 100% solid content per volume, mixed in a ratio of 9.5 lbs of sand per gallon of product. Approved product: **DUROMAR CHEMECRETE SUPER**.

4. Lining: Two component novolac epoxy with modified cycloaliphatic amine hardener, 100% solid content per volume. Approved product: **DUROMAR DF-4301**.

K. System 11: Concrete Repair and Lining System for Concrete Surfaces with Exposure to Chemicals.

1. Sealer: Multifunctional epoxy with modified cycloaliphatic amine hardener concrete sealer, 100% solid content per volume. Approved product: **DUROMAR HPL-1301**.

2. Rebuild Vertical and Horizontal Surfaces: Epoxy grout, 100% solid content per volume, mixed in a ratio of 60 lbs of aggregate (30 lbs of washed fine sand and 30 lbs of ¼" pea gravel) per gallon of product for a concrete consistency. **Only** for heavy damaged areas and ultra-protection when specify. Approved product: **DUROMAR DUROFIL.**

3. Lining: Two component multifunctional novolac epoxy with modified cycloaliphatic amine hardener and reinforced with flake glass, 100% solid content per volume. Approved product: **DUROMAR HPL-4310 FG.**

L. System 12: Internal coating system for condensate tanks

1. Base: Multi-functional novolac epoxy coating with a modified cycloaliphatic amine hardener and reinforced with glass flakes, 100% solids content per volume. A submerge maximum temperature of 300°F and a pH range from 0.5 to 14. Approved product: **DUROMAR HPL-4310 FG.**

2. Finish: Multi-functional novolac epoxy coating with a modified cycloaliphatic amine hardener and reinforced with glass flakes, 100% solids content per volume. A submerge maximum temperature of 300°F and a pH range from 0.5 to 14. Approved product: **DUROMAR HPL-4310 FG.**

PART 2 EXECUTION

2.1 PRELIMINARY

A. The product's manufacturer Technician will examine the substrate and the conditions under which the work will be made to verify that all

requirements and conditions are met before application. The Technician is the sole responsible to certified in written that such required conditions are properly met to begin application.

B. □All products shall be from the same manufacturer, including the cleaning All products shall be from the same manufacturer, including the cleaning thinner.

C. The use of thinner in the coating mix is **prohibited**. Thinner shall only be used as a cleaning agent.

D. Stripe coat shall be applied to all welds, edges and corners with a minimum dry film thickness (dft) of 5 mils. This thickness shall not be considered as part of the coating system layers.

E. Coating application shall follow manufacturer recommendations and SSPC-PA1 standard.

F. Contractor shall remove all weld spatter and slag to a smooth contour before abrasive surface preparation and coating.

G. All surface preparation and coating application shall be performed at the site. Shop primer shall be removed at the site.

H. Surface preparation shall be compare to photographic reference from SSPC-VIS 1 for steel, prepared with dry grit media blast.

I. In the case that the overcoat window expired, contractor shall apply a dry grit media blast to a SSPC-SP7 (Brush-Off Blast Cleaning) with the specified anchor profile followed by a surface cleaning with a 98% Alcohol.

2.2 PREPARATION

A. General Procedures: Remove or protect every accessory, plates, luminaries, or similar equipment not to be painted. All these equipment shall be reinstalled after completing the job.

B. Before abrasive cleaning, wet or dry, evaluate for the presence of oil or grease on the surface to be painted. Oil and grease shall be completely removed by Solvent Cleaning, SSPC-SP1 or recommended by the manufacturer. Use one of the following test to detect the presence of oil or grease:

1. Water breaking: Use atomizes distilled water on the surface. The presence of oil or grease is detected when the water does not penetrate.

2. Clean Cloth: Slightly rug a clean white cloth over the surface. Discoloration on the cloth is an evidence of grease or oil.

C. Surface preparation before painting/coating:

1. Surface Preparation 1: Working area shall be isolated. Dry abrasive grit blasting to **white metal** (SSPC-SP5) with a surface profile of 3 mils, for surfaces exposed to severe environment. For working areas inside PREPA's facilities, sponge jet technology can be used with the same requirements.

2. Surface Preparation 2: Working area shall be isolated. Dry abrasive grit blasting to **near white** (SSPC-SP10) with a surface profile of 2 mils, for surfaces exposed to severe environment. For working areas inside PREPA's facilities, sponge jet technology can be used with the same requirements.

3. Surface Preparation 3: Horizontal or vertical vacuum abrasive cleaning to **commercial grade** (SSPC-SP6) for steel surfaces exposed to severe environment. The abrasive cleaning profile is 3 mils.

4. Surface Preparation 4: Water pressurized (4,000psi) blast cleaning with inhibitors for surfaces exposed to severe environment. Areas with localized corrosion or with loosed material shall be mechanical cleaned.

5. Surface Preparation 5: Wet abrasive cleaning for surfaces exposed to severe environment. The abrasive cleaning profile is 2 mils.

6. Surface Preparation 6: Sodium bicarbonate cleaning using inhibitors in water, for surfaces exposed to severe environment. The abrasive cleaning profile is 2 mils.

7. Surface Preparation 7: For concrete substrates, medium shot-blast to ICRI CSP 4 or 5.

D. Water, residual material used for cleaning, residuals painting, scales, or loose material as a result of the surface preparation shall be recollected for a full RCRA characterization test.

1. Residual collectors systems are Contractor's responsibility.

2. It is prohibited to store residual materials at tanks dikes areas.

E. Material Preparation: Mix and prepare the components following manufacturer's recommendations.

1. Keep clean and free of foreign materials the containments used for mixing and paint application.

2. Only use solvents and mixing agents of the same manufacturer.

3. Products diluted in excess are not allowed. The Contractor is the sole responsible on applying and ending with the specified thickness (dry). Engineer shall approve the required dry thickness applied.

F. Procedure for Testing and Removal of Soluble Salts (Chloride/Sulfate/Nitrate) – Not necessary when the surfaces are water jetted cleaned. The methodology shall be used for tank's interior.

1. All surfaces shall be water blasted cleaned with a minimum of 3,000 psi, using a 1% solution of Chlor Rid or similar product to remove soluble salts after abrasive cleaning and to prevent deformations on the surface profile. The maximum chloride permissible contamination level in the water used for cleaning is limited to 100ppm.

2. The base coat (primer) can be applied if the surface is clean, free of dust, abrasive and other contaminants. The following tests shall be done to guarantee the cleanness of the surface:

   a. Adhesive tape testing every 1,000 ft ^{2}.

3. Chlor Test CSN, or similar product, shall be done one hour after abrasive cleaning. The test shall be done on representative areas with corrosion or loosed material, and closed to weld seams at shells, roof and bottom.

4. Surfaces shall be tested for contaminants before any rehabilitation or surface preparation. Cleaning as described in the preceding items shall be repeated if contamination levels are founded to be greater than the followings

a. Chlorides > 20 mg/m^2 (2 $\mu g/cm^2$)

b. Sulfate > 25 mg/m^2 (2.5 $\mu g/cm^2$)

c. Nitrate > 25 mg/m^2 (2.5 $\mu g/cm^2$)

2.3 APLICATION

A. Apply the coating following manufacturer's instructions. Use suitable techniques and equipment for the material to be applied on the substrate. The airless spray method is preferable. The Contractor shall take all necessary measures to prevent the intrusion of any contaminant that may affect the painted area.

B. It is not permitted to paint over dirty, corroded, scaled, dusted, greased, unprepared surfaces.

C. Systems components shall be compatible, from the same manufacturer.

D. The film thickness remains the same independently on the method of application. Subsequent layers will not be applied until the previous layer has been cured, as indicated on the manufacturer's literature.

E. Apply additional layers when the previous layer is stained. All layers shall have the same uniform color and texture. Specified film thickness shall be verified on corners and edges. Special attention shall be given to assure that the corners, edges, hollows and welds receives the same thickness of dry film as in flat surfaces. Do not apply primer when it has been shop applied.

F. Itinerary for Coating: First coat shall be applied as soon as possible after surface has been prepared. Repeat surface preparation process when there a change in color, loss of required surface profile or fast rusted.

G. Apply the minimum dry film thickness (dft) required per specified system. When is necessary and/or required by the Engineer, apply a spot primer at critical points before base (primer) coat. Specified coating thickness is not included in this step. Among the critical points are the edges, corners, and elbows.

1. System 1

a. Base – 3 mils

b. Intermediate – 8 mils

c. Finish – 5 mils

2. System 2

a. Base – 5 mils

b. Intermediate – 5 mils

c. Finish – 3 mils

3. System 3 – 20 mils

4. System 4

a. Primer – 4 mils

b. Finish – 16 mils, applied in two applications of 8 mils each

5. System 5

a. Primer – 4 mils

b. Base – 8 mils

c. Finish – 8 mils

6. System 6

a. Primer – 3 mils

b. Base – 20 mils

c. Finish – 20 mils

7. System 7

a. Filler Coat – Lost substrate shall be replaced with this material to a smooth contour.

b. Base – 80 mils, applied in two layers of 40 mils each.

c. Finish – 40 mils, applied in two layers of 20 mils each.

8. System 8

a. Filler Coat – Lost substrate shall be replaced with this material to a smooth contour.

b. Base – 80 mils, applied in two layers of 40 mils each.

c. Intermediate – 40 mils, applied in two layers of 20 mils each.

d. Finish – 10 mils.

9. System 9 – 4 mils

10. System 10

a. Sealer – Apply to a rate of 320 ft^2 / gal (5 mils) using single or plural component airless spray equipment.

b. Rebuild – Fill large voids in concrete to reshape surface or ½" for ultra-protection using a steel trowel or spreader bar.

c. Resurface – Spread material to a leveled ¼" layer with a trowel or screed rake.

d. Lining – 60 mils, applied in two layers of 30 mils each, with a single or plural component airless spray equipment.

11. System 11

a. Sealer – Apply to a rate of 320 ft^2 / gal (5 mils) using single or plural component airless spray equipment.

b. Rebuild – Fill large voids in concrete to reshape surface or ½" for ultra-protection using a steel trowel or spreader bar.

c. Lining – 80 mils, applied in two layers of 40 mils each, with a single or plural component airless spray equipment.

12. System 12

a. Base – 20 mils

b. Finish – 20 mils

2.4 QUALITY CONTROL

A. The Authority reserve the right to request at any time, and many times as necessary, the following tests during the application:

1. The Authority may contract the services of an independent laboratory to sample the products that are been used. The samples will be taken in the presence of the Contractor.

2. The laboratory will analyze the sample for the following characteristics per Authority request:

   a. Material's Quantitative Analysis.
   b. Corrosion Resistance
   c. Apparent Reflectivity
   d. Flexibility
   e. Opacity
   f. Color Retention
   g. Rust and Alkaline Resistance

3. If the test results show that the material used does not comply with the requirements specified, the Authority will stop the works and may require to the Contractor the disbursement of the testing, removal of the rejected paint, new surface preparation and new coating at his own cost.

B. The Contractor will provide to the Engineer the receipts of the materials purchased.

C. The Contractor shall keep a daily log of field conditions and of the necessary tests to assure the job is being done as specified and according to the manufacturer.

D. Quality control plan (by contractor except when noted) shall include but no limited to:

1. Non visible contaminants (salts/ions) test using SSPC Guide 15 Method A-2. The test shall be conducted every 500 ft^2. Surfaces with the following concentrations shall be considered as CONTAMINATED:

a. Chlorides > 2 ppm (2 $\mu g/cm^2$ or 20 mg/m^2)

b. Sulfate > 2.5 ppm (2.5 $\mu g/cm^2$ or 25 mg/m^2)

c. Nitrate > 5 ppm (5 $\mu g/cm^2$ or 50 mg/m^2)

This test shall be performed before surface preparation, before primer coat and between each coating layer.

In the case that any level exceed the maximum allowable, a water-CHLOR*RID 1:50 solution shall be used to pressurized (5,000 psi) blast cleaning the affected area.

2. If 8 hours or more have been elapsed without coating been applied or flash rust is present, contractor shall prepare the surface again at his own cost.

3. Surface profile test shall be performed with a digital gauge similar to Elcometer 224.

4. Tests shall be performed and recorded for ambient conditions such as temperature, relative humidity and dew point.

5. Substrate surface temperature shall be checked and recorded before any coating application.

6. Every mixing procedure shall be documented with the mixing ration, mixing duration and dwell duration.

7. Wet film thickness shall be checked.

8. Dry film thickness test shall be performed with a digital meter similar to PosiTector 6000 in conformance with SSPC-PA2.

9. Adhesion test will be performed by with a Defelsko PosiTest AT-A automatic tester.

10. Holiday Test to 100% of the surface with a high voltage contact probe.

11. All the inspections and tests shall be performed in the presence of PREPA's inspector.

E. The Contractor shall keep accessible all the information related to the equipment used for inspections and tests, including equipment technical data and calibration.

F. The contractor shall prepare a quality control plan for PREPA's approval. The plan shall be signed by the quality control personnel.

G. Before any coating layer, contractor shall clean the surface to a grade of SSPC-SP1 using thinner for exterior surfaces and alcohol 98% for interior surfaces.

H. Contractor shall be responsible to record keeping of all data and the spatial relationship to the structure.

I. All inspection equipment shall be calibrated and operated by certified personnel.

2.5 HOUSE KEEPING

A. Empty containers, covers, debris, residuals and all unnecessary material in the working area shall be properly removed and disposed daily.

2.6 PROTECTION

A. Protect all equipment and completed work done in adjacent areas.

B. Damages shall be repaired, replaced or recoated per Engineer's requirements.

2.7 SECURITY

A. Coatings/paintings shall be done following the safety measures recommended by the manufacturer and required by the Safety Engineer in charge. The Contractor shall follow at all time the best management practice plan (BMPP) and safety regulations established by the Authority to assure a safe working environment to the personnel.

2.8 COLORS

a. Upon Contractor's formal request, PREPA shall select the colors for all the approved system coatings, including all the paint and primer components of the approved coating system.

Requisition ADM-005-16
CASE Fire Protection System Water Tank Rehabilitation
CASE – Palo Seco

END OF SECTION 09900

Government of Puerto Rico

Puerto Rico Electric Power Authority

Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Rental Services for Mobile Cranes Palo Seco

1/20/2022

Introduction

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

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

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

The sections included in this document are:

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

Document Revision History

Version	Date	Summary of Changes
v.1	1/20/2022	

Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Rental Services for Mobile Cranes - Palo Seco Steam Plant
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

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

Program Manager: ***<Name>***

<Insert title here>

PREPA Project Sponsor: ***<Name >***

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Palo Seco Steam Plant Rental Services of Mobile Cranes	[redacted]

Note: *GPS coordinates are required for all facilities.*

2.2. Facilities Description

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

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Contract on request for one year for rental of Cherry Picker crane of 50 tons with strut between 100 to 150 feet and 32 feet and / or crane of 150 tons whose rent includes the rental of the equipment, mobilization, operator' salary, daily meals and fuel. Daily, weekly, and monthly rent.

This equipment will be used to carry out repair and maintenance work on the premises of the Palo Seco Toa Baja, Puerto Rico Power Plant.

Section 3. Scope of Work

3.1. Scope of Work Description

Crane rental services to carry out repair and maintenance work in the facilities of the Palo Seco Steam Plant. will consist of the following:

The service includes the equipment described below, including maintenance, required insurance, inspection of the equipment being up to date, authorized and trained personnel to operate them, operator's salary, assistant's salary, daily meals, and fuel.

Descriptions:

1. Rental of hydraulic crane rough terrain of 50 Tons 4x4 capacity Cherry Picker type, with 105 feet of main strut , plus 51 feet of "jiba". Have all applicable safety requirements in the construction industry, as required by OSHA and ANSI. Must have two (2) pieces of equipment available for lease at all times.
2. Crane rental of 50 Tons (Monthly rent baed on 176 hours)
3. 50 Ton crane rental (Weekly rent based on period 3 to 7 days)
4. Crane rental of 50 Tons (Daily rent based on 8 hours)
5. Cost of additional hours per day (overtime) 50 Ton crane.
6. Mobilization prices and assembly of the 50 Ton crane
7. Dismantling and demobilization price of the 50 Ton
8. Rental of 150 Ton All Terrain hydraulic crane with capacity of 197 feet of main strut plus 59 feet of "jiba" and the option to use an additional 55 feet in extensions. Have all applicable safety requirements in the construction industry, as required by OSHA and ANSI.
9. 150 Tons crane rental (Monthly rent based on 176 hours)
10. 150 Tons crane rental (Weekly rent based on 3 to 7 days)
11. 150 Tons crane rental (Daily rent based on 8 hours)
12. Cost of additional hours per day (overtime) for crane of 150 Tons
13. Mobilization price and assembly of the 150 Ton crane
14. Price for dismantling and demobilizing the 150 Ton crane

3.2. Type of Project

Indicate whether the intended plan is a(n):

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

Choose One (Restoration, Improved or Alternate) *If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

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

3.3. Preliminary Architectural and Engineering (A&E)

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

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

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

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
• (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
• 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount ($M)
Rental	$700,000.00
Total Project Estimated Cost	**$700,000.00**

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

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

Section 7. EHP Requirements

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

Section 8. Program Manager Lead Certification

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

Program Manager's Printed Name | Date

Title | Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name | Date

Title | Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

- Please see attached Justification Memo and Technical Specification.

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures

10.4. Other: (Please Describe)

N/A

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

12 de enero de 2022

Neftalí González Cruz, Jefe Interino
División de Suministros

Antonio Kalil Carrión, Jefe
Central Generatriz Palo Seco

SOLICITUD AUTORIZACIÓN PARA APROBACION CONTRATO RENTA GRUAS 50 & 150 TON EN LA **CENTRAL GENERATRIZ PALO SECO CR 244595**

Se solicita la aprobación de un contrato a requerimiento por un año para alquiler de grúas: Cherry Picker de 50 toneladas con puntal entre 100 a 150 pies y 32 pies de jibá y/o grúa de 150 toneladas cuya renta incluya el alquiler del equipo, movimientos, salario del operador, dieta diaria y combustible. Renta diaria, semanal y mensual.
Estos equipos serán utilizados para realizar labores de reparación y mantenimiento en los predios de la Central Palo Seco Toa Baja, PR.

Descripciones:
1. Alquiler de grua Cherry Picker de 50 toneladas con puntal entre 100 a 150 pies y 32 pies de jibá y/o grúa de 150 toneladas cuya renta incluya el alquiler del equipo, movimientos, salario del operador, dieta diaria y combustible.
2. Alquiler de grúa de 50 Toneladas Rough Terrain "Cherry Picker" tiene que tener una capacidad de 50 toneladas con un alcance de 140 pies mínimos con jibá, tener todos los requerimientos de seguridad aplicables en la industria de la construcción, según lo requiere OSHA y ANSI. Tiene que tener dos (2) equipos disponibles para arrendamiento en todo momento. (Costo semanal basado en periodos de 3 a 7 días).
3. Alquiler de grúa de 50 Toneladas Rough Terrain “Cherry Picker" tiene que tener una capacidad de 50 toneladas con un alcance de 140 pies mínimos con jibá, tener todos los requerimientos de seguridad aplicables en la industria de la construcción, según lo requiere OSHA y ANSI. Tiene que tener dos (2) equipos disponibles para arrendamiento en todo momento. (Costo diario basado en 8 horas).
4. Alquiler de grúa de 50 Toneladas Rough Terrain "Cherry Picker" tiene que tener una capacidad de 50 toneladas con un alcance de 140 pies mínimos con jibá, tener todos los requerimientos de seguridad aplicables en la industria de la construcción, según OSHA y ANSI.

Tiene que tener dos (2) equipos disponibles para arrendamiento en todo momento. (Costo por hora adicional. Horas extra por día).
5. Alquiler de grúa de 150 toneladas.(Renta Mensual)
6. Alquiler de grúa de 150 toneladas. (Renta Semanal)
7. Alquiler de grúa de 150 toneladas. (Renta Diaria)
8. Alquiler de grúa de 150 toneladas. (Entrega y Recogido en los predios de la Central)
Requerimientos adicionales:
-Equipo de seguridad personal de el/los operarios de las grúas mientras se encuentren trabajando en los predios de la Central. (Capacete, orejeras, gafas de seguridad, calzado de seguridad, chaleco reflector) -Tarjeta de identificación de el/los operarios accesible mientras se encuentran en los predios de la Central

REQUERIMIENTOS ADICIONALES:

-EQUIPO DE SEGURIDAD PERSONAL DE EL/LOS OPERARIOS DE LAS GRÚAS MIENTRAS SE ENCUENTREN TRABAJANDO EN LOS PREDIOS DE LA CENTRAL. (CAPACETE, OREJERAS, GAFAS DE SEGURIDAD, CALZADO DE SEGURIDAD, CHALECO REFLECTOR) - -TARJETA DE IDENTIFICACIÓN DE EL/LOS OPERARIOS ACCESIBLE MIENTRAS SE ENCUENTRAN EN LOS PREDIOS DE LA CENTRAL.

DESGLOSE DE COSTOS

I-VER TABLA DE CUMPLIMIENTO PARA COSTOS DEL EQUIPO, SEGÚN PROCESO DE SUBASTA FORMAL RFP 0002332.

a. PRECIO POR MOVILIZACIÓN Y ENSAMBLAJE DE LA GRUA.

b. PRECIO POR DESMONTAR Y DESMOVILIZAR LA GRUA.

c. PRECIO MENSUAL DE LA GRUA. EN ESTE RENGLÓN SE INCLUIRÁ EL COSTO DE LA GRUA Y EL OPERADOR EN HORARIO REGULAR DE 40 HORAS SEMANALES.

d. PRECIO POR SEMANA DE LA GRUA. EN ESTE RENGLÓN SE INCLUIRÁ EL COSTO DE LA GRUA Y EL OPERADOR EN HORARIO REGULAR DE 40 HORAS A LA SEMANA.

e. PRECIO POR DÍA.

f. HORAS EXTRAS. SE PAGARÁ COMO HORAS EXTRAS, EL EXCESO DE 8 HORAS DIARIAS Y/O EL EXCESO DE 40 HORAS SEMANALES.

II-LOS SIGUIENTES DÍAS ÚNICAMENTE SE CONSIDERARÁN DÍAS FERIADOS PARA EFECTOS DE ESTA ORDEN:

g. AÑO NUEVO
h. DÍA DE REYES
i. PRESIDENTS DAY

j. MARTIN LUTHER KING
k. VIERNES SANTOS
l. 4 DE JULIO
m. 25 DE JULIO
n. DÍA DEL TRABAJO
o. ACCIÓN DE GRACIAS
p. DÍA DE NAVIDAD

III-EL MANTENIMIENTO PREVENTIVO Y LLENADO DE COMBUSTIBLE DE LA GRUA SE REALIZARÁ FUERA DE HORAS LABORABLES. EN CASO DE UNA AVERÍA DE LA GRUA, LA MISMA SE REPARARÁ EN SITIO, SIGUIENDO LAS MEJORES PRÁCTICAS PARA EVITAR DERRAMES DE COMBUSTIBLE O ACEITE. DE NO PODER REPARAR LA GRUA EN UN PERIODO DE 24 HORAS, EL CONTRATISTA SE VERÁ OBLIGADO A RETIRAR LA GRUA AVERIADA DE SITIO Y REPONERLA POR OTRA DE SIMILAR Ó DE MÁS CAPACIDAD SIN COSTO ADICIONAL PARA LA AUTORIDAD. LAS HORAS QUE LA GRUA NO ESTÉ DISPONIBLE PARA TRABAJO, NO SE CONSIDERARÁN HORAS TRABAJADAS DE LA MISMA. COORDINACIONES DE LA GRUA: PARA MOVILIZACIONES DE LAS GRUAS DE MENOR CAPACIDAD (30, 50 Y 70 TON), EL CONTRATISTA SE VERÁ OBLIGADO A MOVILIZARSE A LA CENTRAL CUANDO ASÍ SE LE REQUIERA EN NO MÁS DE 12 HORAS UNA VEZ SE REALICE LA COORDINACIÓN. PARA LAS GRUAS DE 100 Y 150 TON, EL CONTRATISTA SE MOVILIZARÁ EN UN PLAZO NO MAYOR DE 48 HORAS CUANDO ASÍ SE REQUIERA. PARA LA MOVILIZACIÓN DE LA GRUA DE 350 TON SE COORDINARÁ CON EL CONTRATISTA CON UNA SEMANA DE ANTICIPACIÓN.

IV-INCLUYE OPERADOR CON LAS DEBIDAS LICENCIAS Y ENTRENAMIENTOS PARA OPERAR EL EQUIPO. LA AEE NO SERÁ RESPONSABLE POR LAS LICENCIAS REQUERIDAS PARA EL OPERADOR. EL SUPLIDOR MANTENDRÁ LAS LICENCIAS VIGENTES CUMPLIENDO CON TODAS LAS REGLAMENTACIONES Y LEYES QUE APLIQUEN A ESTE SERVICIO.

V-EL EQUIPO COTIZADO TIENE QUE CUMPLIR CON TODOS LOS REQUIRIMIENTOS DE SEGURIDAD Y AMBIENTALES REQUERIDOS POR O.S.H.A. Y ASME.

VI-EL SUPLIDOR TIENE QUE INCLUIR TODOS LOS SEGUROS NECESARIOS PARA EL ACARREO DEL EQUIPO.

REQUISITOS DE SEGUROS:

EL CONTRATISTA PROVEERÁ UN CERTIFICADO EN ORIGINAL FIRMADO POR UN REPRESENTANTE AUTORIZADO DE UNA COMPAÑÍA EN PUERTO RICO QUE DESCRIBA LA CUBIERTA DE LOS SIGUIENTES SEGUROS:

A. CORPORACIÓN DEL FONDO DEL SEGURO DEL ESTADO

B. SEGURO DE RESPONSABILIDAD PÚBLICA GENERAL – CON UNA CUBIERTA MÍNIMA DE $1,000,000.00

C. SEGURO DE RESPONSABILIDAD PÚBLICA DE AUTOMOVIL - CON UNA CUBIERTA MÍNIMA DE $1,000,000.00 – LIMITE SENCILLO COMBINADO

D. SEGURO DE RESPONSABILIDAD PATRONAL - CON UNA CUBIERTA MÍNIMA DE $1,000,000.00 – LIMITE SENCILLO COMBINADO

REQUISITOS DE FIANZA DE EJECUCIÓN:

-SE LE REQUIERE AL SUPLIDOR, UNA FIANZA DE EJECUCIÓN POR EL 100% DEL TOTAL DE LA ORDEN (FORMULARIO AEE 500.0-59.)

EL CONTRATISTA ACUERDA LLEVAR A CABO TODOS LOS TRABAJOS CONTRATADOS EN CUMPLIMIENTO CON TODAS LAS LEYES, REGLAMENTACIONES U ORDENANZAS FEDERALES, ESTATALES Y MUNICIPALES DE SALUD Y SEGURIDAD.

CLAUSULA DE SERVICIOS INTERAGENCIALES:

AMBAS PARTES CONTRATANTES RECONOCEN Y ACCEDEN A QUE LOS SERVICIOS CONTRATADOS PODRÁN SER BRINDADOS A CUALQUIER ENTIDAD DE LA RAMA EJECUTIVA CON LA CUAL LA ENTIDAD CONTRATANTE REALICE UN ACUERDO INTERAGENCIAL O POR DISPOSICIÓN DIRECTA DE LA SECRETARIA DE LA GOBERNACIÓN. ESTOS SERVICIOS SE REALIZARAN BAJO LOS MISMOS TÉRMINOS Y CONDICIONES EN CUANTO A HORAS DE TRABAJO Y COMPENSACIÓN CONSIGNADOS EN ESTE CONTRATO. PARA EFECTOS DE ESTA CLÁUSULA, EL TÉRMINO "ENTIDAD DE LA RAMA EJECUTIVA" INCLUYE A TODAS LAS AGENCIAS DEL GOBIERNO DE PUERTO RICO, ASI COMO A LAS INSTRUMENTALIDADES Y CORPORACIONES PÚBLICAS Y A LA OFICINA DEL GOBERNADOR.

CLÁUSULA DE TERMINACIÓN:

LA SECRETARIA DE LA GOBERNACIÓN TENDRÁ LA FACULTAD PARA DAR POR TERMINADO EL PRESENTE CONTRATO EN CUALQUIER MOMENTO.

LEY 2-2018 CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO

1. EL CONTRATISTA SE COMPROMETE A CUMPLIR CON LAS DISPOSICIONES DE LA LEY NÚM. 2-2018, CONOCIDA COMO EL CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO.

2. EL CONTRATISTA MANTENDRÁ VIGENTE EN EL REGISTRO DE PROVEEDORES DE LA AEE, UNA DECLARACIÓN JURADA, ANTE NOTARIO PÚBLICO, EN LA QUE INFORMARÁ SI LA PERSONA NATURAL O JURÍDICA O CUALQUIER PRESIDENTE, VICEPRESIDENTE, DIRECTOR, DIRECTOR EJECUTIVO, O MIEMBRO DE UNA JUNTA DE OFICIALES O JUNTA DE DIRECTORES, O PERSONAS QUE DESEMPEÑEN FUNCIONES EQUIVALENTES PARA LA PERSONA JURÍDICA, HA SIDO CONVICTA O SE HA DECLARADO CULPABLE DE CUALQUIERA DE LOS DELITOS ENUMERADOS EN LA SECCIÓN 6.8 DE LA LEY 8-2017, SEGÚN ENMENDADA, CONOCIDA COMO "LEY PARA LA ADMINISTRACIÓN Y TRANSFORMACIÓN DE LOS RECURSOS HUMANOS EN EL GOBIERNO DE PUERTO RICO", O POR CUALQUIERA DE LOS DELITOS CONTENIDOS EN ESTE O CUALQUIERA DE LOS DELITOS INCLUIDOS EN LA LEY 2-2018.

3. EL CONTRATISTA CERTIFICA QUE NO HA SIDO CONVICTO EN PUERTO RICO O EN LOS ESTADOS UNIDOS POR INFRACCIÓN A LOS ARTÍCULOS 4.2, 4.3 O 5.7 DE LA LEY 1-2012, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY ORGÁNICA DE LA OFICINA DE ÉTICA GUBERNAMENTAL DE PUERTO RICO, CUALQUIER DE LOS DELITOS ENUMERADOS EN LOS ARTÍCULOS 250 A 266 DE LA LEY 146-2012, SEGÚN ENMENDADA, CONOCIDA COMO EL CÓDIGO PENAL DE PUERTO RICO, CUALQUIERA DE LOS DELITOS TIPIFICADOS EN LA LEY 2-2018, SEGÚN ENMENDADA, CONOCIDA COMO EL CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO O CUALQUIER OTRO DELITO QUE IMPLIQUE EL MAL USO DE LOS FONDOS O PROPIEDAD PÚBLICA, INCLUYENDO, PERO SIN LIMITARSE, A LOS DELITOS MENCIONADOS EN LA SECCIÓN 6.8 DE LA LEY 8-2017, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY DE ADMINISTRACIÓN Y TRANSFORMACIÓN DE RECURSOS HUMANOS EN EL GOBIERNO DE PUERTO RICO.

4. LA AUTORIDAD DARÁ POR TERMINADO EL CONTRATO EN CASO DE QUE EL CONTRATISTA RESULTE CONVICTO EN PUERTO RICO O EN LOS ESTADOS UNIDOS POR INFRACCIÓN A LOS ARTÍCULOS 4.2, 4.3 O 5.7 DE LA LEY 1-2012, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY ORGÁNICA DE LA OFICINA DE ÉTICA GUBERNAMENTAL DE PUERTO RICO; CUALQUIERA DE LOS DELITOS ENUMERADOS EN LOS ARTÍCULOS 250 A 266 DE LA LEY 146-2012, SEGÚN ENMENDADA, CONOCIDA COMO EL CÓDIGO PENAL DE PUERTO RICO, CUALQUIERA DE LOS DELITOS TIPIFICADOS EN LA LEY 2-2018, CONOCIDA COMO CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO O CUALQUIER OTRO DELITO QUE IMPLIQUE EL USO INDEBIDO DE FONDOS O PROPIEDAD PÚBLICA, INCLUYENDO, PERO SIN LIMITARSE A, LOS DELITOS MENCIONADOS EN LA SECCIÓN 6.8 DE LA LEY 8-2017, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY DE ADMINISTRACIÓN Y TRANSFORMACIÓN DE RECURSOS HUMANOS EN EL GOBIERNO DE PUERTO RICO.

PUERTO RICO ELECTRIC POWER AUTHORITY
CENTRAL PALO SECO

CR: **244595**

Alcance trabajo
O descripción: **CONTRATO A REQUERIMIENTO PARA SERVICIO DE RENTA DE GRUAS MOVILES**

Renta Grúas 50 &150 Toneladas Central Palo Seco

Justificación:

Contrato a requerimiento por un año para alquiler de grúa Cherry Picker de 50 toneladas con puntal entre 100 a 150 pies y 32 pies de jibá y/o grúa de 150 toneladas cuya renta incluya el alquiler del equipo, movimientos, salario del operador, dieta diaria y combustible. Renta diaria, semanal y mensual.

Estos equipos serán utilizados para realizar labores de reparación y mantenimiento en los predios de la Central Palo Seco Toa Baja, PR. Descripciones:

1. Alquiler de grua Cherry Picker de 50 toneladas con puntal entre 100 a 150 pies y 32 pies de jibá y/o grúa de 150 toneladas cuya renta incluya el alquiler del equipo, movimientos, salario del operador, dieta diaria y combustible.

2. Alquiler de grúa de 50 Toneladas Rough Terrain "Cherry Picker" tiene que tener una capacidad de 50 toneladas con un alcance de 140 pies mínimos con jibá, tener todos los requerimientos de seguridad aplicables en la industria de la construcción, según lo requiere OSHA y ANSI. Tiene que tener dos (2) equipos disponibles para arrendamiento en todo momento. (Costo semanal basado en periodos de 3 a 7 días).

3. Alquiler de grúa de 50 Toneladas Rough Terrain "Cherry Picker" tiene que tener una capacidad de 50 toneladas con un alcance de 140 pies mínimos con jibá, tener todos los requerimientos de seguridad aplicables en la industria de la construcción, según lo requiere OSHA y ANSI. Tiene que tener dos (2) equipos disponibles para arrendamiento en todo momento. (Costo diario basado en 8 horas).

4. Alquiler de grúa de 50 Toneladas Rough Terrain "Cherry Picker" tiene que tener una capacidad de 50 toneladas con un alcance de 140 pies mínimos con jibá, tener todos los requerimientos de seguridad aplicables en la industria de la construcción, según OSHA y ANSI. Tiene que tener dos (2) equipos disponibles para arrendamiento en todo momento. (Costo por hora adicional. Horas extra por día).

5. Alquiler de grúa de 150 toneladas.(Renta Mensual)

6. Alquiler de grúa de 150 toneladas. (Renta Semanal)

7. Alquiler de grúa de 150 toneladas. (Renta Diaria)

8. Alquiler de grúa de 150 toneladas. (Entrega y Recogido en los predios de la Central)

Requerimientos adicionales:

Equipo de seguridad personal de el/los operarios de las grúas mientras se encuentren trabajando en los predios de la Central. (Capacete, orejeras, gafas de seguridad, calzado de seguridad, chaleco reflector) -

Tarjeta de identificación de el/los operarios accesible mientras se encuentran en los predios de la Central

ALCANCE DEL TRABAJO

SERVICIO DE ALQUILER DE GRUAS PARA REALIZAR LABORES DE REPARACION Y MANTENIMIENTO EN LAS FACILIDADES DE LA CENTRAL TERMOELECTRICA DE PALO SECO.

EL SERVICIO INCLUYE LOS EQUIPOS DESCRITOS A CONTINUACION, INCLUYENDO MANTENIMIENTO, LOS SEGUROS REQUERIDOS, INSPECCIÓN DE LOS EQUIPOS AL DÍA, EL PERSONAL AUTORIZADO Y ADIESTRADO PARA OPERAR LOS MISMOS, SALARIO DEL OPERADOR, SALARIO DEL AYUDANTE, DIETAS DIARIAS Y COMBUSTIBLE:

DESCRIPCIONES:

1. ALQUILER DE GRÚA HIDRAULICA ROUGH TERRAIN DE 50 TONELADAS CAPACIDAD 4X4 TIPO CHERRY PICKER, CON 105 PIESDE PUNTAL PRINCIPAL, MÁS 51 PIES DE JIBA. TENER TODOS LOS REQUERIMIENTOS DE SEGURIDAD APLICABLES EN LA INDUSTRIA DE LA CONSTRUCCIÓN, SEGÚN LO REQUIERE OSHA Y ANSI. TIENE QUE TENER DOS (2) EQUIPOS DISPONIBLES PARA ARRENDAMIENTO EN TODO MOMENTO.

2. ALQUILER DE GRUA DE 50 TONELADAS (RENTA MENSUAL BASADO EN 176 HORAS)

3. ALQUILER DE GRUA DE 50 TONELADAS (RENTA SEMANAL BASADO EN PERÍODO DE 3 A 7 DÍAS)

4. ALQUILER DE GRUA DE 50 TONELADAS (RENTA DIARIA BASADO EN 8 HORAS) GRÚA 50 TONELADAS

5 COSTO DE HORAS ADICIONALES POR DIA (HORAS EXTRAS) GRÚA DE 50 TONELADAS

6 PRECIO POR MOVILIZACIÓN Y ENSAMBLAJE DE LA GRÚA DE 50 TONELADAS

7. PRECIO POR DESMONTAR Y DESMOVILIZACIÓN DE LA GRÚA DE 50 TONELADAS

8. ALQUILER DE GRÚA HIDRAULICA ALL TERRAIN (TODO TERRENO) DE 150 TONELADAS CON CAPACIDAD DE 197 PIES DE PUNTAL PRINCIPAL MÁS 59 PIES DE JIBA Y LA OPCION DE UTILIZAR 55 PIES ADICIONALES EN EXTENSIONES. TENER TODOS LOS REQUERIMIENTOS DE SEGURIDAD APLICABLES EN LA INDUSTRIA DE LA CONSTRUCCIÓN, SEGÚN LO REQUIERE OSHA Y ANSI.)

9. ALQUILER DE GRÚA DE 150 TONELADAS (RENTA MENSUAL BASADO EN 176 HORAS)

10. ALQUILER DE GRÚA DE 150 TONELADAS (RENTA SEMANAL BASADO EN 3 A 7 DÍAS)

11. ALQUILER DE GRUA DE 150 TONELADAS (RENTA DIARIA BASADO EN 8 HORAS)

12. COSTO DE HORAS ADICIONALES POR DIA (HORAS EXTRAS) GRÚA DE 150 TONELADAS

13. PRECIO POR MOVILIZACIÓN Y ENSAMBLAJE DE LA GRÚA DE 150 TONELADAS

14. PRECIO POR DESMONTAR Y DESMOVILIZACIÓN DE LA GRÚA DE 150 TONELADAS

REQUERIMIENTOS ADICIONALES:

- EQUIPO DE SEGURIDAD PERSONAL DE EL/LOS OPERARIOS DE LAS GRÚAS MIENTRAS SE ENCUENTREN TRABAJANDO EN LOS PREDIOS DE LA CENTRAL. (CAPACETE, OREJERAS, GAFAS DE SEGURIDAD, CALZADO DE SEGURIDAD, CHALECO REFLECTOR) -

- TARJETA DE IDENTIFICACIÓN DE EL/LOS OPERARIOS ACCESIBLE MIENTRAS SE ENCUENTRAN EN LOS PREDIOS DE LA CENTRAL.

DESGLOSE DE COSTOS

I-VER TABLA DE CUMPLIMIENTO PARA COSTOS DEL EQUIPO, SEGÚN PROCESO DE SUBASTA FORMAL RFP 0002332.

a. PRECIO POR MOVILIZACIÓN Y ENSAMBLAJE DE LA GRUA.

b. PRECIO POR DESMONTAR Y DESMOVILIZAR LA GRUA.

c. PRECIO MENSUAL DE LA GRUA. EN ESTE RENGLÓN SE INCLUIRÁ EL COSTO DE LA GRUA Y EL OPERADOR EN HORARIO REGULAR DE 40 HORAS SEMANALES.

d. PRECIO POR SEMANA DE LA GRUA. EN ESTE RENGLÓN SE INCLUIRÁ EL COSTO DE LA GRUA Y EL OPERADOR EN HORARIO REGULAR DE 40 HORAS A LA SEMANA.

e. PRECIO POR DÍA.

f. HORAS EXTRAS. SE PAGARÁ COMO HORAS EXTRAS, EL EXCESO DE 8 HORAS DIARIAS Y/O EL EXCESO DE 40 HORAS SEMANALES.

II-LOS SIGUIENTES DÍAS ÚNICAMENTE SE CONSIDERARÁN DÍAS FERIADOS PARA EFECTOS DE ESTA ORDEN:

g. AÑO NUEVO
h. DÍA DE REYES
i. PRESIDENTS DAY
j. MARTIN LUTHER KING
k. VIERNES SANTOS
l. 4 DE JULIO
m. 25 DE JULIO
n. DÍA DEL TRABAJO
o. ACCIÓN DE GRACIAS
p. DÍA DE NAVIDAD

III-EL MANTENIMIENTO PREVENTIVO Y LLENADO DE COMBUSTIBLE DE LA GRUA SE REALIZARÁ FUERA DE HORAS LABORABLES. EN CASO DE UNA AVERÍA DE LA GRUA, LA MISMA SE REPARARÁ EN SITIO, SIGUIENDO LAS MEJORES PRÁCTICAS PARA EVITAR DERRAMES DE COMBUSTIBLE O ACEITE. DE NO PODER REPARAR LA GRUA EN UN PERIODO DE 24 HORAS, EL CONTRATISTA SE VERÁ OBLIGADO A RETIRAR LA GRUA AVERIADA DE SITIO Y REPONERLA POR OTRA DE SIMILAR Ó DE MÁS CAPACIDAD SIN COSTO ADICIONAL PARA LA AUTORIDAD. LAS HORAS QUE LA GRUA NO ESTÉ DISPONIBLE PARA TRABAJO, NO SE CONSIDERARÁN HORAS TRABAJADAS DE LA MISMA. COORDINACIONES DE LA GRUA: PARA MOVILIZACIONES DE LAS GRUAS DE MENOR CAPACIDAD (30, 50 Y 70 TON), EL CONTRATISTA SE VERÁ OBLIGADO A MOVILIZARSE A LA CENTRAL CUANDO ASÍ SE LE REQUIERA EN NO MÁS DE 12 HORAS UNA VEZ SE REALICE LA COORDINACIÓN. PARA LAS GRUAS DE 100 Y 150 TON, EL CONTRATISTA SE MOVILIZARÁ EN UN PLAZO NO MAYOR DE 48 HORAS CUANDO ASÍ SE REQUIERA. PARA LA MOVILIZACIÓN DE LA GRUA DE 350 TON SE COORDINARÁ CON EL CONTRATISTA CON UNA SEMANA DE ANTICIPACIÓN.

IV-INCLUYE OPERADOR CON LAS DEBIDAS LICENCIAS Y ENTRENAMIENTOS PARA OPERAR EL EQUIPO. LA AEE NO SERÁ RESPONSABLE POR LAS LICENCIAS REQUERIDAS PARA EL OPERADOR. EL SUPLIDOR MANTENDRÁ LAS LICENCIAS VIGENTES CUMPLIENDO CON TODAS LAS REGLAMENTACIONES Y LEYES QUE APLIQUEN A ESTE SERVICIO.

V-EL EQUIPO COTIZADO TIENE QUE CUMPLIR CON TODOS LOS REQUIRIMIENTOS DE SEGURIDAD Y AMBIENTALES REQUERIDOS POR O.S.H.A. Y ASME.

VI-EL SUPLIDOR TIENE QUE INCLUIR TODOS LOS SEGUROS NECESARIOS PARA EL ACARREO DEL EQUIPO.

VII. LA SUBASTA SE EVALUARÁ CON LA SUMA DE LOS TOTALES DE LOS SIGUIENTES RENGLONES:

A. RENTA MENSUAL DE LA GRÚA DE 50 TONELADAS X 12 MESES/AÑO

B. SALARIO EN TIEMPO REGULAR POR HORA DEL OPERADOR DE LA GRÚA DE 50 TONELADAS X 1950 HORAS/AÑO

C. SALARIO EN TIEMPO EXTRA POR HORA DEL OPERADOR DE LA GRÚA DE 50 TONELADAS X 900 HORAS/AÑO

D. COSTO POR HORA EXTRA DE LA GRÚA DE 50 TONELADAS X 900 HORAS/AÑO

E. COSTO DE MOBILIZACIÓN DE LA GRÚA DE 50 TONELADAS X 4 MOBILIZACIONES/AÑO

F. COSTO DE DESMOBILIZACIÓN DE LA GRÚA DE 50 TONELADAS X 4 MOBILIZACIONES/AÑO

G. RENTA MENSUAL DE LA GRÚA DE 150 TONELADAS X 4 MESES/AÑO

H. SALARIO EN TIEMPO REGULAR POR HORA DEL OPERADOR DE LA GRÚA DE 150 TONELADAS X 600 HORAS/AÑO

I. SALARIO EN TIEMPO EXTRA POR HORA DEL OPERADOR DE LA GRÚA DE 150 TONELADAS X 300 HORAS/AÑO

J. COSTO POR HORA EXTRA DE LA GRÚA DE 150 TONELADAS X 300 HORAS/AÑO

K. COSTO DE MOBILIZACIÓN DE LA GRÚA DE 150 TONELADAS X 3 MOBILIZACIONES/AÑO

L. COSTO DE DESMOBILIZACIÓN DE LA GRÚA DE 150 TONELADAS X 3 MOBILIZACIONES/AÑO

REQUISITOS DE SEGUROS:

EL CONTRATISTA PROVEERÁ UN CERTIFICADO EN ORIGINAL FIRMADO POR UN REPRESENTANTE AUTORIZADO DE UNA COMPAÑÍA EN PUERTO RICO QUE DESCRIBA LA CUBIERTA DE LOS SIGUIENTES SEGUROS:

A. CORPORACIÓN DEL FONDO DEL SEGURO DEL ESTADO

B. SEGURO DE RESPONSABILIDAD PÚBLICA GENERAL – CON UNA CUBIERTA MÍNIMA DE $1,000,000.00

C. SEGURO DE RESPONSABILIDAD PÚBLICA DE AUTOMOVIL - CON UNA CUBIERTA MÍNIMA DE $1,000,000.00 – LIMITE SENCILLO COMBINADO

D. SEGURO DE RESPONSABILIDAD PATRONAL - CON UNA CUBIERTA MÍNIMA DE $1,000,000.00 – LIMITE SENCILLO COMBINADO

REQUISITOS DE FIANZA DE EJECUCIÓN:

-SE LE REQUIERE AL SUPLIDOR, UNA FIANZA DE EJECUCIÓN POR EL 100% DEL TOTAL DE LA ORDEN (FORMULARIO AEE 500.0-59.)

EL CONTRATISTA ACUERDA LLEVAR A CABO TODOS LOS TRABAJOS CONTRATADOS EN CUMPLIMIENTO CON TODAS LAS LEYES, REGLAMENTACIONES U ORDENANZAS FEDERALES, ESTATALES Y MUNICIPALES DE SALUD Y SEGURIDAD.

CLAUSULA DE SERVICIOS INTERAGENCIALES:

AMBAS PARTES CONTRATANTES RECONOCEN Y ACCEDEN A QUE LOS SERVICIOS CONTRATADOS PODRÁN SER BRINDADOS A CUALQUIER ENTIDAD DE LA RAMA EJECUTIVA CON LA CUAL LA ENTIDAD CONTRATANTE REALICE UN ACUERDO INTERAGENCIAL O POR DISPOSICIÓN DIRECTA DE LA SECRETARIA DE LA GOBERNACIÓN. ESTOS SERVICIOS SE REALIZARAN BAJO LOS MISMOS TÉRMINOS Y CONDICIONES EN CUANTO A HORAS DE TRABAJO Y COMPENSACIÓN CONSIGNADOS EN ESTE CONTRATO. PARA EFECTOS DE ESTA CLÁUSULA, EL TÉRMINO "ENTIDAD DE LA RAMA EJECUTIVA" INCLUYE A TODAS LAS AGENCIAS DEL GOBIERNO DE PUERTO RICO, ASI COMO A LAS INSTRUMENTALIDADES Y CORPORACIONES PÚBLICAS Y A LA OFICINA DEL GOBERNADOR.

CLÁUSULA DE TERMINACIÓN:

LA SECRETARIA DE LA GOBERNACIÓN TENDRÁ LA FACULTAD PARA DAR POR TERMINADO EL PRESENTE CONTRATO EN CUALQUIER MOMENTO.

LEY 2-2018 CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO

1. EL CONTRATISTA SE COMPROMETE A CUMPLIR CON LAS DISPOSICIONES DE LA LEY NÚM. 2-2018, CONOCIDA COMO EL CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO.

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3. EL CONTRATISTA CERTIFICA QUE NO HA SIDO CONVICTO EN PUERTO RICO O EN LOS ESTADOS UNIDOS POR INFRACCIÓN A LOS ARTÍCULOS 4.2, 4.3 O 5.7 DE LA LEY 1-2012, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY ORGÁNICA DE LA OFICINA DE ÉTICA GUBERNAMENTAL DE PUERTO RICO, CUALQUIER DE LOS DELITOS ENUMERADOS EN LOS ARTÍCULOS 250 A 266 DE LA LEY 146-2012, SEGÚN ENMENDADA, CONOCIDA COMO EL CÓDIGO PENAL DE PUERTO RICO, CUALQUIERA DE LOS DELITOS TIPIFICADOS EN LA LEY 2-2018, SEGÚN ENMENDADA, CONOCIDA COMO EL CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO O CUALQUIER OTRO DELITO QUE IMPLIQUE EL MAL USO DE LOS FONDOS O PROPIEDAD PÚBLICA, INCLUYENDO, PERO SIN LIMITARSE, A LOS DELITOS MENCIONADOS EN LA SECCIÓN 6.8 DE LA LEY 8-2017, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY DE ADMINISTRACIÓN Y TRANSFORMACIÓN DE RECURSOS HUMANOS EN EL GOBIERNO DE PUERTO RICO.

4. LA AUTORIDAD DARÁ POR TERMINADO EL CONTRATO EN CASO DE QUE EL CONTRATISTA RESULTE CONVICTO EN PUERTO RICO O EN LOS ESTADOS UNIDOS POR INFRACCIÓN A LOS ARTÍCULOS 4.2, 4.3 O 5.7 DE LA LEY 1-2012, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY ORGÁNICA DE LA OFICINA DE ÉTICA GUBERNAMENTAL DE PUERTO RICO; CUALQUIERA DE LOS DELITOS ENUMERADOS EN LOS ARTÍCULOS 250 A 266 DE LA LEY 146-2012, SEGÚN ENMENDADA, CONOCIDA COMO EL CÓDIGO PENAL DE PUERTO RICO, CUALQUIERA DE LOS DELITOS TIPIFICADOS EN LA LEY 2-2018, CONOCIDA COMO CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO O CUALQUIER OTRO DELITO QUE IMPLIQUE EL USO INDEBIDO DE FONDOS O PROPIEDAD PÚBLICA, INCLUYENDO, PERO SIN LIMITARSE A, LOS DELITOS MENCIONADOS EN LA SECCIÓN 6.8 DE LA LEY 8-2017, SEGÚN ENMENDADA, CONOCIDA

COMO LA LEY DE ADMINISTRACIÓN Y TRANSFORMACIÓN DE RECURSOS HUMANOS EN EL GOBIERNO DE PUERTO RICO.

Government of Puerto Rico

Puerto Rico Electric Power Authority

Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Palo Seco Steam Plant - Procurement Turning Gear System, Units 3 and 4

11/29/2021

Introduction

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

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

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

The sections included in this document are:

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

Document Revision History

Version	Date	Summary of Changes

Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Palo Seco Steam Plant – Procurement Turning Gear System, Units 3 and 4
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

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

Program Manager: ***<Name>***

<Insert title here>

PREPA Project Sponsor: ***<Name >***

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Palo Seco Unit 3 - Turbine	[redacted]
Palo Seco Unit 4 - Turbine	[redacted]

Note: *GPS coordinates are required for all facilities.*

2.2. Facilities Description

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

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

This project, related to the Procurement of the Turning Gear System, Units 3 and 4 (purchase) is necessary for the power plant to replace existing turning gear system of any of the units 3 and 4, in case of a malfunction. This system is essential to maintain the turbo-generator rotor in slow rotation motion to avoid possible structural deflections that may affect the return to service of the unit after a programmed, maintenance or forced outage repair is completed.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for this project consists of the following:

-Purchase of a new rotor turning gear system for Units 3 or 4 of Palo Seco's Steam Plant that Siemens Energy Inc. will supply. Refer to details below:

SECTION 1
SCOPE OF SUPPLY / PRICING

Item #	Style #	Description	Quantity	Lead Time (Weeks)	Unit Price (USD)	Total Price (USD)
1	PW6802596G05	Mechanical Turning Gear Parts for Assembly	1	30	$295,381.60	$295,381.60
					Total	$295,381.60

3.2. Type of Project

Indicate whether the intended plan is a(n):

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

Choose One (Restoration, Improved or Alternate) *If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

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

3.3. Preliminary Architectural and Engineering (A&E)

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

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

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

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
• (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
• 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount ($M)
Purchase of Turning Gear System (Siemens Energy, Inc. - Style # PW680J296G03 - Mechanical Turning Gear Parts for Assembly)	$ 295,381.60
Total Project Estimated Cost	**$295,381.60**

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

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

Section 7. EHP Requirements

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

Section 8. Program Manager Lead Certification

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

_____ _____

Program Manager's Printed Name Date

_____ _____

Title Signature

Section 9. PREPA Project Sponsor Comments

Comments

<Insert any comments here>

PREPA Project Sponsor's Printed Name _____ Date _____

Title _____ Signature _____

Section 10. Attachments

10.1. Project Detailed Cost Estimates

Please see attached the following supporting documentation:

- Justificacion_PREB_4075
- Propuesta_PREB_4075
- Specs_1_PREB_4075
- Specs_2_PREB_4075
- Specs_3_PREB_4075
- Términos y Condiciones_PREB_4075

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures

10.4. Other: (Please Describe)

N/A

GOBIERNO DE PUERTO RICO

Autoridad de Energía Eléctrica de Puerto Rico

22 de junio de 2020

Neftalí González Cruz, Jefe
División de Suministros, Interino

Antonio Kalil Carrión, Jefe
Central Palo Seco, Interino

Justificación para compra de mecanismo del sistema de giro lento (Rotor Turning Gear) del Turbogenerador #3 y #4 de la Central Palo Seco

Cuando una Unidad se retira de servicio, ya sea por mantenimiento o reparaciones, la turbina se detiene y se procede a mantener la misma en giro lento (Turning Gear). El giro lento mantiene la turbina rodando a bajas revoluciones y evita que su eje se doble debido al peso y la alta temperatura. Esto evita daños en la turbina y el generador que pudieran ascender a millones de dólares en reparaciones.

Actualmente no contamos con un repuesto para los dispositivos de giro lento de las Unidades 3 y 4. Si en algún momento se presentara una avería en los engranajes de los dispositivos de alguna de las dos unidades, no podríamos realizar una reparación de corto tiempo, sustituyendo el dispositivo averiado por uno nuevo y evitando daños mayores. La unidad en cuestión, quedaría fuera por una cantidad de tiempo indefinido, lo que redundaría en un costo mayor de operación.

Por estas razones solicitamos la adquisición de estas piezas. Cualquier duda, puede comunicarse con el Ing. Héctor Rodríguez Moctezuma al 7033 o 7075, o con el Supervisor Emanuel Rivera Panzardi al 7175.

Coordinado:

Daniel Hernández Morales
Director Generación

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY
Executive Director | Josué A. Colón Ortiz | director_ejecutivo@prepa.com

November 3, 2021

Mary C. Zapata Acosta
Deputy Executive Director
Operations

Josué A. Colón Ortiz
Executive Director

Authorization to Utilize the Procedures for Acquisition of Goods and Services in Emergency Situations for the Generation Assets

We have reviewed the Generation Directorate's request for approval to use the Procedures for Acquisition of Goods or Services in Emergency Situations (Emergency Procedures) for the critical repair works of our system's most important base load and emergency generating units such as, but not limited to, the Aguirre 2, Costa Sur 5 and 6, Palo Seco 3 and 4, Cambalache 2 and 3 and the Aguirre Combined Cycle Units.

After careful consideration of mister William Ríos Mera, Generation Director's, request, we authorize the use of the Emergency Procedures, approved by PREPA's Governing Board through Resolution 4598, of March 28, 2018, for the critical repair works of base load and emergency generating units of the Generation Directorate.

All the emergency procurements, regardless of their estimated costs, will be procured through the Power Advocate Platform only and will be published in PREPA's web page. The Deputy Executive Director of Operations, in coordination with the Chief of the Supply Chain Division, will oversee the emergency procurement process, in compliance with the Emergency Procedures. The Deputy Executive Director of Operations and the Generation Director will designate a committee of at least three members to each procurement process, who will be responsible for the evaluation of the proposals and the award recommendation.

Engineers Carlos Negrón Alfonso and Ferdinand Correa Méndez, Administrator in Operations and Administrator in Generation, respectively, in coordination with the Head of each Power Plant, have identified the need for the following projects of vital importance, which require maintenance work to achieve the necessary reliability of each unit. The project descriptions, by power plant and division, are the following:

San Juan Power Plant

1. Units 5 and 6 Auxiliary Equipment Cooling Towers Replacement – the project is necessary to maintain all the auxiliary equipment under the operational temperature parameters. PREPA already procured the equipment as part of the Major Overhaul Project of both units 5 and 6. The project estimated cost is $0.85 MM shall be completed in 120 days. This project is essential for returning unit 5 and 6 back on service on a safe manner.

2. Procurement Ammonium for Unit 5 – this good is necessary for the compliance of the Federal Air Permit of the power plant. The purchase estimated cost is $0.50 MM and shall have a term of 365 days.

3. Procurement of High-Pressure Pumps Units 5 and 6 – the goods are necessary to proceed with a replacement of the existing high pressure boiler feed water pumping system to assure the efficient and reliable operation of both units 5 and 6. The purchase and service estimated cost is $1.6 MM and shall be completed in 300 days.

4. Unit 5 Repair and Coating Application Condenser, East Side – the project is necessary to repair various areas of the condenser and to apply the necessary amount of epoxy coating to avoid future forced outages. The project will result in an improvement of the unit's reliability. The project is estimated in $0.615 MM and shall be completed in 120 days.

5. Heavy Equipment Rental Services for Units 5-6 and 7-10 – the service is necessary for the repair and maintenance works of all the units of the San Juan Steam Plant. The service estimated cost is $0.85 MM and shall have a term of 365 days.

6. Repairs to the Nautilus Water Treatment System – the project is necessary to repair the structural walls and floor of the nautilus water clarifier system. This equipment is an essential component of the water treatment which will be discharge to the sea, as part of the NPDES permit. The project is estimated in $0.25 MM and shall be completed in 120 days.

7. Structural Repairs Service Fuel Tank S-10 – the project is necessary to perform the structural repairs to ring walls, roof, stairs, and floor of a fuel service tank S-10. The project is estimated in $0.75 MM and shall be completed in 240 days.

8. Unit 7 Air Preheater Maintenance and Replacement – the project is necessary to assure the efficiency of the boiler system and the number of megawatts of power production of the unit. The project is estimated in $0.6 MM and shall be completed in 120 days.

9. Water Treatment and Technical Assistance Cooling Water System – the service is necessary to maintain the cooling towers water system within chemical parameters to assure the protection of its mechanical components. This will have the effect of maintaining the necessary water temperatures for the auxiliary equipment of the power plant's units. The service estimated cost is $0.25 MM and shall have a term of 365 days.

10. Cooling Tower Unit 10 Repair Works – the project is necessary to have a backup cooling system for the auxiliary equipment of Unit 9, which is in service. Also, it will be necessary to have this equipment ready for operation if a decision is made to repair and return to service unit 10. The project estimated cost is $0.385 MM and shall be completed in 120 days.

11. High Pressure Bleed Valve, Low Pressure Bleed Valve and Steam Injection Block Valve Units 5 and 6 – the purchase is necessary to maintain the level of compressed air extractions and steam injection for the operation of the gas turbines. The purchase estimated cost is $0.35 MM and shall be received in 120 days.

12. Black Start Generators Units 5 & 6 Control Upgrade – the project is necessary to maintain the reliability of two emergency generators whose purpose is to provide power to start up units 5 and 6 during a black out event. The project estimated cost is $0.35 MM and shall be completed in 120 days.

13. Replacement of Outlet Valves and Elbow Condenser Units 5 and 6 – the project is necessary because of past forced outages on both units 5 and 6 due to pipe elbow breaks and valves with water passage. The project estimated cost is $0.35 MM and shall be completed in 60 days per unit.

14. Replacement of Two Uninterruptible Power Supply Systems for Units 7 and 8 – the project is necessary assure a back-up power during any event in the electrical system that may cause a breakdown or fluctuations in voltage that could affect the units. The project estimated cost is $0.45 MM and shall be completed in 180 days.

15. New Raw Water Tank – the project is necessary to provide potable water for the daily operations of the technical and administrative personnel of the power plant and to create demineralized water for the units 7 through 10. The existing tank presents high levels of corrosion and wear that ensure a future rupture which will result in taken it out of service. The project estimated cost is $1 MM and shall be completed in 180 days.

Aguirre Power Plant and Combined Cycle

1. Unit 1 South Wall Boiler Tubing Replacement and Repairs of – the project is necessary to assure the operation and conditions of the Unit 1 boiler system. As a result of the Events the boiler has suffered tube breaks which has caused forced outages of the unit. The project estimated cost is $7 MM and shall be completed in 150 days.

2. Unit 1 Air and Gas Duct Pre-Heaters Repair Works – the project is necessary to assure the operation and conditions of the Unit 1 boiler system. As a result of the Events the air ducts have suffered damages that has caused air infiltrations, which affects the unit's power efficiency. The project estimated cost is $1 MM and shall be completed in 120 days.

3. Rehabilitation Fuel Tank Farm Liners – the project is necessary to comply with the Spill Prevention, Control and Countermeasure (SPCC) plan under the Oil Pollution Act of 1990. This act amended the Clean Water Act to require facilities to have spill response plans of oils, which can reach the navigable waters of the United States. The project estimated cost is $1.2 MM and shall be completed in 180 days.

4. Replacement of Load Center 1-4 Condenser Circulating Water Pump – the project is necessary to obtain the level measurements of the fuel tanks system which will assure a more reliable and efficient operation. The project estimated cost is $0.6 MM and shall be completed in 180 days.

5. Sea Water Intake Structural Repairs Work – the project is necessary to improve the structural conditions of the sea water intake and outfall pool of the units 1 and 2 condenser's cooling system that present corrosion and concrete segments broken. The project estimated cost is $5 MM and shall be completed in 365 days.

6. Procurement of Stages 1, 2, 3 Turbine Rotor Bucket Set, Aguirre Combined Cycle – the purchase is necessary to obtain the refurbished stages 1, 2 and 3 rotors bucket set to be used as a replacement for a major inspection work of a combustion turbine. The equipment estimated cost is $0.75 MM and shall be received in 240 days.

7. New Water Condensate Tank for the Aguirre Combined Cycle – the project is necessary to provide water for the steam cycle of the combined cycle which allows the power plant to be more reliable. The project estimated cost is $1 MM and shall be completed in 180 days.

8. Hot Gas Path Inspection Work Units 1-1 and 1-2 – the project consists of the inspection and repair of the combustion system components and is necessary to maintain these units available and reliable to respond to emergency situations and peak demand hours of the island's electric system. The project estimated cost is $2 MM and shall be completed in 240 days.

9. Hot Gas Path Inspection Work Unit 2-4 and Standby Transformer – the project consists of the inspection and repair of the combustion system components and is necessary to maintain the unit available and reliable to respond to emergency situations and peak demand hours of the island's electric system. The project estimated cost is $1.7 MM and shall be completed in 120 days.

10. Major Inspection Work Unit 1-3 – the project consists of the inspection and repair of the combustion and turbine system components and is necessary to maintain the unit available and reliable to respond to emergency situations and peak demand hours of the island's electric system. The project estimated cost is $2.5 MM and shall be completed in 240 days.

11. Procurement of Two Discharge Condenser Water Pump Motors – the project is necessary to assure the flow of the sea water use for the cooling system of the condenser of both units 1 and 2. This will maintain a reliable operational condition of these 900 MW generating units. The purchase estimated cost $0.75 MM and shall be delivered in 270 days.

12. Procurement of Two Boiler Circulating Water Pump Motors – the project is necessary to assure the flow of the demineralized water for boiler system of both units 1 and 2. This will maintain a reliable operational condition of these 900 MW generating units. The purchase estimated cost $0.75 MM and shall be delivered in 270 days.

Costa Sur Power Plant

1. Travelling Screens Replacement – the project is necessary to improve reliability on the units 5 and 6 condensers' cooling system and the compliance with the Section 316 (b) of the Clean Water Act. The project estimated cost is $5 MM and shall be completed in 540 days.

2. Procurement and Replacement of Regulator Valves for Boiler Feed Water Units 5 and 6 – the project is necessary to assure the flow of water to the boiler of each of the units during operational mode by replacing the existing valves which has surpassed its operational life and require repair. The project estimated cost is $0.5 MM and shall be completed in 180 days.

3. Low Pressure Water Heater 3 Repair Work – the project is necessary to maintain temperature efficiency in the boiler of the unit and reduce the cost of burning fuel. The project estimated cost is $0.4 MM and shall be completed in 90 days.

4. Procurement of Water Heater 5 (Deaerator) Spare Pump – the purchase is necessary to assure an efficient process of the boiler system of any of units, in case of a malfunction of the existing one. The purchase estimated cost is $0.4 MM and shall be delivered in 180 days.

5. Procurement of Air-Preheaters Baskets, Unit 5 – the purchase is necessary to replace the existing baskets during the major overhaul of the unit next year. The material must be ready on site for the commencement of the project and are essential to maintain a more efficient boiler system. The purchase estimated cost is $1 MM and shall be delivered in 180 days.

6. Replacement of Air-Preheaters Baskets, Unit 5 – the project is necessary to replace the existing baskets during the major overhaul of the unit next year and is essential to maintain a more efficient boiler system. The project estimated cost is $0.7 MM and shall be completed in 120 days.

* 7. Procurement of Condenser Circulating Water Pump (CCWP) and Boiler Circulating Water Pump (BCWP) Spare Motors for Units 5 and 6 – the purchase of these spare motors is necessary in case of a malfunction of any of the existing ones, the power plant's personnel may have the equipment available and can proceed to change the damaged part in the shortest period and reduce the impact to the island's electrical system. The CCWP and the BCWP are an essential component of the condenser cycle system and boiler cycle system, respectively. The purchase estimated cost is $0.62 MM and shall be delivered in 180 days.

8. Procurement of Induced Draft Fan (IDF) and Forced Draft Fan (FDF) Spare Motors for Units 5 and 6 – the purchase of these spare motors is necessary in case of a malfunction of any of the existing ones, the power plant's personnel may have the equipment available and can proceed to change the damaged part in the shortest period and reduce the impact to the island's electrical system. The IDF and the FDF are essential components of the and boiler cycle system. The purchase estimated cost is $0.87 MM and shall be delivered in 270 days.

9. Procurement of Condensate Pump (CP) Motor for Units 5 and 6 – the purchase of these spare motor is necessary in case of a malfunction of any of the existing ones, the power plant's personnel may have the equipment available and can proceed to change the damaged part in the shortest period and reduce the impact to the island's electrical system. The CP are essential components of the boiler cycle system. The purchase estimated cost is $0.87 MM and shall be delivered in 180 days.

10. Replacement of Unit 5 Electric Load Center – the project is necessary to improve the reliability of the auxiliary equipment of the unit during operations by replacing an already obsolete motor control center with an advance and more efficient equipment. The project estimated cost is $1 MM and shall be completed in 270 days.

11. Replacement of Excitation System Units 5 and 6 – the project is necessary to improve the reliability of the generator of both units 5 and 6. The project estimated cost is $1.5 MM and shall be completed in 180 days.

12. Replacement of 4160 V Electric Cable Normal Transformer 5A, 5B – the project is necessary to improve the reliability of the electric auxiliary equipment of unit 5. The project estimated cost is $0.25 MM and shall be completed in 90 days.

Palo Seco Power Plant

1. Procurement and Delivery of Water Wall Boiler Tubes and Economizer – the project is necessary to have the components The project estimated cost is $5 MM and shall be completed in 365 days.

2. Low Pressure Turbine Rotor Refurbished, Unit 3 – the project is necessary to repair the existing low-pressure turbine during a major outage. The project estimated cost is $2 MM and shall be completed in 240 days.

3. Fuel Tanks Level Measurement System – the project is necessary to obtain the level measurements of the fuel tanks system which will assure a more reliable and efficient operation. The project estimated cost is $0.55 MM and shall be completed in 120 days.

4. Water Retention Tank Num. 3 – the project is necessary for the treatment of the water, resulting from the pre-heater and boiler washing processes of the generating units, as well as in the treatment of the water that reaches the washing wells of the units by any other reason. In these tanks the excess water is received from these wells and is retained for two important purposes; store excess water from the wash basins to prevent them from overflowing and neutralize the pH that is outside the parameters for disposal. The project estimated cost is $0.8 MM and shall be completed in 240 days.

5. Unit 4 Refractory, Insulation, scaffolding and Painting Application Works – the services are necessary for the rehabilitation works of Unit 4 and related structures during the future environmental maintenance outages. The service estimated cost is $1 MM and shall have a term of 365 days.

6. Contract, on request, for Crane Services – the service is necessary for the repair and maintenance works of both units 3 and 4. The service estimated cost is $0.7 MM and shall have a term of 365 days.

7. Procurement Turning Gear System, Units 3 and 4 – the purchase is necessary for the power plant to replace existing turning gear system of any of the units 3 and 4, in case of a malfunction. This system is essential to maintain the turbo-generator rotor in slow rotation motion to avoid possible structural deflections that may affect the return to service of the unit after a programmed, maintenance or forced outage repair is completed. The purchase estimated cost is $0.3 MM and shall be received in 180 days.

8. New Water Condensate 1-2 Tank – the project is necessary to provide water for the steam cycle of the units 3 and 4, which allows the power plant to be more reliable. The project estimated cost is $1 MM and shall be completed in 210 days.

Hydro-Gas Turbines

1. Procurement of Seven Generator Breakers for Frame 5000 Hitachi Gas Turbines – the purchase is necessary to assure the reliability of the unit's synchronism to the electrical system. The purchase estimated cost is $0.5 MM and shall be received in 180 days.

2. Procurement of Two Turbo-Compressors for Frame 5000 Gas Turbines – the purchase is necessary to perform the major repairs works of the turbo-compressor of two gas turbines units. The purchase estimated cost is $4 MM and shall be delivered in 240 days.

3. Procurement of Two Spare Speed Reduction Gear for Frame 5000 Gas Turbines – the purchase is necessary to have the availability of two speed reduction gears due to the long lead fabrication and delivery and the continues used of the Frame 5000 Gas Turbine. The purchase estimated cost is $1.2 MM and shall be delivered in 180 days.

4. Procurement of Three Exhaust Plenums for Frame 5000 Gas Turbines – the purchase is necessary to have the availability of three exhaust plenum due to the long lead fabrication and delivery and the continues used of the Frame 5000 Gas Turbine. The purchase estimated cost is $0.6 MM and shall be delivered in 180 days.

5. Procurement of Three Exhaust Gas Diffusion Ducts for Frame 5000 Gas Turbines – the purchase is necessary to have the availability of the diffusion ducts due to the long lead fabrication and delivery and the continues used of the Frame 5000 Gas Turbine. The purchase estimated cost is $0.3 MM and shall be delivered in 180 days.

Engineering and Technical Services

1. Stamp R - Mechanical Repair Works for Boilers and Turbo-Generators Contract – the contract is necessary to provide repair services to boilers and turbogenerators for all the power plants. The contract is $1.95 MM and shall have a term of 365 days.

2. Hydro-blasting Service for Boilers – the service is necessary to remove all debris and dirt lodged the interior of a condenser of a generating unit. This will allow the required level of vacuum necessary to complete the turbine's steam cycle, ensuring efficient and reliable energy production at the lowest cost. The service estimated cost is $0.65 MM and shall have a term of 365 days.

3. Hydro-blasting Service for Boilers – the service is necessary to remove all combustion debris of the interior of boiler's oven and heat recovery systems using high pressure water. The service estimated cost is $0.95 MM and shall have a term of 365 days.

4. Interior Dry-Cleaning Service for Boilers – the service for the soot dry cleaning and vacuum truck inside the boilers, pipelines, and chimney. The service estimated cost is $0.85 MM and shall have a term of 365 days.

5. Electrical and Instrumentation works in power plants – the contract is necessary to provide repair services to electrical equipment for all the power plants. The contract is $0.85 MM and shall have a term of 365 days.

6. Procurement Acid for all power plants – this good is necessary for chemical control of the water use in the steam cycle and for the process water to be treated and discharge to the sea in compliance with the NPDES Permit of the power plant. The purchase estimated cost is $1 MM and shall have a term of 365 days.

7. Refractory, Insulation and Painting Application Works – the services are necessary for the rehabilitation works of all power units and related structures during the future environmental maintenance outages. The service estimated cost is $1.95 MM and shall have a term of 365 days.

8. Scaffolding Inside and Outside Boiler Works Works – the services are necessary for the installation of equipment necessary for the technical personnel to access elevated areas within all safety criteria, for the rehabilitation works of all power units and related structures during the future environmental maintenance outages. The service estimated cost is $1.99 MM and shall have a term of 365 days.

9. Waste Management Services Contract for Power Plants – the service is necessary to continue the disposal of silt, asbestos-containing materials, and non-hazardous waste from generating plants, combustion turbine and hydroelectric stations. The service estimated cost is $1 MM and shall have a term of 365 days.

10. Non-Destructive Examinations and Inspection Services – the services are needed for the inspection and evaluation of critical equipment in our Generation Units, Tanks, High Energy Steam Piping and Fuel transfer and distribution lines. The before mentioned assessments are required by law and the estimated cost is $.75 MM for a term of 365 days.

11. Inspection and Maintenance Work Cargo Elevators in the Power Plants – the services are need to main a safety and reliable operation of all the cargo elevators for PREPA's power plants. The service estimated cost is $.9 MM and shall have a term of 365 days.

Based on the abovementioned situation, in order to have a reliable and stable generation with enough capacity to meet peak demands, the request is approved.

PUERTO RICO ELECTRIC POWER AUTHORITY ("PREPA")
PALO SECO UNIT 3

Supply of Mechanical Turning Gear Assembly Parts.

SIEMENS
Ingenuity for life

June 10, 2020

Confidential Information

June 10, 2020

Angelica Rosario Davila
Puerto Rico Electric Power Authority
Purchasing Supervisor
San Juan, PR 00907

Subject: PREPA – Palo Seco Unit # 3 – Supply of Mechanical Turning Gear Assembly.

Dear Mrs. Angelica Rosario Davila:

Siemens Energy Inc., (hereinafter referred to as "Siemens") is pleased to submit the attached technical and commercial information to you as the basis upon which Siemens would supply the "Mechanical Turning Gear Assembly Parts" to Puerto Rico Electric Power Authority (hereinafter referred to as "PREPA") for Palo Seco Unit # 3 located in Puerto Rico.

Siemens offers to supply the "Mechanical Turning Gear assembly" described herein at the prices and exclusively at the terms and conditions set forth in this offer (hereinafter the "Offer"). This Offer is divided into the following sections:

Section 1	Scope of Supply / Pricing Table
Section 2	Commercial Conditions

This Offer is provided "as-is" for your evaluation of Siemens as the provider of the goods therein and contains information that is confidential to and solely owned by Siemens. Your acceptance, viewing or storage of this Offer is an acknowledgment of a confidential relationship between you and Siemens. Siemens requires that this Offer be returned or destroyed when no longer required for the purpose identified herein. This Offer and any information obtained from this Offer may not be re-produced, transmitted, disclosed or otherwise used, in whole or in part, without the prior written authorization of Siemens.

The above terms supersede any click-wrap or other terms not expressly set forth in a signed agreement between the parties covering the Offer. All such click-wrap or other terms are expressly rejected by Siemens.

Siemens is certified to the following standards:

IMS Global Certificate - ISO 9001
IMS Global Certificate - ISO 14001
IMS Global Certificate - OHSAS 18001

We appreciate the opportunity to submit this Offer to you. Please contact me with any questions or comments you may have regarding the above.

Sincerely,

Wilbert De La Paz

Wilbert De La Paz
Technical Sales Manager
Latin America Energy Services - Caribbean
Siemens Energy, Inc.
Office: 1 (321) 318-8836
E-mail: wilbert.de_la_paz@siemens.com

SECTION 1
SCOPE OF SUPPLY / PRICING

Item #	Style #	Description	Quantity	Lead Time (Weeks)	Unit Price (USD)	Total Price (USD)
1	PW680J296G03	Mechanical Turning Gear Parts for Assembly	1	30	$295,381.60	$295,381.60
					Total	**$295,381.60**

Pricing Notes:

1. Prices above include delivery of such components DAP at designated Port of Export in the USA Mainland, pursuant to Incoterms 2020.

2. PREPA is responsible for loading the goods at the designated Port of Export in the USA Mainland.

3. This Offer does not include installation or any other field services.

4. In the event an order is placed for this work and cancelled, Siemens will recover any costs associated with planning the manufacturing of the "Mechanical Turning Gear Assembly" pursuant to the Termination provision of this Offer.

SECTION 2
COMMERCIAL CONDITIONS

OFFER VALIDITY

The terms and conditions set forth in this Offer are the terms and conditions governing the same. This Offer is valid for thirty (30) days from the date of this letter unless otherwise extended, modified or withdrawn in writing by Siemens. The return of a Purchase Order or any other reasonable manner of acceptance communicated to Siemens during such validity period will be sufficient to form an Agreement based on Siemens' Offer.

In the event of a conflict between the PREPA purchase order (the "Order") and this Offer, the terms and conditions of this Offer shall prevail.

The worldwide outbreak of the coronavirus disease ("COVID-19"), affects or is likely to affect usual business activities and/or the execution of work under this offer. As the impacts from COVID-19 are unknown at this time, Siemens commitments regarding the scope contemplated hereunder including procurement lead-time, delivery date, resources, and schedule are provided without consideration of such potential impacts from COVID-19. Siemens is closely monitoring the development of COVID-19 and its associated impacts, and will endeavor to inform PREPA of the impacts that COVID-19 has or may have on Siemens' manufacturing, supply chain, operations, logistics, and personnel relating to Siemens scope of supply contemplated hereunder. If required to overcome the consequences directly or indirectly caused by the outbreak of COVID-19, Siemens shall be entitled to relief of its obligations in schedule, price, or any other reasonably required adjustment of this bid response. In the event equipment delivery is contemplated hereunder, Siemens shall be entitled to postpone or provide partial deliveries to the extent Siemens' ability to supply or deliver is impacted by COVID-19.

TERMS OF PAYMENT

A. Invoices will be submitted and payable based on the following milestones:

- 50% upon Receipt of an acceptable Purchase Order
- 50% Due upon Delivery of Components DAP at Designated Port of Export in the USA Mainland, as per Incoterms 2020.

B. Payments are due and payable net within forty-five (45) days from the date of invoice.

The Purchase Order needs to be made out to Siemens Energy, Inc.

The addressee for the Order should be:

Wilbert De La Paz
Technical Sales Manager
Siemens Energy, Inc.
4400 N Alafaya Trail
Orlando, Florida 32826-2399

C. **Late Payments**

No late payment fees are applicable for this offer scope.

D. **Disputed Invoice**

If PREPA disputes all or any portion of an invoice, it must first deliver written notice to Siemens of the disputed amount and the basis for the dispute within twenty-one (21) days of receiving the invoice. Failure of PREPA to timely notify Siemens of any dispute constitutes a waiver of PREPA's claim. If PREPA only disputes a portion of the invoice PREPA must pay the undisputed portion in accordance with Section B above. Upon resolution of the dispute in favor of Siemens, PREPA must pay the invoice or the remainder of the invoice, plus any accrued interest on the late payment.

E**.** **Payment Method**

All payments to Siemens shall be made by electronic transfer of funds to the account of Siemens at Mellon Bank, Pittsburgh, PA, Routing Number 043000261, Account # 0000380269, or such other depository as Siemens shall designate by written notice to PREPA.

F. **Suspension/Termination Right**

Siemens may suspend services and manufacturing and/or shipment of Parts if an undisputed invoice is more than fifteen (15) days past due. Siemens may terminate this Agreement if an undisputed invoice is more than thirty (30) days past due. Unless otherwise prohibited by law, Siemens may also terminate this Agreement immediately in the event of a material adverse change in the PREPA's financial condition, including, but not limited to bankruptcy, insolvency, or liquidation.

WARRANTY

A. Part Warranty and Exclusive Remedy

Siemens warrants that the Part(s) furnished to PREPA, including any part repaired or replaced by Siemens during the Part Warranty Period, will be free of defects in workmanship and materials until twelve (12) months from the date of delivery DAP at designated Port of Export in the USA Mainland, as per Incoterms 2020. (the "Part Warranty Period").

If during the Parts Warranty Period Siemens is promptly notified in writing that the Part fails to conform to the Part Warranty, then Siemens will at its option and expense correct such nonconformity by repair or replacement.

B. Title

Siemens warrants that the Parts, when delivered, shall not be subject to any encumbrances, liens, security interests, or other defects in title. In the event of any failure to conform to this warranty, Siemens, upon prompt written notice of such failure, shall defend the title to the Parts. Title to equipment replaced by Siemens as a part of Siemens' warranty obligations hereunder shall, at Siemens request, revert to Siemens at a deemed value of zero upon completion of a warranty replacement and Siemens shall be entitled to remove such Part from the Site upon completion of its warranty obligations.

C. Warranty Conditions

The warranty and remedy set forth in this Section, "Warranty" is conditioned upon:

(1) PREPA's receipt, handling, storage and maintenance during any storage, installation, testing, operation and maintenance, including tasks incident thereto, of the Part, PREPA's Material or PREPA's equipment, in accordance with the recommendations of Siemens to the extent applicable or, in the absence of such recommendations or to the extent not applicable, in accordance with the generally accepted practices of the United States electric power industry. In addition, such Part, PREPA's Material or PREPA's

equipment shall not have been operated in excess of limitations specified in writing by Siemens and not have been subjected to accident, alteration, abuse or misuse; and

(2) For all warranty work, PREPA shall provide access to operating and maintenance data as requested by Siemens.

(3) For all warranty work, where disassembly, removal, replacement and reinstallation of equipment, materials, structures or PREPA's Material was not part of the Siemens scope of work under the Agreement; PREPA providing, without cost to Siemens, access to the nonconformity by disassembling, removing, replacing and reinstalling any equipment, materials, structures or PREPA's Material to the extent necessary to permit Siemens to perform its warranty obligations.

(4) All warranty work being performed on a single-shift straight-time basis, Monday through Friday. In the event PREPA requests correction of warranty items on an overtime or multiple shift schedule, the premium portion of such overtime or multiple shift shall be to PREPA's account.

(5) PREPA, without cost to Siemens, making its Site facilities and personnel (to the extent consistent with personnel job classifications) available to assist Siemens in the performance of its warranty obligations.

(6) PREPA, with respect to Paragraph 4 above, reimbursing Siemens for all costs incurred in the transportation of personnel and defective, repaired or replacement parts to and from the Site.

(7) The Part or PREPA's Material must be returned with complete identification in accordance with Material returned without proper authorization and identification.

Prior to the return of any Part or PREPA's Material to Siemens, the PREPA must obtain authorization and shipping instructions from Siemens. Siemens reserves the right to reject any Hazardous Material.

D. For the avoidance of doubt, in the event instructions furnished by Siemens. In no event will Siemens be responsible for Part or PREPA's that physical loss or damage to the PREPA's property results from the failure of a warranted defective portion of the Part to conform to its respective warranty during the applicable warranty period, should Siemens have any liability at all, Siemens liability shall in no case exceed Siemens obligation to perform the warranty remedies specified in this Section, as applicable, which Siemens would have had to perform if such warranty remedy had been carried out immediately following such failure but prior to the occurrence of the physical loss or damage.

E. Exclusivity of Warranties and Remedies

THE WARRANTIES PROVIDED BY SIEMENS AS SET FORTH IN THIS SECTION ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES WHETHER STATUTORY, EXPRESS, OR IMPLIED (INCLUDING ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL WARRANTIES ARISING FROM COURSE OF DEALING OR USAGE OF TRADE). Correction of nonconformities in the manner and for the period of time provided above shall constitute Siemens' sole liability and PREPA's exclusive remedy for defective or nonconforming Part whether claims of PREPA are based in contract, in tort (including negligence and strict liability), or otherwise.

TAXES

In compliance with Puerto Rico's Internal Revenue Service Code, Section 2906, Article 2, PREPA is exempt of the tax payment. Also, starting on November 15th, 2006; and in accordance with Law 117 enacted on July 4, 2006, known as "Ley de Justicia Contributiva" PREPA is exempt of the IVU ("Impuesto a la Venta y Usos Estatal y Municipal") tax payment.

PREPA will provide a valid exemption certificate or permit and indemnify, defend and hold Siemens harmless from any taxes, costs and penalties arising from same. In the event of a change of law where PREPA becomes liable for such taxes, PREPA shall reimburse Siemens for any such taxes.

Invoices shall include all details related to good or services purchased.

Siemens shall be responsible for and pay directly, all corporate and individual taxes measured by the net income or profit imposed by any governmental authority on Siemens, its employees or subcontractors due to the execution of any agreement or the performance of or payment for work hereunder. Unless and otherwise agreed in writing or prohibited by law, the price set forth in this Order shall not include any local tax (IVU) but Seller shall pay any federal tax, US Customs Fees, shipping surcharge fees or other tax required to be imposed on the materials, services or work product.

Important:

PREPA is a government owed company exempt to pay taxes under Section 2906, Article 2 of Puerto Rico's Internal Revenue Service Code Section 2508 of Law Number 117 dated July 4, 2006 known as "Ley de Justicia Contributiva".

DELIVERY; TITLE; RISK OF LOSS OF PARTS

Delivery of components, Title and Risk of Loss or damage shall be made when said components becomes available to PREPA DAP at the Port of Export in the USA Mainland, as per Incoterms 2020. Siemens may make partial shipments. Any shipping, delivery and installation dates are estimated dates only. Siemens is not liable for any loss or expense incurred by PREPA or PREPA's customers if Siemens fails to meet its delivery schedule.

Parts being returned pursuant to the warranties or patent and copyright infringement sections of the Agreement will be delivered by PREPA (Delivered Duty Paid) at its expense to the repair or manufacturing plant designated by Siemens where the work is to be performed. Title to such Parts will always remain with PREPA. Risk of loss or damage to such Parts will transfer to Siemens upon its arrival on board the carrier at the repair or manufacturing plant and will transfer back to PREPA upon its delivery to the carrier at the repair or manufacturing plant for return to PREPA. Delivery of Parts shall be made when the item is placed on board carrier at the repair or manufacturing plant. When repair work is performed by Siemens at the Site, title and risk of loss or damage to the Parts and to other property shall always remain with PREPA.

FORCE MAJEURE / DELAYS

If either party is unable to perform or suffers delay in performance, due to any cause beyond its reasonable control (regardless of whether the cause was foreseeable), including without limitation acts of God, inclement or unusually severe weather conditions, strikes, labor shortage or disturbance, fire, accident, war or civil disturbance, delays of carriers, cyber-attacks, terrorist attacks, failure of normal sources of supply, acts or inaction of government, or failure or delay beyond its reasonable control in obtaining necessary work permits or work visas for Siemens' personnel or its subcontractor's personnel or necessary import or export licenses, the time of performance will be extended by a period equal to the length of time it takes to overcome the effect of the event. In addition, Siemens shall be entitled to be compensated by PREPA for reasonable and direct additional costs of service incurred during such event. Siemens will notify PREPA within a reasonable time after becoming aware of any such event. If there are force majeure delays exceeding 180 days in the aggregate, Siemens may terminate the Agreement pursuant to the Section of Cancellation below. Failure to pay shall not constitute a force majeure delay.

TERMINATION

PREPA may, at its option, cancel any unfulfilled Order, in which event PREPA's only obligation shall be to ay for materials shipped or work product or services performed prior to the receipt of such cancellation; provided however, that if this Order covers materials manufactured to PREPA's specification, upon receipt of notice of cancellation, Siemens shall stop all performance except as otherwise directed by PREPA, and if Siemens is not in breach of this Order, PREPA shall pay Siemens' actual, direct, unavoidable and reasonable costs resulting from such termination, not to exceed the total

price of the materials, work product or services stated in this Order. Upon such payment, title to any materials or work product, including uncompleted materials or work product, shall pass to PREPA. In the event of a default by Siemens in the performance of any obligation hereunder, including time of delivery, or in the event it become apparent that delivery cannot be accomplished within the time specified, PREPA may, at its option, cancel this Order in its entirety, without penalty of liability (except for materials received and accepted). All provisions necessarily requiring survival beyond any termination of this Order, including, but not limited to those relating to "Choice of Law and Arbitration", "Confidentiality", "Limitation of Liability", "Title" and "Warranty" shall survive such termination.

PATENT AND COPYRIGHT INFRINGEMENT

Siemens will, at its own option and expense, defend or settle any suit or proceeding brought against PREPA based on an allegation that any processes performed by Siemens in connection with the Siemens Parts and services constitutes an infringement of any Patent Cooperation Treaty ("PCT") country member's patent or misappropriation of a third party's trade secret or copyright in the country where the PREPA's Site is located. PREPA will promptly give Siemens written notice of the suit or proceeding and the authority, information, and assistance needed to defend the claims. Siemens shall have full and exclusive authority to defend and settle such claim and will pay the damages and costs awarded against Siemens in any suit or proceeding so defended. PREPA shall not make any admission(s) which might be prejudicial to Siemens and shall not enter a settlement without Siemens' consent. If and to the extent any process performed by Siemens in connection with the Siemens Parts and services as a result of any suit or proceeding so defended is held to constitute infringement or its use by PREPA is enjoined, Siemens will, at its option and expense, either: (i) procure for PREPA the right to continue using said process; (ii) replace it with substantially equivalent non-infringing process; or (iii) modify the process so it's use is non-infringing.

Siemens will have no duty or obligation under this Section if the process is: (i) performed according to PREPA's design or instructions and compliance therewith has caused Siemens to deviate from its normal course of performance; (ii) modified by PREPA or its contractors after performance; or (iii) combined by PREPA or its contractors with devices, methods, systems or processes not furnished hereunder and by reason of said design, instruction, modification, or combination a suit is brought against PREPA. In addition, if by reason of such design, instruction, modification or combination, a suit or proceeding is brought against Siemens, PREPA must protect Siemens in the same manner and to the same extent that Siemens has agreed to protect PREPA under this Section.

THIS SECTION, "PATENT AND COPYRIGHT INFRINGMENT" IS AN EXCLUSIVE STATEMENT OF SIEMENS' DUTIES AND PREPA'S REMEDIES RELATING TO PATENTS, TRADE SECRETS AND COPYRIGHTS, AND DIRECT OR CONTRIBUTORY INFRINGEMENT THEREOF.

CONFIDENTIALITY

A. Both during and after the term of this Agreement, the parties will treat as confidential all information obtained from the disclosing party and all information compiled or generated by the disclosing party under this Agreement for the receiving party, including but not limited to business information, the Offer, the Agreement, processes and procedures, know-how, methods and techniques employed by Siemens in connection with the Siemens Parts and services, technical data, drawings, flow charts, program listings, software code, and other software, plans and projections. Neither party may disclose or refer to the Siemens Parts and services to be performed under this Agreement in any manner that identifies the other party without advance written permission. Except for security surveillance, the observing or recording of the Siemens Parts and services or any part thereof, whether by photographic, video or audio devices or in any other manner is prohibited. In the event any such prohibited observation or recording occurs, Siemens may (in addition to any other legal or equitable rights and remedies) stop the services until Siemens has satisfied itself that the prohibited conduct has ceased, and in such event the date of delivery or time for performance will be extended by a period of time which Siemens determines necessary Unless required by appropriate governmental authorities, neither party shall, without the prior written consent of the other party, issue any public statement, press release, publicity hand-out or other material relating to the Siemens Parts and services performed or installed on PREPA's Site or equipment. However, Siemens has the right to share confidential information with its affiliate and subcontractors provided those recipients are subject to the same confidentiality obligations set forth herein.

B. Nothing in this Agreement requires a party to treat as confidential any information which: (i) is or becomes generally known to the public, without the fault of the receiving party; (ii) is disclosed to the receiving party, without obligation of confidentiality, by a third party having the right to make such disclosure; (iii) was previously known to the receiving party, without obligation of confidentiality, which fact can be demonstrated by means of documents which are in the possession of the receiving party upon the date of this Agreement; or (iv) was independently developed by receiving party or its representatives, as evidenced by written records, without the use of discloser's confidential information, or (v) is required to be disclosed by law, except to the extent eligible for special treatment under an appropriate protective order, provided that the party required to disclose by law will promptly advise the originating party of any requirement to make such disclosure to allow the originating party the opportunity to obtain a protective order and assist the originating party in so doing.

C. It is Siemens' policy not to unlawfully or improperly receive or use confidential information, including trade secrets, belonging to others. This policy precludes Siemens from obtaining, directly or indirectly from any employee, contractor, or other individual rendering services to Siemens confidential information of a prior employer, client or any other person which such employee, contractor, or individual is under an obligation not to disclose. PREPA agrees to abide by this policy.

D. Siemens shall retain all intellectual property rights in the Siemens Parts and services, works, Siemens' documents, processes, Siemens' confidential information, and any design information and/or documents made by (or on behalf of) Siemens. Upon receipt of all fees, expenses and taxes due in respect of the relevant Siemens Parts and services, Siemens grants to PREPA a non-transferable, non-exclusive, royalty-free license to copy, use and communicate Siemens' documents for the sole purpose of operation and maintenance of the facility upon which the Siemens Parts and services have been performed.

E. PREPA shall not, without the prior written permission of Siemens, transmit any information received from Siemens pursuant to the Agreement, directly or indirectly, to any of the prohibited countries designated in the U.S. Government regulations, as issued from time to time relating to the exportation of technical data.Proprietary Information.

LIMITATION OF LIABILITY

The overall aggregate liability of Siemens and its affiliated companies with respect to any and all claims arising out of the performance or nonperformance of obligations under the Order or Contract, regardless of any legal theory or cause of action under which such liability may arise, shall not exceed the Contract or Order Price, as the case may be (which includes authorized changes). However, the foregoing dollar limitation shall not apply to liability arising from third party claims for bodily injury or third-party property damage to the extent such liability results from Siemens' gross negligence or willful misconduct while performing under the Order or Contract, as the case may be.

The appearing parties agree that their respective responsibilities for damages under this Contract or Order will be governed by the Puerto Rico Civil Code and its case law, as dictated by the Supreme Court of Puerto Rico. However, PREPA agrees that the remedies provided herein are exclusive and under no circumstance shall the maximum amount of liability under the Contract or Order exceed the Contract or Order price, as the case may be.

This Section shall prevail over any conflicting or inconsistent provisions set forth elsewhere in the Contract or Order.

TRANSFER; OWNERSHIP

A. Prior to the transfer to another party of any Part, PREPA's Material, work product furnished hereunder by Siemens' parties or each of their respective Suppliers, or the transfer of any interest in said Part, PREPA's Material or work product, or the facility in which or the site on which said Part, PREPA's Material or work product is or will be installed or furnished, PREPA shall obtain for Siemens' parties and each of their respective Suppliers written assurances from the transferee of limitation of and protection against liability following the proposed transfer at least equivalent to that afforded Siemens' parties and each of their respective Suppliers under the Agreement.

B. If PREPA is not the sole owner of the Part, PREPA's Material, work product furnished hereunder by Siemens or its Suppliers, or the facility in which or the site on which the Part, PREPA's Material or work product is or will be installed or furnished, PREPA represents and warrants that it has (and will maintain) written assurances from each and every other owner of limitation of and protection against liability of Siemens' parties and each of their respective Suppliers with respect to each and every such other owner at least equivalent to that afforded Siemens' parties and each of their respective Suppliers under the Agreement.

C. Transfer contrary to the provisions of paragraph A. above or breach of paragraph B. above, shall make PREPA the indemnitor of Siemens' parties and each of their respective Suppliers against any liabilities incurred by Siemens' parties and each of their respective Suppliers in excess of those that would have been incurred had no such transfer or breach, as the case may be, taken place.

EXPORT LAW COMPLIANCE

PREPA acknowledges that Siemens is required to comply with applicable export laws and regulations relating to the sale, exportation, transfer, assignment, disposal and usage of the Parts provided under the Agreement, including any export license requirements. PREPA agrees that such Parts shall not at any time directly or indirectly be used, exported, sold, transferred, assigned or otherwise disposed of in a manner which will result in non-compliance with such applicable export laws and regulations. It shall be a condition of the continuing performance by Siemens of its obligations hereunder that compliance with such export laws and regulations be maintained at all times.

ASSIGNMENT

The parties may not assign this Contract, Order or any part thereof without the other party's prior written approval.

The parties under this Contract or Order may transfer, assign, or novate the Contract, Order or any part of it to an affiliated company, being any legal entity ("Company") which directly or indirectly is controlled by the assigning party, controls assigning party or is controlled by a Company which directly or indirectly controls assigning party. In the event of a sale or other transfer of the business of the assigning party or a part of the business of the assigning party to a third party, the assigning party shall further be entitled to assign the whole Contract, Order or any part of the Contract or Order to such a third party. Siemens may also sub-contract parts or the totality of the materials, services or work product that is the object of this Order and/or Contract.

PREPA'S INSURANCE

PREPA shall obtain a full and unrestricted waiver from each of its insurers of their respective subrogation rights against Siemens' parties and each of their respective Suppliers.

CHOICE OF LAW AND ARBITRATION

The Agreement will be construed and interpreted in accordance with the laws of the Commonwealth of Puerto Rico without application of (i) its choice-of-law rules or (ii) the United Nations Convention on Contracts for the Sale of Goods.

The parties shall exert their best efforts to arrive at an amicable settlement of any dispute which may arise between them with respect to the Agreement. If, however, no such settlement is reached, then upon written notice from either party to the other, said dispute shall be finally resolved by binding arbitration in accordance with the Rules of Conciliation and Arbitration of the International Chamber of Commerce. The arbitration proceeding shall take place in Miami, Florida and shall be conducted in the English language. Unless otherwise mutually agreed upon, in any such arbitration there shall be appointed three arbitrators.

The dispute shall be submitted to the arbitrators in such manner as they shall deem appropriate and the decisions of the majority of the arbitrators rendered in writing shall be final and conclusive and binding on the parties.

Each party shall pay its own expenses in connection with arbitration, and the parties shall share equally the compensation and expenses of the arbitrators.

Government of Puerto Rico

Puerto Rico Electric Power Authority

Hurricane Maria DR-PR-4339

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

Palo Seco Steam Plant - Upgrade OSI DCS

11/29/2021

Introduction

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

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

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

The sections included in this document are:

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

Document Revision History

Version	Date	Summary of Changes

Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Palo Seco Steam Plant – Upgrade OSI Distributed Control System (DCS)
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

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

Program Manager: ***<Name>***

<Insert title here>

PREPA Project Sponsor: ***<Name >***

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Palo Seco Control Room	[redacted]

Note: *GPS coordinates are required for all facilities.*

2.2. Facilities Description

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

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

The project is necessary in order to upgrade the OSI Distributed Control System (DCS) installed on Palo Seco units 3 and 4 which has more than ten years. The system controls all the operation of Gas Insulated Substation (GIS) and switchgear of all units which also need to be updated.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for Palo Seco's upgrade of the OSI Distributed Control System (DCS) will consist of the following:

-Contractor shall supply and install new Human Machine Interphase (HMI) for operation and upgrade the Gas Insulated Substation (GIS)/Switchgear DCS control system that will include software's last edition.

3.2. Type of Project

Indicate whether the intended plan is a(n):

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

Choose One (Restoration, Improved or Alternate) *If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

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

3.3. Preliminary Architectural and Engineering (A&E)

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

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

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

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
• (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
• 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount ($M)
OSI: System Upgrade and .NET Migration installation (Third Party Hardware)	$ 54,180.00
OSI: System Upgrade and .NET Migration installation (OSI Software)	305,000.00
OSI: System Upgrade and .NET Migration installation (Third Party Software)	5,925.00
Project Implementation	421,057.00
Monarch Warranty	207,540.00
Historical Archival RDBMS – Oracle12c	7,200.00
Historical Archival RDBMS – Microsoft SQL Server	2,916.00
OSI Hardware	9,730.00
Communications Equipment Replacement Implementation	13,800.00
Training	13,080.00
Support & Management Services	105,120.00
Total Project Estimated Cost	**$1,145,548. 00**

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

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

Section 7. EHP Requirements

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

Section 8. Program Manager Lead Certification

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

Program Manager's Printed Name	Date
Title	Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name	Date
Title	Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

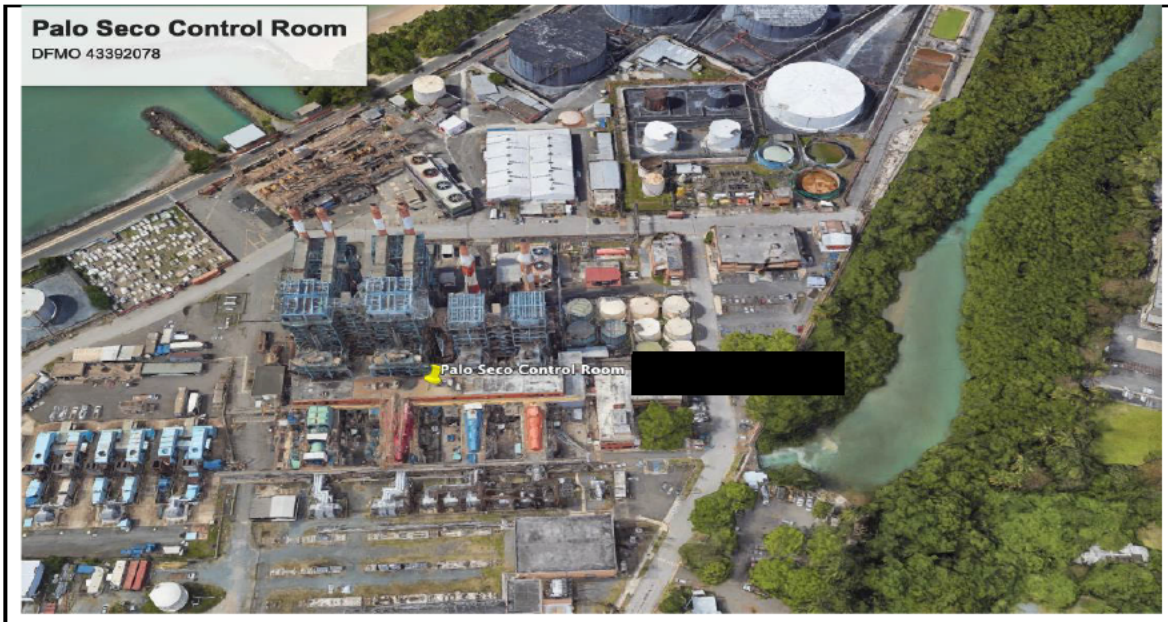
Please see attached the following supporting documentation:

- Quotation OSI #27717 - PREPA2021-Q01_System_Upgrade_and_Options_03,19,21
- Scope of Work - Justifcation

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A

Scope of Work

OSI Distributed Control System (DCS) installed on Palo Seco units 3 and 4, has more than ten years. The system control all the operation of Gas Insulated Substation (GIS) and switchgear of all units. Contractor shall supply and install Human Machine Interphase (HMI), an upgrade to GIS/Switchgear DCS control system that include software last edition.

QUOTATION

Quote Number: 27717
Reference: PREPA2021-Q01

Quote To:
Puerto Rico Electric Power Authority
PO Box 364267
San Juan PR 00936-4267
Puerto Rico

OSI Sales Contact:
Name: Sergio Bajetti
Phone: (763) 404-4433
Email: Sergio.Bajetti@osii.com

Date:
3/19/2021
Valid Until:
5/18/2021

Attention:
José G. Mulero Fernández
+1 787-521-5178
jose.mulero@prepa.com

Quote Description:
System Upgrade and .NET Migration

Description	Qty	Unit Cost	Unit	Extended Cost
Base Quote: System Upgrade and .NET Migration				
Third Party Hardware				
SCADA Server Dell PowerEdge R740 (2) Intel Xeon 2.1GHz 8Core HT CPUs 32GB RDIMM RAM 1.2TB (4x600GB) RAID10 (4) Gigabit Ethernet Ports Redundant Power Supply DVD-ROM, SATA, Internal 3-Year, 9x5 NBD Standard Support	2	4,622.00	EA	US$ 9,244.00
HIS Server Dell PowerEdge R740 (2) Intel Xeon 2.1GHz 8Core HT CPUs 32GB RDIMM RAM 600GB (2x600GB) RAID1 1.2TB (4x600GB) RAID10 + 1 Hot Spare (4) Gigabit Ethernet Ports Redundant Power Supply DVD-ROM, SATA, Internal 3-Year, 9x5 NBD Standard Support	2	6,110.00	EA	US$ 12,220.00
Cisco 3650 Catalyst Network Switch (24-Port)	6	3,624.00	EA	US$ 21,744.00
Dell 18.5" 1U KMM Touchpad and Keyboard, USB3 ReadyRails II 100-240VAC 6' Standard NEMA5-15 Power Cord	1	1,200.00	EA	US$ 1,200.00
Dell 1U 19" 8-Port KVM Switch 10' KVM Cables 100-240VAC Dell KMM Bracket 6' Standard NEMA5-15 Power Cord	1	1,162.00	EA	US$ 1,162.00
Dell Flat Panel Display - 23" 1920x1080 Resolution Monitor	9	248.00	EA	US$ 2,232.00

QUOTATION

Quote Number: 27717
Reference: PREPA2021-Q01

Description	Qty	Unit Cost	Unit	Extended Cost
System Workstation Dell Precision T5820 3.6GHz Intel Quad Core HT Xeon 500GB Hard Disk 16GB DVD-RW Integrated GbE NIC Additional GbE NIC AMD Radeon Pro XW4100 Graphics Card Integrated Sound Corded Keyboard and Scroll Mouse 3-Year, 9x5 NBD Standard Support	3	2,006.00	EA	US$ 6,018.00
LAN Cabling/Connectors	1	360.00	LOT	US$ 360.00
Third Party Hardware Subtotal:				**US$ 54,180.00**
OSI Software				
monarch Software Upgrade License Includes: - .NET Migration - DataExplorer Basic (RIK Maintenance) - ViewPoint (Advanced Alarming) - OpenView Lite, 8 Concurrent Users (RIK OpenJAVA) - OpenHRS to HRS RIK CHRONUS Conversion Includes Customer Appreciation Discount	1	400,000.00	EA	US$ 400,000.00
Discount:				US$ -95,000.00
OSI Software Subtotal:				**US$ 305,000.00**
Third Party Software				
Windows Server 2019 Standard OLP - 16 Core License	4	1,011.00	EA	US$ 4,044.00
Windows Server 2019 Standard OLP - Device CAL	3	35.00	EA	US$ 105.00
Microsoft Windows 10 Professional 64-Bit	3	164.00	EA	US$ 492.00
Microsoft Office 2019 OLP Standard	3	428.00	EA	US$ 1,284.00
Third Party Software Subtotal:				**US$ 5,925.00**

Open Systems International Inc.
4101 Arrowhead Drive, Medina MN 55340-9649
Phone: (763) 551-0559 Fax: (763) 404-4007
email: info@osii.com https://www.osii.com

QUOTATION

Quote Number: 27717
Reference: PREPA2021-Q01

Description	Qty	Unit Cost	Unit	Extended Cost
Project Implementation				
Upgrade Implementation At OSI: - Project Management and Coordination - Project Engineering and Design - NERC CIP Documentation of Firewall Ports Necessary for Upgraded System Operation (Updated "Open Port" Documentation) - NERC CIP Hardening and Patching of Equipment Upgrades Commissioned by OSI - Cyber Security Evaluation of Network Modifications Required for Upgrade - Design and Configuration of Access Control Policies for Firewall Equipment Commissioned by OSI - Hardware Staging and Configuration - Software Installation and Configuration - Database and Display Conversion and Integration - RDBMS Install and Data Backfill - Factory Q/A Testing - Hardware Packaging - Post-Cutover Problem Resolution and Assistance - System Documentation Updates At PREPA: - Hardware Staging and Wiring - Site Installation and Configuration - Network Integration - Site Testing - Cutover Preparation - Operator Training (1 Day) - Cutover Assistance Includes Travel	1	421,057.00	EA	US$ 421,057.00
Project Implementation Subtotal:				**US$ 421,057.00**
monarch™ Warranty				
Warranty (2-Years) Includes Gold monarch™ Support and Silver Patch Management Services Includes (2) Preventative Visits per Year	1	207,540.00	EA	US$ 207,540.00
monarch™ Warranty Subtotal:				**US$ 207,540.00**
		Base Quote Subtotal:		**US$ 1,088,702.00**
		Discount Total:		**US$ -95,000.00**
		Total:		**US$ 993,702.00**

Description	Qty	Unit Cost	Unit	Extended Cost
Option #1: Historical Archival RDBMS - PostgreSQL				
Third Party Software				
PostgreSQL RDBMS Embedded within OpenHIS	1	0.00	LOT	US$ 0.00
Third Party Software Subtotal:				**US$ 0.00**
Option #1 Total:				**US$ 0.00**

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Description	Qty	Unit Cost	Unit	Extended Cost
Option #2: Historical Archival RDBMS - Oracle 12C				
Third Party Software				
Oracle 12C Standard Database Named User Plus Metric 1-Year Support	20	360.00	EA	US$ 7,200.00
Third Party Software Subtotal:				**US$ 7,200.00**
Option #2 Total:				**US$ 7,200.00**
Option #3: Historical Archival RDBMS - Microsoft SQL Server				
Third Party Software				
Microsoft SQL Server 2017 Standard OLP 2 Hosts 2 Device CALs 3 User CALs 1-Year Support	1	2,916.00	LOT	US$ 2,916.00
Third Party Software Subtotal:				**US$ 2,916.00**
Option #3 Total:				**US$ 2,916.00**
Option #4: Front-End Commuications Equipment Replacement				
OSI Hardware				
OSI Terminus (32-Port Terminal Server)	2	3,000.00	EA	US$ 6,000.00
OSI CommSwitch (16-Port Serial A/B Switch)	1	3,730.00	EA	US$ 3,730.00
OSI Hardware Subtotal:				**US$ 9,730.00**
Project Implementation				
Communications Equipment Replacement Implementation At OSI: - Hardware Design and Documentation - Software Configuration At PREPA: - Hardware Installation and Cabling	1	13,800.00	EA	US$ 13,800.00
Project Implementation Subtotal:				**US$ 13,800.00**
Option #4 Total:				**US$ 23,530.00**

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Description	Qty	Unit Cost	Unit	Extended Cost
Option #5: Recommended Training				
Training				
Training - Units Sufficient for One Attendee of the Following OSI-U Courses: - M255: System Maintenance - M270: Best Practices in Cyber Security - M301: Advanced Development in monarch - S111: Display Development Fundamentals - S112: Tabular Display Fundamentals - S130 SCADA Fundamentals - S211 FEP Communication Fundamentals - S221: Historical Archiving & Report Building Fundamentals - S223: Historian Overview - S224: Report Building Overview - S250 System Administration Fundamentals - S261: Calculation Development Fundamentals - S262: Custom monarch Databases - S302: Advanced Display Building - Tabulars Includes 20% Bulk-Unit Discount	30	545.00	UNITS	US$ 16,350.00
Discount:				**US$ -3,270.00**
Training Subtotal:				**US$ 13,080.00**
Option #5 Total:				**US$ 13,080.00**
Option #6: monarch Support and Patch Management (Year 3)				
monarch™ Support				
Gold monarch Support and Silver Patch Management Services (Year 3) 1-Year Includes (2) Preventative Visits per Year	1	105,120.00	EA	US$ 105,120.00
monarch™ Support Subtotal:				**US$ 105,120.00**
Option #6 Total:				**US$ 105,120.00**

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email: info@osii.com https://www.osii.com

QUOTATION

Quote Number: 27717
Reference: PREPA2021-Q01

Customer Address Info:

Bill To:
Puerto Rico Electric Power Authority
Apartado 364267 Correo General
San Juan PUERTO RICO 00939-4267
Puerto Rico

Ship To:
Puerto Rico Electric Power Authority
PO Box 364267
San Juan PR 00936-4267
Puerto Rico

Payment Terms:
Net 30 Days

Milestone Payment Details:
30% Upon Quote Acceptance
20% Upon Hardware Reception at OSI
30% Upon Completion of Informal FAT
15% Upon Reception of the System at PREPA
5% Upon System Cutover

Special Terms and Conditions:

1. PREPA will provide passwords to the locked VBA code found on the system.
2. PREPA is responsible for installing and ensuring compatibility of BiView software on new workstations.
3. A Relational Database Management System option must be selected.
4. If selected, Option 4 must be implemented with base quote. Equipment in Option 4 requires power adapters, which are expected to be supplied by PREPA.
5. PREPA will provide all third party hardware, software (such as backup/archival software), licensing, and configuration not specifically mentioned in this quote.
6. If required, PREPA will handle any custom display and database work, and will test and verify all external links and interfaces.
7. PREPA will provide high-speed remote access to server and console hardware if needed (VPN, Remote Desktop Connection, etc.). Dial-up modem connections are insufficient.
8. All quoted hardware is provided with standard OEM warranties.
9. PREPA will provide sufficient cabinet space and cabling for new hardware. If PREPA is not able to provide this, additional cabinets and/or cables can be quoted separately.
10. Any hardware purchased by PREPA must be compliant with monarch™.NET minimum requirements, which can be requested from OSI.
11. Project scope changes instigated by PREPA (e.g. hardware quoted above being procured by PREPA, etc.) may impact the project schedule.
12. Workstations are supplied with Microsoft Office Standard (OLP), which does not include Microsoft Access. If Access is required, please inform OSI and quote can be remade to accommodate.
13. Option 6 pricing assumes no new licensing is purchased,
14. For Option 6, if new licensing is purchased, a Support Adder will be incurred and added to the Support pricing.
15. Preventative Visits include (1) engineer onsite for up to (5) days up to (2) times per year.
16. Patch Management Services includes Discovery, Testing, and Analysis of the following software:
- Cisco 3650 Switch
- AMD Graphics Card Drivers
- Windows Server 2019
- Windows 10 64-Bit
- Visual Studio 2017
- Oracle 12c
- MS SQL 2017
- Microsoft Office 2016
17. Services are contingent upon the signing of the Patch Management Services Agreement by both parties.
18. Patch Management Services are to begin a minimum of 30 days following quote acceptance, to allow time for test system build.
19. In order to subscribe to OSI's Patch Management Services program, PREPA must maintain a Gold level of higher monarch™ Support Plan.

Standard Terms and Conditions

1. All quoted prices are in US Dollars ($), unless otherwise stated.
2. Travel and associated administrative costs are not included in this quote, and will be billed as incurred, unless otherwise stated.
3. Customer shall pay all applicable shipping and tariffs, unless otherwise stated.
4. Quoted price does not include applicable taxes, unless otherwise stated.
5. OSI will schedule all work upon receipt of the Customer's written acceptance, subject to OSI's resource availability.
6. Training, if applicable, will be provided at OSI's facility, unless otherwise stated.
7. Training Units may be used for up to 18 months from the date of purchase; any remaining unused Units will expire thereafter. One Training Unit is equivalent to one student attending one day of instruction for OSI University courses in Minneapolis (including Web-U courses).
8. Customer shall provide all relevant system information required for the work as needed (i.e. databases, displays, reports, IP addresses, networking information, RTU channel information, etc.) and shall be responsible for all delays caused by Customer's failure to do so in a timely manner.
9. Customer will have dedicated personnel available to assist OSI in the work, unless otherwise stated.
10. All third-party hardware purchased as part of this quote carries a standard OEM warranty, unless otherwise stated. All OSI hardware purchased as part of this quote carries a one-year warranty against defects from date of delivery, unless otherwise stated.
11. OSI does not guarantee that third-party goods will be available at time of quote acceptance. If third-party goods are not available, upon Customer's authorization, OSI will provide suitable replacements and bill any resulting cost differences to the Customer. Failure to timely authorize replacements may result in delays and/or need to re-quote.
12. When applicable, Customers subscribing to Gold or above Support Plans may be entitled to new software version updates without charge. With the exception of Diamond Plan subscribers, the Customer will be responsible to pay for any engineering services required to implement the software upgrades.
13. Unless otherwise agreed and quoted, Customer is responsible for all preparations for OSI's installation of software, hardware or services and any post-installation compatibility testing and compliance issues.
14. Customer will provide adequate environmental and power conditions onsite, unless otherwise stated.
15. Cutover is defined as the quoted functionality being operational with no outstanding critical incidents.
16. Any Quote(s) for system upgrade services require(s) that at the time of actual implementation Customer has a valid premium monarch™ Support plan which includes software upgrade privileges and that the system size or scope does not change dramatically between the issuance of the quote and implementation of the service.
17. Customer Furnished Hardware and Software: Customer shall provide all required third-party equipment and software ("CFE") for the Project except for the OSI-provided equipment identified in this quote. Customer shall be responsible to timely deliver all CFE to OSI in compliance with the mutually agreed upon Project Schedule for integration with the OSI software. Customer shall pay all shipping and insurance costs both to and from OSI and shall be responsible for all CFE warranties.
18. Export Controls:
18.1. Customer represents: It is not a citizen, national, or resident of, and is not under control of, the government of Cuba, Iran, Sudan, Libya, North Korea, Syria, nor any country to which the United States has prohibited export and that it is not listed on the United States Department of Treasury lists of Specially Designated Nationals, Specially Designated Terrorists, and Specially Designated Narcotic Traffickers, nor is it listed on the United States Department of Commerce Table of Denial Orders.
18.2. Customer agrees that it will not export or re-export the Product(s), directly or indirectly, to the above mentioned countries nor to citizens, nationals or residents of those countries nor to any entity so listed on any of the above mentioned lists.
18.3. Customer agrees that it will not use the Product(s) for, and will not allow the Product(s) to be used for the development, design, manufacture or production of nuclear, chemical or biological weapons of mass destruction.
18.4. The requirements of 18.2 and 18.3 above apply to all Product(s) purchased or licensed to Customer from OSI, whether included in this quote or purchased or licensed previously.

Notice: OSI's quote is based upon Customer's acceptance of all applicable Terms and Conditions. Requests for additions to, deletions of, or different Terms and Conditions, may require a revised quote and/or additional costs or schedule delays.

Government of Puerto Rico

Puerto Rico Electric Power Authority

Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Unit 4, Superheater Header Num. 5 Material and Installation – Palo Seco

1/18/2021

Introduction

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

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

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

The sections included in this document are:

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

Document Revision History

Version	Date	Summary of Changes
v.1	1/19/2022	

Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Unit 4, Superheater Header Num. 5 Material and Installation Palo Seco
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

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

Program Manager: ***<Name>***

<Insert title here>

PREPA Project Sponsor: ***<Name >***

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Palo Seco Steam Plant Unit 4, Superheater Header Num. 5 Material and Installation	[redacted]

Note: *GPS coordinates are required for all facilities.*

2.2. Facilities Description

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

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Vendor proposes to furnish PREPA the material outlined to provide the SH-5 Header replacement for Palo Seco Unit #4.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for Palo Seco Steam Plant Purchase and Installation of Superheater 5 Component of the Unit's 4 boiler will consist of the following:

- **SH-5 Header**:

One SH-5 Header made from grade 22 material. T22 terminal tubes will be safe ended with TP347H material to avoid the dissimilar metal weld in the field. The field weld will remove the existing field weld from the assembly replacement by 1" which would be 23" from the header centerline. The header lead will be provided loose to allow greater flexibility in field installation. Field weld for the header lead is designed at 55.5" from the header centerline.

- **Installation:**

1. Furnish labor as required to perform the equipment replacement.
2. Furnish supervision of the workforce
3. Furnish tools and equipment as needed to perform the work.
4. Furnish the equipment to perform the welds of components conform to ASME Section I.

3.2. Type of Project

Indicate whether the intended plan is a(n):

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

Choose One (Restoration, Improved or Alternate) *If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

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

3.3. Preliminary Architectural and Engineering (A&E)

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

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

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

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
• (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
• 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount ($M)
Header Material Supply	$728,000.00
Installation / Replacement	$1,515,385.00
Total Project Estimated Cost	**$2,243,385.00**

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

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

Section 7. EHP Requirements

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

Section 8. Program Manager Lead Certification

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

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments

<Insert any comments here>

_____ _____

PREPA Project Sponsor's Printed Name Date

_____ _____

Title Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

- Please see attached Proposal for Installation and Material Supply.

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures

10.4. Other: (Please Describe)

N/A

PREPA
Palo Seco Unit #4

SH-5 Header Replacement

GE Steam Power Inc.

Material Offering Proposal #18-1351791

Rev 02---------- July 31, 2019

July 31, 2019

Jorge E Sanchez Valle

REFERENCE: Budget Priced Proposal
Palo Seco Unit #4 SH-5 Header Replacement
Material Offering Proposal #18-1351791
Original Contract – 11166

Dear Eng Sanchez,

In response to your request, GE Power is pleased to submit this budget priced proposal for the supply of the materials and/or services as described herein for PREPA's Palo Seco Unit # 4.

This proposal is intended solely to provide a preliminary indication as to expected costs typically associated with performing the proposed scope of work as outlined below to assist in Purchaser's planning. This proposal has been prepared with minimal technical investigation using benchmarks from similar type projects with no consideration of any special conditions either commercial and/or technical, which Purchaser may ultimately require. For estimating purposes, we've assumed the most economical source of material supply and present-day cost for all other aspects of the estimate. GE has not attempted to escalate materials, engineering, manufacturing or other services based on performance of work at some future date.

1. Technical Discussion

1.1. Boiler Description and Background

GE originally supplied this equipment for Palo Seco Unit 4 on Contract #11166. As the original designers of this equipment, we best understand the design philosophy, parameters, and constraints of this equipment and have in-depth design knowledge of these and similar type units. Furthermore, our boiler modeling is unique; it does not make assumptions, as competitors might do for GE units.

1.2. Engineering Fit-Up Assumptions

GE's offering is made in good faith and on the assumption that all existing equipment is as originally supplied and/or depicted either per boiler specific contract (original or other) and/or Kentucky Utilities supplied drawings or sketches. As examples, but in any event not limited to, conditions such as headers and drums have bowed or rotated out of position; water-cooled or steam-cooled walls are not in vertical and horizontal alignment; roof tubes and/or assemblies have sagged; any equipment modifications (to which GE is unaware), that may negatively impact GE's scope of supply and/or ability to interface with and/or otherwise directly affect the fit up of materials supplied under this offering.

GE's offering has not taken into account any third-party modifications performed to this boiler without the knowledge of GE and has not been considered in the scope of this offering.

Should existing conditions differ from those depicted on either boiler specific contract (original or other) or IP supplied drawings or sketches, which result in interference between materials supplied and the existing equipment, all costs associated with correcting interference problems shall be considered beyond the contracted work scope and shall be solely to PREPA's account.

1.3. Applicable Codes and Regulations for Pressure Parts

Pressure parts described in this material offering proposal have been designed and will be fabricated in accordance with the rules of the applicable sections of the ASME Code and addenda in effect. For purposes of establishing a base material offering price, that edition and addenda of the ASME Code in effect as of the original date of this material offering proposal has been utilized. Design of equipment proposed herein may not necessarily comply with all national standards, local acts, regulations, and insurance codes.

Where other codes require modifications, and PREPA requests GE perform same, or where actual design of pressure parts to the requirements of the edition of the ASME Code mandated by the date of the contract award results in a change in the cost of the equipment and/or services provided by GE, the contract price shall be adjusted accordingly.

2. Statement of Work

GE proposes to furnish PREPA the material outlined in this material offering proposal to provide the SH-5 Header replacement for Palo Seco Unit #4. Deliverables contained within this Statement of Work are the only products and services that GE will provide for the specified price. Any previous discussions, expectations, or understandings are not included, unless specifically defined within this section. For purposes of establishing an offering price, GE assumes that any material not identified in this section will either be supplied by others or re–used by PREPA.

2.1. Scope Summary

GE proposes to furnish PREPA the material and services outlined in this material offering proposal to provide the SH-5 Header replacement.

SH-5 Header – One SH-5 Header made from grade 22 material. T22 terminal tubes will be safe ended with TP347H material to avoid the dissimilar metal weld in the field. The field weld will remove the existing field weld from the assembly replacement by 1” which would be 23” from the header centerline. The header lead will be provided loose to allow greater flexibility in field installation. Field weld for the header lead is designed at 55.5” from the header centerline. Dimensions to be verified at contract stage.

2.2. Work Not Included

- Items not listed in this proposal
- Insulation, Refractory and Lagging
- Installation
- Field testing services
- Hard copy drawings
- Loading, offloading, demolition, or installation
- Shop attached omega or erection lugs
- Weld mapping
- Weld Overlay or Coatings

2.3. Engineering Services

2.3.1. Drawings

Installation Arrangement Drawings (IADs) contain sufficient information for proper installation of supplied materials by a qualified erector.

PREPA's allowable use of IAD(s) is defined as being limited solely for the purpose of installation of the supplied material and specifically excludes any use by PREPA for purposes of PREPA going out for bids to make similar modifications on other units.

No provisions have been made to supply hard copy drawings.

2.3.2. Drawing Distribution

GE's standard method for distributing drawings is Tagged Image File Format (TIFF) or Portable Document Format (PDF).

2.4. Manufacturing Services

It is the intent to have materials fabricated at one of GE's approved pressure part supplier's North American based manufacturing facility.

2.4.1. Tube End Prep

GE will use standard bevel (37-½°) tube end prep.

2.4.2. NDE

- 100% X-Ray examination of header pipe girth welds
- 100% MT examination of tube to header welds
- 100% UT or Eddy Current Tested at the tube material supplier's mill

2.4.3. Hydrostatic Testing

GE will perform hydrostatic testing of the SH-5 header at 1-1/2 times design pressure.

2.4.4. Stress Relieving

Post weld heat treating will be performed on the SH-5 Outlet Header.

2.4.5. Pre-Shipment

To ensure they are free from obstruction and debris, all fabricated tubular steam circuits will be sounded by means of passing a sponge material through the inside diameter of tubes.

2.4.6. Non-Engineered Welds

From time to time in the course of manufacturing tubular and plate products, the insertion of non-engineered welds may be required. Non-engineered welds are those welds, which were unplanned from the outset, but may be required for reasons due to short lengths of tubing, bend errors, defects in bends, etc. It is GE's practice, when conditions such as these arise, that a non-conformance or repair tag is immediately issued and a disposition established. All non-engineered welds are treated in accordance with GE's manufacturing and inspection practices. GE's Project Manager is made aware of the deviation and can advise PREPA or PREPA's representative as to intended repair.

2.5. Raw Tube Material Intended Source

Raw tube material included in this offering is intended to be sourced from tube mill vendors as listed in the GE's AVL database. GE's method of tube supplier qualification is based on decades of experience and is, we believe, the best in the industry. All suppliers, regardless of geographical location, must meet GE's stringent requirements that go beyond those basic requirements imposed by ASME. As a result, all approved suppliers are among the best in the world. A basic tenet is that every supplier must have consistently high quality or there is no economic or schedule advantage, even in the short term, regardless of price or promised delivery time.

2.6. Procurement

Through decades of experience, GE has developed Purchase Instructions in accordance with GE Engineering and Quality Assurance guidelines. Purchase Instructions capture knowledge from previous experiences and impose strict requirements on material suppliers. Purchase Instructions ensure that all applicable quality requirements are specified to meet both ASME Code and/or GE design guidelines that are more stringent than ASME Code. Purchase Instructions help reduce project risk, maintain quality, and ultimately bring value to PREPA.

2.6.1. Raw Tube Material Sourcing

GE Power imposes chemical and mechanical requirements on its tubing suppliers that exceed the ASME/ASTM Codes. GE does not buy tubes to ASME Code hot-finished tolerances. GE's Purchase Instruction tolerances for hot-finished tubes are the same as those our competitors refer to as "HF=CD". Additionally, all tube material is specified to be one hundred percent (100%) ultrasonically tested at the vendors' mill.

2.6.2. Approved Vendor List

All vendors that supply pressure parts, perform work on pressure part material, or perform work under the jurisdiction of ASME Code Section I or VIII are listed in the Chattanooga's AVL database. Potential vendors need to demonstrate commercial and technical viability before being approved. The defined vendor qualification process, as well as Chattanooga's AVL database, is available for review at GE's Chattanooga facilities with appropriate representatives.

2.6.2.1. Mission Statement

It is the policy of GE Power to not discriminate against individuals or business organizations on the basis of race, color, sex, age, national origin, or physical disability. In support of this policy, our goal is to aggressively pursue, whenever possible, small and disadvantaged businesses in order to provide them with maximum opportunity to become approved suppliers to our company.

Material and subcontractor procurements are made in accordance with good purchasing practices and within the approved company guidelines. Predominate criteria used include pricing, schedule, quality, safety, and availability.

2.7. Preliminary Project Schedule

Delivery estimates from the receipt of an acceptable purchase order and subject to manufacturing space availability are shown below. PREPA should be aware that once design and fabrication schedules have been set, subsequent changes could have a significant impact on both price and schedule.

Milestone	Approximate Weeks ARO
Issuance of Purchase Order	00
Initial Order Release for Raw Material	04
Receipt of initial raw material at shop	30
Mid-Point of Pressure Part Fabrication	38
Pressure Part Fabrication Complete	46
Material Shipment to Port of Export	48

3. Warranty

GE warrants to PREPA that the materials supplied under this proposal will be free from defects in material and workmanship for a period of one year from delivery.

4. Pricing, Variable Cost Conditions, Prior Sales, and Validity

4.1. Pricing

Pricing associated for the performance of the work, as described in this material offering, is presented in the accompanying transmittal letter and is exclusive of any change orders to which PREPA and GE might agree.

4.2. Variable Cost Conditions

Due to market fluctuations during the cycle time between quotation and actual order submittal, as well as our suppliers quoting short validity periods, prior to GE's acceptance of an order, we will review variable cost items that are impacted by market fluctuation-–raw material, tube material, and freight. GE reserves the right to adjust final pricing offered based on actual order submittal date. We are committed to work with PREPA to mitigate the impact of market fluctuations.

In the event that tariffs or duties come into effect which impact the cost of materials included in the equipment or work supplied under this Proposal, GE shall have the right to increase the overall price of such equipment or work to reflect the increased cost of such material to GE.

4.3. Prior Sales

GE reserves the right, prior to acceptance of an order, to review committed engineering and manufacturing load, as well as changes in required material lead-times, and adjust overall schedule accordingly based on prior sales between offer submittal date and actual receipt date of an acceptable purchase order.

4.4. Validity of Offering

Subject to **Variable Cost Conditions** and **Prior Sales**, GE's as-stated established material offering is valid for thirty (30) calendar days following submittal.

4.5. Pricing

Below is the material pricing for Unit #4:

Header Material Supply

SH-5 Header material replacement ---------- **$ 728,000**

Pricing Limitations

1. The prices above are in US Dollars, and do not include applicable sales, excise, value-added, use, import duties or similar taxes.
2. The proposed prices are based on the scope of supply outlined in Section 1. Any additional scope required by customer will be considered extra work, and will be quoted on a separate, written Budgetary Quotation.
3. The delivery terms are DAP Prepa Palo Saco, Toa Baja, Puerto Rico, INCOTERMS 2010. Freight costs are prepaid and included to PREPA's South Coast Plant located in Toa Baja, Puerto Rico. PREPA is responsible for import duties and customs process.
4. Alstom Caribe reserves the right to modify prices at any time. This Budgetary Quotation is subject to change upon notice, including, without limitation, in the event that new tariffs or duties come into effect which impact the cost of materials included in the equipment or work supplied under this Budgetary Quotation
5. For each calendar month that payment is late, customer shall pay late payment fee of 1.5% on the overdue balance or the maximum rate permitted by law if it is less.

5. Taxes

PREPA will pay or reimburse GE for all sales, use, value added, excise and other taxes which may be levied or assessed in connection with the transfer of the material or equipment furnished by GE (including such taxes which are levied or assessed in connection with such material or equipment which GE obtains for use in performing the services), or in connection with the performance of the services, or in connection with this material offering proposal or any resultant contract or GE's performance under this material offering proposal or any resultant contract.

GE's price does not include any such taxes. If GE pays any such taxes, PREPA will reimburse GE promptly upon receipt of the billing invoice. PREPA will provide GE with any exemption certificates and other relevant documents in sufficient time to claim any tax exemptions in association with this material offering proposal or any resultant contract but, in all events, will be supplied prior to shipment of material. Additional taxes along with associated interest and penalties assessed to GE by government authorities for denied exemption shall be PREPA's responsibility. This article shall prevail over any conflicting or inconsistent provisions contained elsewhere in the documents comprising the contract regarding taxes.

6. Payment Terms

These proposed payments are a percentage (%) of the total contract price. Terms of payment shall be in accordance with the following payment schedule and are net 30 calendar days from date of invoice unless otherwise stated. These payments are based on maintaining a neutral cash flow for the project. The schedule shown uses the base option for the dates shown but would be adjusted accordingly to account for the option that is chosen.

Payment Milestone	Approximate Weeks ARO	% of Total Contract Price
Issuance of Purchase Order	00	25%
Receipt of initial material at shop	30	25%
Mid-Point Pressure Part Fabrication	38	25%
Pressure Part Fabrication Complete	46	25%

Cancellation Schedule:
Must cancel before 2 weeks after PO not to incur material or fabrication costs.
Must cancel before 20 weeks after PO not to incur fabrication costs.
Engineering and administration costs will be prorated for the active contract period.

7. Commercial Exceptions and Clarifications

THE FOLLOWING PROVISIONS SHALL PREVAIL OVER ANY DIFFERENT, CONFLICTING OR INCONSISTENT PROVISIONS ELSEWHERE IN THE DOCUMENTS COMPRISING THE PURCHASE ORDER:

General Clarification #1 - GE will not submit for review or otherwise any shop detail drawings, design calculations, or information considered proprietary to the fabrication of the product. Shop detail drawings, design calculations, weld procedures, test procedures, fabrication procedures, and instructions are considered proprietary and are available for review at GE's facilities with the appropriate GE representative(s). All prepared drawings remain the property of GE and shall not be reproduced in whole or in part by PREPA without written consent of GE. For all documents, please delete references to submittal of design, procedures, fabrication or shop drawings or similar items that are considered proprietary and copyrighted material wherever found.

General Clarification #2 - GE's offering includes and assumes PREPA written acceptance, as evidenced by the issuance of a purchase order, with Exceptions and Clarifications set forth in GE's material offering.

General Clarification #3 - **In the event that tariffs or duties come into effect which impact the cost of materials included in the equipment or work supplied under this Proposal, GE shall have the right to increase the overall price of such equipment or work to reflect the increased cost of such material to GE.**

8. Commercial Terms and Conditions

GE proposes that this material offering proposal and any resulting Purchase Order/Contract shall be exclusively governed by GE Power Standard Terms and Conditions of Sale, dated May 2018.

If needed, at the pre–award stage, the parties may propose and mutually agree on other Terms and Conditions for project–specific application. Once Terms and Conditions are mutually agreed upon, the subject Terms and Conditions will need to be specifically set forth in the award documentation as the exclusively governing Terms and Conditions of the award.

9. Commercial Exhibits - Attached

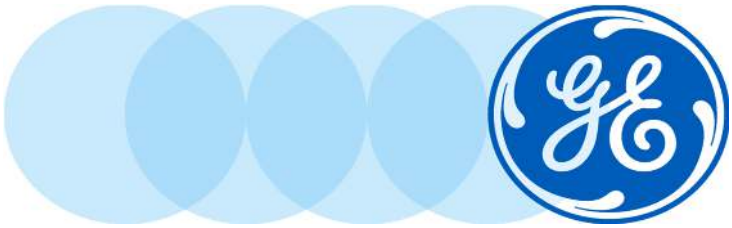
- Commercial Terms and Conditions

U4 - SH5 Header installation

PUERTO RICO ELECTRIC POWER AUTHORITY

Site: Palo Seco

Unit Serial: 09557



Proposal: 1370034

Customer Reference: Email dated August 28, 2019

Proposal Date: October 10, 2019

To:	PUERTO RICO ELECTRIC POWER AUTHORITY	**Proposal**	1370034
	TOA BAJA, 00949	**Serial Number**	09557
Attn:	Jorge E. Sanchez	**Date**	October 10, 2019
Telephone:	+1 787-521-6515	**Offering Type**	Budgetary
Email:	JORGE.SANCHEZ@prepa.com		

Alstom Caribe (hereafter referred to as "GE") is pleased to submit this Budgetary Quotation through the Steam Power business of the General Electric Company to PUERTO RICO ELECTRIC POWER AUTHORITY, (hereafter referred to as "PREPA") for the U4 - SH5 Header installation by expressly request of Jorge E. Sanchez, Project Manager, through e-mail dated August 29th, 2019

This is a Budgetary Quotation provided for the purposes of technical evaluation and fiscal budgeting. It is not a binding offer or acceptance from GE, and it does not create create any obligation on the part of GE, to enter into any agreement or to provide any particular goods or services at any particular price. GE clarifies that that this Budgetary Quotation is presented for reference purposes only and aims to contribute to the unique and free conviction of PREPA on the convenience and the opportunity to implement its scope in a regular public procurement process.

In addition, the prices, terms and conditions provided for in this budget quotation are only an estimate and are not based on the complete information of the details of the good/service and other factors that may affect the final price and the terms and conditions to be established by the respective contract or purchase order/service. Accordingly, the budgetary pricing is subject to change, and no warranty or representation is given, either express o implied, concerning the information in this Budgetary Quotation.

This budgetary quotation, including the price estimate, is based on GE´s standard contract terms and conditions included in Section 5. Deviations from such terms may result in adjustment of the quotation.
This section prevails over any other term and condition provided in other section of this document.

Thank you for the opportunity to provide these services to PREPA

If you have any questions, please do not hesitate to contact me.

Signature:

Name	Orlando Soto
Title	Sales Manager
Address	383 F.D. Roosevelt Avenue Edificio Fundación Angel Ramos, Hato Rey, El Mundo San Juan 00918 PR
Telephone	+1 (787) 999-6410
Fax	+1 (787) 999-6400
Email	orlando.soto@ge.com

Table of Contents

Section 1 - Scope of Services

1.1. Introduction

The scope of work covers the replacement of the Header SH5 of Unit 4, in Palo Seco Power Plant, Puerto Rico Electric and Power Authority.

1.2. Equipment to be replaced

Item	Description	Qty
1	Header SH 5 – Unit 4 Palo Seco	1

1.3. Scope of Work

The scope of work includes the following:

1. Furnish labor as required to perform the equipment replacement.
2. Furnish supervision of the workforce
3. Furnish tools and equipment as needed to perform the work.
4. Furnish the equipment to perform the welds of components conform to ASME Section I.

To perform the site services is required to be informed with three (3) anticipate months before outage, to prepare lifting detail plan and appropriate schedule the resources required for the works.

The following activities are not included in our proposal:

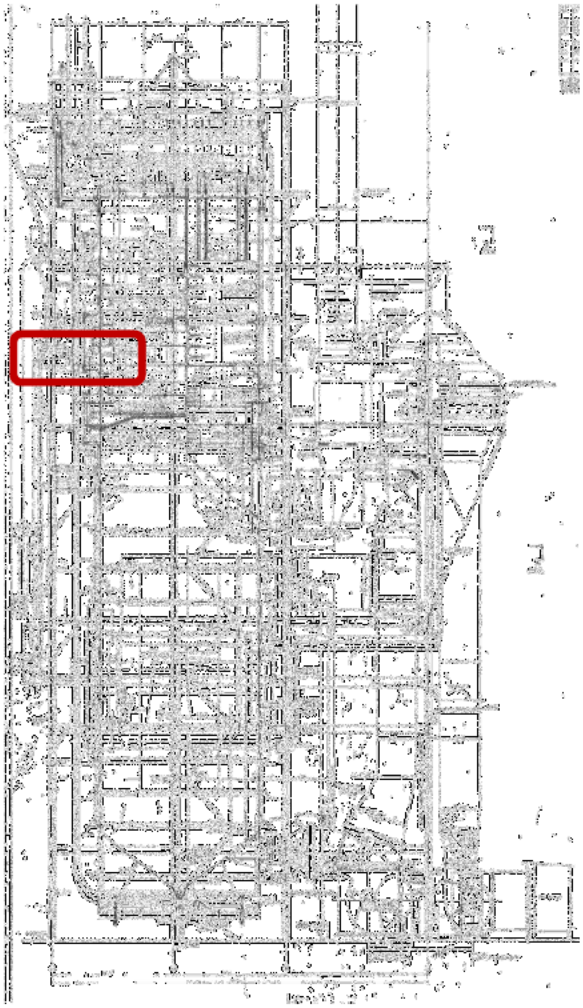
1. Lead paint abatement and final disposition of hazardous materials.
2. Crane services as required to perform the work as further defined below.
3. Removal and installation of insulation and refractory.
4. Electrical condition needed to be temporary removal

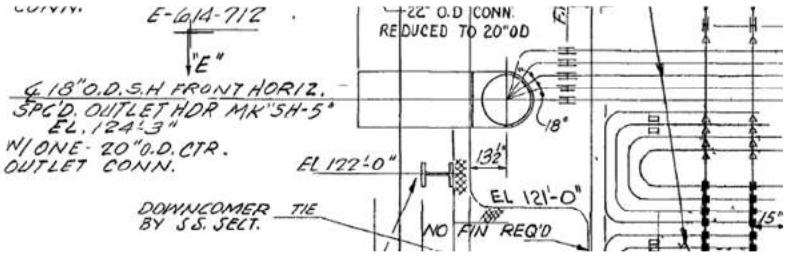
Notes:

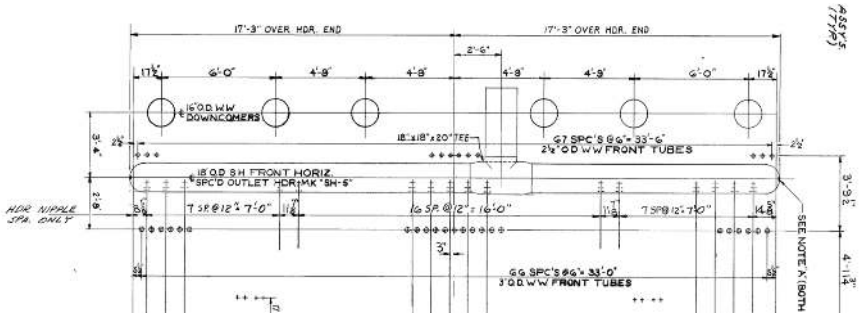
1. This proposal considers that Customer will be furnishing the required crane, together with a certified operator(s) and maintenance.
2. Waste materials must be disposed inside the plant where Customer indicates inside of the Station.
3. Customer will perform initial cleaning of the boiler by water wash or sandblast to remove any residues of Vanadium. Customer personnel will perform regular gas testing of the boiler.
4. All electrical or instrument removal or disconnect to be provided by the customer.

Follow scheme of the HSHT to be replaced:

References Drawings







Pipe Welding List							
Id	**Description**	**Side 1**	**Side 2**	**Diam**	**THK2**	**Mat1**	**Quantity**
1	Main Steam Pipe	Pipe	Pipe	20"	2.406"	SA-387 D	1
2	Stud Pipes SH-5	Pipe	Pipe	2"	0.36"	SA-213 T22	165
3	Front Wall Pipes	Pipe	Pipe	2.5"	0.21"	A36	24
4	Casing	Plate	Plate		0.25"	A36	

1.4. Schedule

Attached can see the scheduled estimated to perform site the works; this includes the following main phases and activities sequence:

- Pre-outage Activities
  - Mobilization.
  - Prepare electrical facilities and provisional structure to move parts inside of the main boiler structure.
  - Un-erection interference elements that no have interference with boiler operation
  - Prepare e install external rigging elements
  - Prepare header
  - Install scaffolding
  - Remove insulation & refractory **(By Customer)**

- Outage Activities
  - Confirm that areas to be opened are asbestos free **(by Customer)**
  - Abate asbestos if necessary **(By Customer)**
  - Remove casing and insulation from vestibule **(by Customer)**
  - Rough cut header nipples close to the header for removal
  - Temporarily support SH outlet lead
  - Rough cut SH outlet lead close to header
  - Install rigging
  - Remove permanent support and transfer to rigging
  - Remove header sections by drifting in the rigging
  - Lower header sections to ground using the crane
  - Raise header to elevation using the crane provided
  - Transfer header to rigging
  - Drift header into location using rigging installed
  - Install header in it's permanent supports
  - Fit-up and weld SH outlet link
  - Perform required Stress relive
  - Perform required NDE

- Fit and weld SH assemblies to header nipples
- Perform required NDE
- 10. Remove all rigging
- 11. Reinstall vestibule tubing
- 12. Weld vestibule tubing
- 13. Inspect as required
- 14. Hydrostatic testing
- 15. Install vestibule casing and insulation **(by Customer)**

- Post-outage Activities
  - Install interferences external
  - Remove external scaffolding
  - Final insulation **(Customer Activity)**
  - Casing Vestibule
  - Demobilization.

Section 2: Proposal Basis

This Proposal is based on the distribution of responsibilities between GE and Customer, as shown in the check list below, as well as the additional assumptions and clarifications listed in this section.

2.1. Responsibilities Matrix

Environmental Health and Safety			
Item	**Responsibility**	**Customer**	**GE**
1	Personal safety equipment (hard hats, eye protection with side shields, ear protection, cotton uniform with company logo, gas mask, etc.). Other safety requirement specific to site, if mandatory, is not part of this scope of supply.		☒
2	Safety orientation (basic) for labor force.		☒
3	Site-specific safety orientation for labor force. Time and cost incurred to undergo site-specific safety and other PREPA requirements such as drug programs shall be billed as an out-of-scope item.	☒	
4	First aid facility, assistance in obtaining medical care, access to Alstom Caribe's medical sites, emergency care or ambulance. If Available or possible	☒	
5	Isolate and tag out (LOCKOUT-TAGOUT) all systems (chemical, electrical, mechanical, environmental, steam, etc) associated with work scope.	☒	☒
6	Testing to make work free from hazardous material (lead, asbestos) and disposal and abatement of such. It is assumed that NO HAZARDOUS material will be encountered in performing the work scope.	☒	
7	Extinguishers (qty 1) at the work area.		☒
8	Electricians/technicians to LOCKOUT-TAGOUT (including lock-out boxes), disconnect and reconnect wiring and conduit necessary for all electrical equipment at or near work area.	☒	

Facilities			
Item	**Responsibility**	**Customer**	**GE**
9	Permits, licenses, governmental or public utility charges and inspection fees necessary to conduct work (except for lead abatement).	☒	
10	Representative scheduled concurrent with GE crews to facilitate location of parts and other outage activities.	☒	
11	Receiving, off-loading and proper temporary storage of all parts, if applicable.	☒	
12	Responsibility for any delays not caused by GE or beyond Ge's control.	☒	
13	Responsibility for GE's complete access to the units in order to perform scope of services as described herein.	☒	

Tooling/Equipment			
Item	**Responsibility**	**Customer**	**GE**
14	Certified operator for crane with required safety training.	☒	
15	Certified operator for forklift, with required safety training.		☒
16	Certified crane, scope of services, as required.	☒	
17	Trash containers and disposal of all materials used.	☒	
18	Wash facilities.	☒	
19	Sanitary facilities.	☒	
20	Change facilities for crew.	☒	
21	Parking space for GE's work force, if available.	☒	
22	Office trailer for field engineers (telephone service by PREPA in office).		☒
23	Normal plant service required for maintenance such as light, water, and electric power (110/220/480V).	☒	
24	Supplementary lighting.		
25	Crew vehicle.		☒
26	Engine driven welding machine, leads.		☒
27	Engine driven air compressor, leads.		☒
28	Acetylene and oxygen.		☒
29	Scaffolding with certified scaffolders, if required.		☒
30	Expendable, consumable or miscellaneous materials (rags, hones, joint compounds, solvents, greases, etc.).		☒
31	Temporary diesel generators and compressor	☒	

Supplies			
Item	**Responsibility**	**Customer**	**GE**
31	Miscellaneous spare parts (gaskets, bolts, etc.).	☒	
32	Parts, spares or replenishment, needed to support the scope of services described herein. Parts should be on hand at the beginning of the project to as to prevent delays resulting from repair or procurement time.	☒	
33	Material and/or parts that which become a permanent part of the units after installation unless specifically specified as being furnished by GE in this proposal.	☒	

Shop and Outside Work			
Item	**Responsibility**	**Customer**	**GE**
34	Non-destructive test services.		☒
35	Soft wheeled cart to transport parts, if available	☒	
36	Parts container, if available.	☒	
37	Parts cleaning station, if available.	☒	
38	Component repair needed to complete the scope of services.	☒	

2.2. Customer Responsibilities

To support the scope of activities listed in Section 1, GE requires the following support from Customer:

a) Free and unobstructed access to the work areas.

b) Lighting and uninterruptible 110 VAC supply (30A).

c) Designated site representative.

d) Maintain the working environment under 105°F to ensure proper operation of the inspection equipment.

Section 3: Pricing Summary

GE is pleased to provide the work scope as indicated in the Scope of Service under Section 1, per the Schedule outlined in Section 1.4, and with the Responsibilities described in Section 2

Item	Description	Total Price (US$)
1	Replacement of De-superheater DS1L/R for the Unit 5 or 6 for Coast South Power whit their respective de-superheater links	$ 1,515,385.00
	TOTAL	**$ 1,515,385.00**

3.1. Pricing Limitations

1. The price is in USD and does not include applicable sales, excise, value added, use or similar taxes.
2. Price does not include "Workman compensation", this would be invoiced at cost
3. PREPA shall request a firm proposal in order to issue an PO to GE for scope described in Section 1. This budgetary proposal is just for PREPAs reference
4. Consequently, in addition to the price specified herein, the amount of any present or future sales, use, excise or similar tax applicable to the work hereunder shall be paid by Buyer or in lieu thereof, Buyer shall provide Seller with the tax exemption evidence acceptable to the taxing authorities.
5. Delay or standby time caused by lack of PREPA support or PREPA suspension will be billed at minimum of eight hours per day per specialist.
6. If PREPA suspends the inspection before completion of the scheduled inspection, GE will bill on a Time & Materials basis as standard published rates.
7. This is a budgetary estimate and all prices are subject to change. The performance of any work hereunder, including the sale/license of any products and services, shall be expressly conditioned upon and subject to the parties reaching a mutual written agreement on the terms and conditions applicable to the work. GE shall have no obligations hereunder unless and until such terms and conditions are specifically agreed to in writing by GE.

3.2. Proposal Validity

Not apply.

3.3. Terms and Conditions

Except as herein modified this budgetary estimate shall be subject to and exclusively governed by GE Products and/or Services Terms and Conditions (Section 5). In case of conflicts between the terms contained in this proposal and the before mentioned terms and conditions, the terms stated in this proposal shall take precedence. For purposes of this proposal, all references to "GE" in the Terms and Conditions shall mean Alstom. Alstom Caribe is in the disposition to agree with Puerto Rico Electric Power Authority terms and conditions based on previous negotiations between the parties.

Section 4: Extra Work Rates

4.1. Extra Work Rates and Definitions

Out of scope work (extra work) is defined as any work not specifically called for in General Electric International Inc. Dominican Republic (GE)'s proposals and will be formally agreed to by PREPA and GE before it is performed.
In the event, extra work is necessary during the performance of the work scope, the extra work can be performed on a lump sum firm price basis for which a proposal will be provided as needed or on a time and material (T&M) basis (rates included in this section). In the event, extra work requires the skills of a specialist, craftsman or technician for whom extra work rates are not included in this proposal, the extra work hourly rates will be provided as needed.

No extra work will be performed without the prior authorization of the designated PREPA's representative. PREPA will designate personnel responsible for authorizing extra work.

The following is an example of, but not limited to, extra work items:
1. Any necessary work not specified in the scope of services (Sections 1 and 2) of this proposal.
2. Loss of productivity due to any/all delays.

GE Observed Holidays

New Year's Day	Martin Luther King Day	Presidents' Day
Good Friday	Memorial Day	Independence Day
Labor Day	Thanksgiving Day	Day After Thanksgiving
Day Before Christmas	Christmas Day	

For holidays falling on a weekend, the day before or the day after will be observed

GE Steam Power

United States

Effective:

April 19, 2019

Commercial Rates – Boiler & Environmental Services

Technical Field Advisor Hourly Rates U.S. Dollar

Description	ST	OT1	OT2
Service Engineer	$205	$308	$410
Senior Service Engineer	$245	$368	$490
Consulting Engineer	$275	$413	$550
Process Specialist	$350	$525	$700

Technical Field Advisors

Technical Advisory Service is defined as technical advice and counsel from field personnel based on engineering and operational practices as applicable to the equipment. TFA Services do not include supervision or management of purchaser's employees, agents or other contractors or the operation of machinery or equipment.

Service Engineer

Demonstrates a general technical competence in the inspection and testing of equipment.

Senior Service Engineer

Demonstrates competency in the maintenance and operation of equipment with specialization in one or more pieces of equipment. Leads a team of service engineers on a project.

Consulting Engineer

Demonstrates competency in the maintenance and operation of equipment with expertise and experience across the equipment at a plant level.

Process Specialist

Expert process knowledge of equipment and systems.

Rate Terms

1. The normal workday and normal workweek are defined as eight (8) consecutive hours and five (5) consecutive normal workdays, respectively, excluding any holidays or weekends.
2. The Overtime 1 rate applies to billable hours on Saturday and normal workday hours greater than 8 but less than 12 consecutive hours.
3. The Overtime 2 rate applies to billable hours on Sundays, holidays and normal workday hours greater than 12 consecutive hours.
4. Travel time will be charged at the applicable hourly rate (i.e., standard rate times applicable rates as set forth in 1 above) on a round trip basis with point of departure.
5. Travel & Living (T&L) for the continental USA will be billed for all days during the assignment including weekends and travel days by the GE representative responsible for providing the service, as follows:
   a. T&L will be $400 per day per employee
   b. Air, train, rental car, or public transportation at cost plus 20%.
   c. Private vehicle/company vehicle at current IRS rate.
7. Purchased labor and materials will be billed at cost plus 30%.
8. Consult with your local GE Steam Power representative to determine any applicable charges for special tooling and/or test equipment or any taxes, fees or VAT that may be in addition to the above rates.
9. Minimum billing of 8 hours for all services provided, including standby time. Minimum standby time is 8 hours at the standard rate (weekdays and weekends).
10. Consult with your local GE Steam Power representative for any rates for services which are not included on this sheet.
11. All rates are based on GE's standard terms and conditions of sale (PSTC).

Technical Field Advisor Services

Below are several Technical Field Advisor Services offered by GE Steam Power Americas:

Equipment Inspections	Outage inspections and reports with recommendations for improving unit availability, reliability, and efficiency.
Outage Planning	Develop outage scope, prioritize tasks, identify replacement parts and expedite delivery to meet outage schedule.
Equipment Tuning	Provide inspection, testing and operational tuning to get your boiler or environmental control systems in the optimum operating range while meeting emission requirements.
System Testing	Provide full range of boiler testing and engineering services.
Performance Assessment	Data collection and analysis with recommendations to optimize performance by implementing improvements to lower costs and improve efficiency.
Instruction/Training	Provide standard and customer-specific operation and maintenance training programs.
Commissioning	Provide installation and commissioning support for new and upgraded equipment.

Section 5: Terms and Conditions

This quotation is subject to the Products and/or Services Terms and Conditions described below, however both parts could get a new agreement on Terms and conditions in the event to sign a contract to perform the scope of service described herein.

Products and/or Services Terms and Conditions PSTC/Emma (Standard) (May 2018)

NOTICE: Sale of any Products and/or Services is expressly conditioned on Buyer's assent to these Terms and Conditions. Any acceptance of Seller's offer is expressly limited to acceptance of these Terms and Conditions and Seller expressly objects to any additional or different terms proposed by Buyer. No facility entry form shall modify these Terms and Conditions even if signed by Seller's representative. Any order to perform work and Seller's performance of work shall constitute Buyer's assent to these Terms and Conditions. Unless otherwise specified in the quotation, Seller's quotation shall expire 30 days from its date and may be modified or withdrawn by Seller before receipt of Buyer's conforming acceptance.

1. Definitions

"Buyer" means the entity to which Seller is providing Products and/or Services under the Contract.

"Contract" means either the contract agreement signed by both parties, or the purchase order signed by Buyer and accepted by Seller in writing, for the sale of Products and/or Services, together with these Terms and Conditions, Seller's final quotation, the agreed scope(s) of work, and Seller's order acknowledgement. In the event of any conflict, the Terms and Conditions shall take precedence over other documents included in the Contract.

"Contract Price" means the agreed price stated in the Contract for the sale of Products and/or Services, including adjustments (if any) in accordance with the Contract.

"Derivative Works" means: (a) any work based upon one or more pre-existing works, such as a revision, enhancement, modification, translation, abridgement, condensation, expansion, extension or any other form in which such pre-existing works may be published, recast, transformed, or adapted, and that if prepared without the authorization of the owner of the copyright or other intellectual property right to such pre-existing works, would constitute an infringement of such copyright or other intellectual property right, and/or (b) any compilation that incorporates such pre-existing works.

"Hazardous Materials" means any toxic or hazardous substance, hazardous material, dangerous or hazardous waste, dangerous good, radioactive material, petroleum or petroleum-derived products or by-products, or any other chemical, substance, material or emission, that is regulated, listed or controlled pursuant to any national, state, provincial, or local law, statute, ordinance, directive, regulation or other legal requirement of the United States ("U S.") or the country of the Site.

"Insolvent/Bankrupt" means that a party is insolvent, makes an assignment for the benefit of its creditors, has an administrator, receiver, liquidator or trustee appointed for it or any of its assets, or files or has filed against it a proceeding under any bankruptcy, insolvency dissolution or liquidation laws.

"Products" means the equipment, parts, materials, supplies, software, and other goods Seller has agreed to supply to Buyer under the Contract.

"Seller" means the entity providing Products or performing Services under the Contract.

"Services" means the services Seller has agreed to perform for Buyer under the Contract.

"Site" means the premises where Products are used or Services are performed, not including Seller's premises from which it performs Services.

"Terms and Conditions" means these "Products and/or Services Terms and Conditions", including any relevant addenda pursuant to Article 18, together with any modifications or additional provisions specifically stated in Seller's final quotation or specifically agreed upon by Seller in writing.

"USD" means United States Dollars.

2. Payment

2.1 Buyer shall pay Seller for the Products and/or Services by paying all invoiced amounts by direct bank transfer in the currency specified by Seller in the Contract, without deduction, withholding or set-off for any payment or claim, within thirty (30) days from the invoice date. If the Contract Price is less than two hundred fifty thousand USD ($250,000), Seller shall issue invoices upon shipment of Products and as Services are performed. If the Contract Price is two hundred fifty thousand USD ($250,000) or more, progress payments shall be invoiced starting with twenty-five percent (25%) of the Contract Price for Products and/or Services upon the earlier of Contract signature or issuance of Seller's order acknowledgement and continuing such that the Contract Price for remaining Services is invoiced as they are performed and ninety percent (90%) of the Contract Price for Products is received before the earliest scheduled Product shipment ("Progress Payments"). For each calendar month, or fraction thereof, that payment is late, Buyer shall pay a late payment charge computed at the rate of 1.5% per month on the overdue balance, or the maximum rate permitted by law if it is less. If the price is set by the Contract in a currency other than USD, references to USD in this Section 2.1 shall mean the equivalent amount in the applicable currency.

2 2 As and if requested by Seller, Buyer shall at its expense establish and keep in force payment security in the form of an irrevocable, unconditional, sight letter of credit or bank guarantee allowing for pro-rata payments as Products are shipped and Services are performed, plus payment of cancellation and termination charges, and all other amounts due from Buyer under the Contract ("Payment Security"). The Payment Security shall be (a) in a form, and issued or confirmed by a bank acceptable to Seller, (b) payable at the counters of such acceptable bank or negotiating bank, (c) opened at least sixty (60) days prior to both the earliest scheduled shipment of Products and commencement of Services, and (d) remain in effect until the latest of ninety (90) days after the last scheduled Product shipment, completion of all Services and Seller's receipt of the final payment required under the Contract. Buyer shall, at its expense, increase the amount(s), extend the validity period(s) and make other appropriate modifications to any Payment Security within ten (10) days of Seller's notification that such adjustment is necessary in connection with Buyer's obligations under the Contract.

2 3 Seller is not required to commence or continue its performance unless and until any required Payment Security is received, operative and in effect and all applicable Progress Payments have been received. For each day of delay in receiving any Progress Payments or acceptable Payment Security, Seller shall be entitled to an equitable extension of time to durations or periods of time (if any) expressly agreed to by the Parties in the written schedule for performance and/or completion of the Services or any parts thereof. If at any time Seller reasonably determines that Buyer's financial condition or payment history does not justify continuation of Seller's performance, Seller shall be entitled to require full or partial payment in advance or otherwise restructure payments, request additional forms of Payment Security, suspend its performance or terminate the Contract.

3. Taxes and Duties

Seller shall be responsible for all corporate taxes measured by net income due to performance of or payment for work under this Contract ("Seller Taxes"). Buyer shall be responsible for all taxes, duties, fees, or other charges of any nature (including, but not limited to, consumption, gross receipts, import, property, sales, stamp, turnover, use, or value-added taxes, and all items of withholding, deficiency, penalty, addition to tax, interest, or assessment related thereto, imposed by any governmental authority on Buyer or Seller or its subcontractors) in relation to the Contract or the performance of or payment for work under the Contract other than Seller Taxes ("Buyer Taxes"). The Contract Price does not include the amount of any Buyer Taxes. If Buyer deducts or withholds Buyer Taxes, Buyer shall pay additional amounts so that Seller receives the full Contract Price without reduction for Buyer Taxes. Buyer shall provide to Seller, within one month of payment, official receipts from the applicable governmental authority for deducted or withheld taxes.

4. Deliveries; Title Transfer; Risk of Loss; Storage

4.1 For shipments that do not involve export, including shipments from one European Union ("EU") country to another EU country, Seller shall deliver

Products to Buyer FCA Seller's facility or warehouse (Incoterms 2010). For export shipments, Seller shall deliver Products to Buyer FCA Port of Export (Incoterms 2010). Buyer shall pay all delivery costs and charges or pay Seller's standard shipping charges plus up to twenty-five (25%) percent. Partial deliveries are permitted. Seller may deliver Products in advance of the delivery schedule. If Products delivered do not correspond in quantity, type or price to those itemized in the shipping invoice or documentation, Buyer shall so notify Seller within ten (10) days after receipt.

4.2 For shipments that do not involve export, title to Products shall pass to Buyer upon delivery in accordance with Section 4.1. For export shipments from a Seller facility or warehouse outside the U.S., title shall pass to Buyer upon delivery in accordance with Section 4.1. For shipments from the U.S. to another country, title shall pass to Buyer immediately after each item departs from the territorial land, seas and overlying airspace of the U.S. The 1982 United Nations Convention of the law of the Sea shall apply to determine the U.S. territorial seas. For all other shipments, title to Products shall pass to Buyer the earlier of (i) the port of export immediately upon clearance of Products for export or (ii) immediately after each item departs from the territorial land, seas and overlying airspace of the sending country. When Buyer arranges the export or intercommunity shipment, Buyer will provide Seller evidence of exportation or intercommunity shipment acceptable to the relevant tax and custom authorities. Buyer may not use any third party vendor for providing customs clearance services until Seller has approved such party prior to shipment of the Parts. Notwithstanding the foregoing, Seller grants only a non-exclusive license, and does not pass title, for any software provided by Seller under this Contract, and title to any leased equipment remains with Seller.

4.3 Risk of loss shall pass to Buyer upon delivery pursuant to Section 4.1, except that for export shipments from the U.S., risk of loss shall transfer to Buyer upon title passage.

4.4 If any Products to be delivered under this Contract or if any Buyer equipment repaired at Seller's facilities cannot be shipped to or received by Buyer when ready due to any cause attributable to Buyer or its other contractors, Seller may ship the Products and equipment to a storage facility, including storage at the place of manufacture or repair, or to an agreed freight forwarder. If Seller places Products or equipment into storage, the following apply: (i) title and risk of loss immediately pass to Buyer, if they have not already passed, and delivery shall be deemed to have occurred; (ii) any amounts otherwise payable to Seller upon delivery or shipment shall be due; (iii) all expenses and charges incurred by Seller related to the storage shall be payable by Buyer upon submission of Seller's invoices; and (iv) when conditions permit and upon payment of all amounts due, Seller shall make Products and repaired equipment available to Buyer for delivery.

4.5 If repair Services are to be performed on Buyer's equipment at Seller's facility, Buyer shall be responsible for, and shall retain risk of loss of, such equipment at all times, except that Seller shall be responsible for damage to the equipment while at Seller's facility to the extent such damage is caused by Seller's negligence.

4.6 Except as otherwise expressly agreed to by the Parties in writing, acceptance of Products shall be deemed to occur upon delivery and acceptance of Services, upon performance.

5. Warranty

5.1 Seller warrants that Products shall be delivered free from defects in material, workmanship and title and that Services shall be performed in a competent, diligent manner in accordance with any mutually agreed specifications incorporated into the Contract.

5.2 The warranty for Products shall expire one (1) year from first use or eighteen (18) months from delivery, whichever occurs first, except that software is warranted for ninety (90) days from delivery; and the warranty for Services shall expire one (1) year after performance of the Service, except that software-related Services are warranted for ninety (90) days (as applicable, the "Warranty Period").

5.3 If Products and/or Services do not meet the above warranties, Buyer shall promptly notify Seller in writing prior to expiration of the applicable Warranty Period. Seller shall (i) at its option, repair or replace defective Products and (ii) re-perform defective Services. If despite Seller's reasonable efforts, a non-conforming Product cannot be repaired or replaced, or non-conforming Services cannot be re-performed, Seller shall refund or credit monies paid by Buyer for such non-conforming Products and/or Services. Warranty repair, replacement or re-performance by Seller shall not extend or renew the applicable Warranty Period. Seller's warranty obligations exclude the repair or replacement of any damaged parts or Products other than the initially failing part which caused the damage. Buyer shall obtain Seller's agreement on the specifications of any tests it plans to conduct to determine whether a non-conformance exists.

5.4 Buyer shall bear the costs of access for Seller's remedial warranty efforts (including removal and replacement of systems, structures or other parts of Buyer's facility), de installation, decontamination, re installation and transportation of defective Products to Seller and back to Buyer.

5 5 The warranties and remedies are conditioned upon (a) proper storage, installation, use, operation, and maintenance of Products, (b) Buyer keeping accurate and complete records of operation and maintenance during the warranty period and providing Seller access to those records, and (c) modification or repair of Products and/or Services only as authorized by Seller in writing. Failure to meet any such conditions renders the warranty null and void. Seller is not responsible for normal wear and tear.

5.6 This Article 5 provides the exclusive remedies for all claims based upon the failure of or defect in Products or Services, whether the claim is based in contract, negligence, statute, or any tortious/extra-contractual liability theory, strict liability or otherwise. The foregoing warranties in this Article 5 are exclusive and are in lieu of all other warranties, conditions and guarantees whether written, oral, implied or statutory. NO IMPLIED OR STATUTORY WARRANTY, OR WARRANTY OR CONDITION OF MERCHANTABILITY, QUALITY OR FITNESS FOR A PARTICULAR PURPOSE APPLIES.

6. Confidentiality

6.1 Seller and Buyer (as to information disclosed, the "Disclosing Party") may each provide the other party (as to information received, the "Receiving Party") with Confidential Information in connection with this Contract. "Confidential Information" means information that is designated in writing as "confidential" or "proprietary" by Disclosing Party at the time of written disclosure. In addition, prices for Products and/or Services shall be considered Seller's Confidential Information.

6 2 Receiving Party agrees: (i) to use the Confidential Information only in connection with the Contract and use of Products and/or Services, (ii) to take reasonable measures to prevent disclosure of the Confidential Information to third parties, and (iii) not to disclose the Confidential Information to a competitor of Disclosing Party. Notwithstanding these restrictions, (a) Seller may disclose Confidential Information to its affiliates and subcontractors in connection with performance of the Contract, (b) a Receiving Party may disclose Confidential Information to its auditors, (c) Buyer may disclose Confidential Information to lenders as necessary for Buyer to secure or retain financing needed to perform its obligations under the Contract, and (d) a Receiving Party may disclose Confidential Information to any other third party with the prior written permission of Disclosing Party, and in each case, only so long as the Receiving Party obtains a non-disclosure commitment from any such subcontractors, auditors, lenders or other permitted third party that prohibits disclosure of the Confidential Information and provided further that the Receiving Party remains responsible for any unauthorized use or disclosure of the Confidential Information. Receiving Party shall upon request return to Disclosing Party or destroy all copies of Confidential Information except to the extent that a specific provision of the Contract entitles Receiving Party to retain an item of Confidential Information. Seller may also retain one archive copy of Buyer's Confidential Information.

6 3 The obligations under this Article 6 shall not apply to any portion of the Confidential Information that: (i) is or becomes generally available to the public other than as a result of disclosure by Receiving Party, its representatives or its affiliates; (ii) is or becomes available to Receiving Party on a non-confidential basis from a source other than Disclosing Party when the source is not, to the best of Receiving Party's knowledge, subject to a confidentiality obligation to Disclosing Party; (iii) is independently developed by Receiving Party, its representatives or affiliates, without reference to the Confidential Information; (iv) is required to be disclosed by law or valid legal process provided that the Receiving Party intending to make disclosure in response to such requirements or process shall promptly notify the Disclosing Party in advance of such disclosure and reasonably cooperate in attempts to maintain the confidentiality of the Confidential Information.

6.4 Each Disclosing Party warrants that it has the right to disclose the information that it discloses. Neither Buyer nor Seller shall make any public announcement about the Contract without prior written approval of the other party. . Article 6 does not supersede any separate confidentiality or nondisclosure agreement signed by the parties.

7. Intellectual Property

7.1 Seller shall defend and indemnify Buyer against any claim by a non-affiliated third party (a "Claim") alleging that Products and/or Services furnished under this Contract infringe a patent in effect in the U.S., an EU member state or the country of the Site (provided there is a corresponding patent issued by the U.S. or an EU member state), or any copyright or trademark registered in the country of the Site, provided that Buyer (a) promptly notifies Seller in writing of the Claim, (b) makes no admission of liability and does not take any position adverse to Seller, (c) gives Seller sole authority to control defense and settlement of the Claim, and (d) provides Seller with full disclosure and reasonable assistance as required to defend the Claim.

7.2 Section 7.1 shall not apply and Seller shall have no obligation or liability with respect to any Claim based upon (a) Products and/or Services that have been modified, or revised, (b) the combination of any Products and/or Services with other products and/or services when such combination is a basis of the alleged infringement, (c) failure of Buyer to implement any update provided by Seller that would have prevented the Claim, (d) unauthorized use of Products and/or Services, or (e) Products and/or Services made or performed to Buyer's specifications.

7.3 Should any Product and/or Service, or any portion thereof, become the subject of a Claim, Seller may at its option (a) procure for Buyer the right to continue using the Product and/or Service, or applicable portion thereof, (b) modify or replace it in whole or in part to make it non-infringing, or (c) failing (a) or (b), take back infringing Products and/or discontinue infringing Services and refund the price received by Seller attributable to the infringing Products and/or Services.

7.4 Article 7 states Seller's exclusive liability for intellectual property infringement by Products and/or Services.

7.5 Each party shall retain ownership of all Confidential Information and intellectual property it had prior to the Contract. All rights in and to software not expressly granted to Buyer are reserved by Seller. All new intellectual property conceived or created by Seller in the performance of this Contract, whether alone or with any contribution from Buyer, shall be owned exclusively by Seller. Buyer agrees to deliver assignment documentation as necessary to achieve that result.

7.6 Buyer will not itself, and will not allow any party (including Buyer Affiliates) to: (i) reverse engineer Products or Services (including any Seller monitoring or data analysis by Seller), (ii) prepare Derivative Works from, alter, modify, disassemble, reverse engineer, reverse assemble, de-compile, or otherwise attempt to reconstruct, discover or derive the object or source code of any software licensed to Buyer by Seller under this Contract (including any third party software); (iii) permit or otherwise grant any third-party access to Products, Services or software for such purpose, even if such third party is performing any corrections, bug fixes and updates.

7.7 Products furnished by Seller under this Contract shall not be installed, used, or made available for use in any equipment other than the equipment specified in the Contract at Buyer's Site. Buyer warrants that such equipment, and the Site, is under its ownership and control, and agrees to inform Seller forthwith should this cease to be the case at any time before expiry of the Warranty Period.

7.8 Buyer agrees to pass on the restrictions and obligations under Sections 7.6 and 7.7 to any affiliates or third parties who have obtained or may obtain access to the Products or Services and shall be fully liable for any breach of this Article 7 by its affiliates or third parties, as if it had committed such breach itself.

8. Indemnity

Each of Buyer and Seller (as an "Indemnifying Party") shall indemnify the other party (as an "Indemnified Party") from and against claims brought by a third party, on account of personal injury or damage to the third party's tangible property, to the extent caused by the negligence of the Indemnifying Party in connection with this Contract. In the event the injury or damage is caused by joint or concurrent negligence of Buyer and Seller, the loss or expense shall be borne by each party in proportion to its degree of negligence. For purposes of Seller's indemnity obligation, no part of the Products or Site is considered third party property.

9. Insurance

During the term of the Contract, Seller shall maintain for its protection the following insurance coverage: (i) Worker's Compensation, Employer's Liability and other statutory insurance required by law with respect to work related injuries or disease of employees of Seller in such form(s) and amount(s) as required by applicable laws; (ii) Automobile Liability insurance with a combined single limit of $2,500,000.00; and (iii) Commercial General Liability or Public Liability insurance for bodily injury and property damage with a combined single limit of $2,500,000 00. If required in the Contract, Seller shall provide a certificate of insurance reflecting such coverage.

10. Schedule and Excusable Events

10.1 Any durations or periods of time quoted on the schedule or otherwise agreed for performance, delivery and/or completion of the Services or delivery of Products shall be regarded as estimated only. In addition, delivery times are dependent upon prompt receipt by Seller of all information necessary to proceed with the work without interruption. In the event Seller agrees in writing to guaranteed performance, delivery and/or completion times and specific sums as liquidated damages for late performance, delivery or completion, any such liability for damages shall only commence when the period of delay exceeds the guaranteed date or time by 14 (fourteen) calendar days and liquidated damages may be applied and be levied only from that 14th day onwards. Payment of liquidated damages shall be in full and final settlement of any and all liability of the Seller for delays under the Contract and shall be Buyer's sole and exclusive remedy for failing to achieve the performance, delivery and/or completion guarantee. The Seller's maximum aggregate liability for liquidated damages for delay shall in no circumstances exceed 5% (five per cent) of the total amount of the Contract Price paid to the Seller.

10.2 Seller shall not be liable and shall not be considered in breach of any obligations to supply manpower, deliver Products or to perform, deliver or complete the Services or any parts thereof within specified durations or periods or by a specified time) if it is delayed or prevented, directly or indirectly, by any cause beyond its reasonable control, or by armed conflict, acts or threats of terrorism, epidemics, strikes or other labor disturbances, or acts or omissions of any governmental authority or of the Buyer or Buyer's contractors or suppliers or for any period of suspension under Section 11.3. If any such cause or excusable event occurs, the schedule for Seller's performance shall be adjusted accordingly and dates or times stated in the schedule for performance and/or completion of the Services shall be extended by the amount of time lost by reason of the event plus such additional time as may be needed to overcome the effect of the event. If acts or omissions of the Buyer or its contractors or suppliers cause the delay, Seller shall also be entitled to an equitable price adjustment.

11. Termination and Suspension

11.1 Buyer may terminate the Contract (or the portion affected) for cause if Seller (i) becomes Insolvent/Bankrupt, or (ii) commits a material breach of the Contract which does not otherwise have a specified contractual remedy, provided that: (a) Buyer shall first provide Seller with detailed written notice of the breach and of Buyer's intention to terminate the Contract, and (b) Seller shall have failed, within 30 days after receipt of the notice, to commence and diligently pursue cure of the breach.

11.2 If Buyer terminates the Contract pursuant to Section 11.1, (i) Seller shall reimburse Buyer the difference between that portion of the Contract Price allocable to the terminated scope and the actual amounts reasonably incurred by Buyer to complete that scope, and (ii) Buyer shall pay to Seller (a) the portion of the Contract Price allocable to Products and/or Services completed, (b) lease fees incurred, and (c) amounts for Services performed before the effective date of termination. The amount due for Services shall be determined in accordance with the milestone schedule (for completed milestones) and rates set forth in the Contract (for work toward milestones not yet achieved and where there is no milestone schedule), as applicable or, where there are no milestones and/or rates in the Contract, at Seller's then-current standard time and material rates.

11.3 Seller may suspend or terminate the Contract (or any affected portion thereof) immediately for cause if Buyer (i) becomes Insolvent/Bankrupt, or (ii) materially breaches the Contract, including, but not limited to, failure or delay in Buyer providing Payment Security, making any payment when due, or fulfilling any payment conditions.

11.4 If the Contract (or any portion thereof) is terminated for any reason other than Seller's default under Section 11.1, Buyer shall pay Seller for all Products completed, lease fees incurred and Services performed before the effective date of termination, plus expenses reasonably incurred by Seller in connection with the termination. The amount due for Services shall be determined in accordance with the milestone schedule (for completed milestones) and rates set forth in the Contract (for work toward milestones not yet achieved and where there is no milestone schedule), as applicable or, where there are no milestones and/or rates in the Contract, at Seller's then-current standard time and material rates. In addition, Buyer shall pay Seller a cancellation charge equal to 80% of the Contract Price applicable to uncompleted made-to-order Products and/or Services and 15% of the Contract Price applicable to all other uncompleted Products and/or Services.

11.5 Either Buyer or Seller may terminate the Contract (or the portion affected) upon twenty (20) days advance notice if there is an excusable event (as described in Article 10) lasting longer than one hundred and twenty (120) days. In such case, Buyer shall pay to Seller amounts payable under Section 11.4, excluding the cancellation charge for uncompleted Products and/or Services.

11.6 Buyer shall pay all reasonable expenses incurred by Seller in connection with a suspension, including, but not limited to, expenses for repossession, fee collection, demobilization/remobilization, and costs of storage during suspension. The schedule for Seller's obligations shall be extended for a period of time reasonably necessary to overcome the effects of any suspension.

12. Compliance with Laws, Codes and Standards

12.1 Seller shall comply with laws applicable to the manufacture of Products and its performance of Services. Buyer shall comply with laws applicable to the application, operation, use and disposal of the Products and Services.

12 2 Seller's obligations are conditioned upon Buyer's compliance with all U.S., EU and other applicable trade control laws and regulations. Buyer shall not trans-ship, re-export, divert or direct or otherwise make or allow any disposition of Products other than in and to the ultimate country of destination declared by Buyer and specified as the country of ultimate destination on Seller's invoice. Buyer hereby certifies that the equipment, materials, services, technical data, software or other information or assistance furnished by Seller under this Contract will not be used in the design, development, production, stockpiling or use of chemical, biological, or nuclear weapons either by Buyer or by any entity acting on Buyer's behalf.

12 3 Notwithstanding any other provision, Buyer shall timely obtain, effectuate and maintain in force any required permit, license, exemption, filing, registration and other authorization, including, but not limited to, building and environmental permits, import licenses, environmental impact assessments, and foreign exchange authorizations, required for the lawful performance of Services at the Site or fulfillment of Buyer's obligations, except that Seller shall obtain any license or registration necessary for Seller to generally conduct business and visas or work permits, if any, necessary for Seller's personnel. Buyer shall provide reasonable assistance to Seller in obtaining such visas and work permits.

13. Environmental, Health and Safety Matters

13.1 Buyer shall maintain safe working conditions at the Site, including, without limitation, implementing appropriate procedures regarding Hazardous Materials, confined space entry, and energization and de-energization of power systems (electrical, mechanical and hydraulic) using safe and effective lock-out/tag-out ("LOTO") procedures including physical LOTO or a mutually agreed upon alternative method.

13 2 Buyer shall timely advise Seller in writing of all applicable Site-specific health, safety, security and environmental requirements and procedures. Without limiting Buyer's responsibilities under Article 13, Seller has the right but not the obligation to, from time to time, review and inspect applicable health, safety, security and environmental documentation, procedures and conditions at the Site.

13 3 If, in Seller's reasonable opinion, the health, safety, or security of personnel or the Site is, or is apt to be, imperiled by security risks, terrorist acts or threats, the presence of or threat of exposure to Hazardous Materials, or unsafe working conditions, Seller may, in addition to other rights or remedies available to it, evacuate some or all of its personnel from Site, suspend performance of all or any part of the Contract, and/or remotely perform or supervise work. Any such occurrence shall be considered an excusable event. Buyer shall reasonably assist in any such evacuation.

13.4 Operation of Buyer's equipment is the responsibility of Buyer. Buyer shall not require or permit Seller's personnel to operate Buyer's equipment at Site.

13 5 Buyer will make its Site medical facilities and resources available to Seller personnel who need medical attention.

13.6 Seller has no responsibility or liability for the pre-existing condition of Buyer's equipment or the Site. Prior to Seller starting any work at Site, Buyer will provide documentation that identifies the presence and condition of any Hazardous Materials existing in or about Buyer's equipment or the Site that Seller may encounter while performing under this Contract. Buyer shall disclose to Seller industrial hygiene and environmental monitoring data regarding conditions that may affect Seller's work or personnel at the Site. Buyer shall keep Seller informed of changes in any such conditions.

13.7 Seller shall notify Buyer if Seller becomes aware of: (i) conditions at the Site differing materially from those disclosed by Buyer, or (ii) previously unknown physical conditions at Site differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract. If any such conditions cause an increase in Seller's cost of, or the time required for, performance of any part of the work under the Contract, an equitable adjustment in price and schedule shall be made.

13 8 If Seller encounters Hazardous Materials in Buyer's equipment or at the Site that require special handling or disposal, Seller is not obligated to continue work affected by the hazardous conditions. In such an event, Buyer shall eliminate the hazardous conditions in accordance with applicable laws and regulations so that Seller's work under the Contract may safely proceed, and Seller shall be entitled to an equitable adjustment of the price and schedule to compensate for any increase in Seller's cost of, or time required for, performance of any part of the work. Buyer shall properly store, transport and dispose of all Hazardous Materials introduced, produced or generated in the course of Seller's work at the Site.

13 9 Buyer shall indemnify Seller for any and all claims, damages, losses, and expenses arising out of or relating to any Hazardous Materials which are or were (i) present in or about Buyer's equipment or the Site prior to the commencement of Seller's work, (ii) improperly handled or disposed of by Buyer or Buyer's employees, agents, contractors or subcontractors, or (iii) brought, generated, produced or released on Site by parties other than Seller.

14. Changes

14.1 Each party may at any time propose changes in the schedule or scope of Products and/or Services. Seller is not obligated to proceed with any change until both parties agree upon such change in writing. The written change documentation will describe the changes in scope and schedule, and the resulting changes in price and other provisions, as agreed.

14.2 The scope, Contract Price, schedule, and other provisions will be equitably adjusted to reflect additional costs or obligations incurred by Seller resulting from a change, after Seller's proposal date, in Buyer's Site-specific requirements or procedures, or in industry specifications, codes, standards, applicable laws or regulations. Unless otherwise agreed by the parties, pricing for additional work arising from such changes shall be at Seller's time and material rates.

14.3 It shall be acceptable and not considered a change if Seller delivers a Product that bears a different, superseding or new part or version number compared to the part or version number listed in the Contract.

15. Limitations of Liability

15.1 To the maximum extent permitted by applicable law, the total liability of Seller for all claims arising from or related to the formation, performance or breach of this Contract, or provision of any Products and/or Services, shall not exceed the (i) Contract Price, or (ii) if Buyer places multiple order(s) under the Contract, the price of each particular order for all claims arising from or related to that order and ten thousand USD (US $10,000) for all claims not part of any particular order.

15.2 Seller shall not be liable for loss of profit or revenues, loss of use of equipment or systems, interruption of business, cost of replacement power, cost of capital, downtime costs, increased operating costs, any special, consequential, incidental, indirect, or punitive damages, or claims of Buyer's customers for any of the foregoing types of damages.

15.3 All Seller liability shall end upon expiration of the applicable warranty period, provided that Buyer may continue to enforce a claim for which it has given notice prior to that date by commencing an action or arbitration, as applicable under this Contract, before expiration of any statute of limitations or other legal time limitation but in no event later than one year after expiration of such warranty period.

15.4 Seller shall not be liable for advice or assistance that is not required for the work scope under this Contract.

15.5 Buyer will not supply Products and/or Services to any third party, or use Products and/or Services other than at the Site owned by Buyer. In case of non-compliance, Buyer shall (i) indemnify and defend Seller from and against any and all claims by, and liability to, any third party to whom Products and/or Services are supplied, and (ii) require that the third party agree, for the benefit of and enforceable by Seller, to be bound by the provisions of Article 7 and all the limitations included in this Article 15.

15.6 For purposes of this Article 15, the term "Seller" means Seller, its affiliates, subcontractors and suppliers of any tier, and their respective employees. The limitations in this Article 15 shall apply regardless of whether a claim is based in contract, negligence, statute, indemnity, tortious/extra-contractual liability theory, strict liability or otherwise.

16. Governing Law and Dispute Resolution

16.1 This Contract shall be governed by and construed in accordance with the laws of (i) the State of New York if Buyer's place of business is in the U.S. or (ii) England and Wales, if the Buyer's place of business is outside the U S., in either case without giving effect to any choice of law rules that would cause the application of laws of any other jurisdiction (the "Governing Law").

16.2 All disputes and, to the maximum extent permitted by applicable law, all non-contractual obligations arising in any way whatsoever out of or in connection with this Contract arising in connection with this Contract, including any question regarding its existence or validity, shall be resolved in accordance with this Article 16. If a dispute is not resolved by negotiations, either party may, by giving written notice, refer the dispute to a meeting of appropriate higher management, to be held within twenty (20) business days after the giving of notice. If the dispute is not resolved within thirty (30) business days after the giving of notice, or such later date as may be mutually agreed, either party may commence arbitration or court proceedings, depending upon the location of the Buyer, in accordance with one of the following:

(a) if the Buyer's pertinent place of business is in the U.S., legal action shall be commenced in federal court with jurisdiction applicable to, or state court located in, either New York, New York (and Buyer hereby consents to be subject to such New York federal and state jurisdiction) or the location of Buyer's principal place of business; or

(b) if the Buyer's pertinent place of business is outside the U S., the dispute shall be submitted to and finally resolved under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said Rules (the "Rules"). The seat of arbitration shall be in London, England. The arbitration shall be conducted in English. The decision of the arbitrators shall be final and binding upon the parties.

16 3 Notwithstanding the foregoing, each party shall have the right at any time, at its option and where legally available, to commence an action or proceeding in a court of competent jurisdiction, subject to the terms of this Contract, to seek a restraining order, injunction, or similar order (but not monetary damages), or to seek interim or conservatory measures.

17. Inspection and Factory Tests

Seller will apply its normal quality control procedures in manufacturing Products. Seller shall attempt to accommodate requests by Buyer to witness Seller's factory tests of Products, subject to appropriate access restrictions, if such witnessing can be arranged without delaying the work.

18. Software, Leased Equipment, Remote Diagnostic Services, PCB Services

If Seller provides any software to Buyer, the Software License Addendum shall apply. If Seller leases any of Seller's equipment or provides related Services to Buyer, including placing Seller's equipment at Buyer's site to provide remote Services, the Lease Addendum shall apply. If Seller provides remote diagnostic services to Buyer, the Remote Diagnostic Services Addendum shall apply. If Seller provides PCB Services to Buyer, the PCB Services Addendum shall apply. If there is any conflict between these Products and/or Services Terms and Conditions" and the terms of any addendum incorporated pursuant to this Article 18, the terms of the addendum shall take precedence with respect to the applicable scope.

19. General Clauses

19.1 Products and Services sold by Seller are not intended, in whole or in part, for application (and will not be used) in connection with or nearby any nuclear facility or activity, and Buyer warrants that it shall not use or permit others to use Products and/or Services for any such purposes, without the advance written consent of Seller.

19 2 Seller may assign or novate its rights and obligations under the Contract, in whole or in part, to any of its affiliates or may assign any of its accounts receivable under this Contract to any party without Buyer's consent. Buyer agrees to execute any documents that may be necessary to complete Seller's assignment or novation. Seller may subcontract portions of the work, so long as Seller remains responsible for it. The delegation or assignment by Buyer of any or all of its rights or obligations under the Contract without Seller's prior written consent (which consent shall not be unreasonably withheld) shall be void.

19 3 Buyer shall notify Seller immediately upon any change in ownership of more than fifty percent (50%) of Buyer's voting rights or of any controlling interest in Buyer. If Buyer fails to do so or Seller objects to the change, Seller may (a) terminate the Contract, (b) require Buyer to provide adequate assurance of performance (including but not limited to payment), and/or (c) put in place special controls regarding Seller's Confidential Information.

19.4 If any Contract provision is found to be void or unenforceable, the remainder of the Contract shall not be affected. The parties will endeavor to replace any such void or unenforceable provision with a new provision that achieves substantially the same practical and economic effect and is valid and enforceable.

19 5 The following Articles shall survive termination or cancellation of the Contract: 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 15, 16, 18, 19 and 20.

19.6 The Contract represents the entire agreement between the parties. No oral or written representation or warranty not contained in this Contract shall be binding on either party. Buyer's and Seller's rights, remedies and obligations arising from or related to Products and/or Services sold under this Contract are limited to the rights, remedies and obligations stated in this Contract. No modification, amendment, rescission or waiver shall be binding on either party unless agreed in writing.

19.7 Except as provided in Article 15 (Limitations of Liability), this Contract is only for the benefit of the parties and not for any third parties.

19 8 This Contract may be signed in multiple counterparts that together shall constitute one agreement.

20. U.S. Government Contracts

20.1 This Article 20 applies only if the Contract is for the direct or indirect sale to any agency of the U S. government and/or is funded in whole or in part by any agency of the U.S. government.

20.2 Buyer agrees that all Products and/or Services provided by Seller meet the definition of "commercial-off-the-shelf" ("COTS") or "commercial item" as those terms are defined in Federal Acquisition Regulation ("FAR") 2.101. To the extent the Buy American Act, Trade Agreements Act, or other domestic preference requirements are applicable to this Contract, the country of origin of Products is unknown unless otherwise specifically stated by Seller in this Contract. Buyer agrees any Services offered by Seller are exempt from the Service Contract Act of 1965 (FAR 52 222-41). Buyer represents and agrees that this Contract is not funded in whole or in part by American Recovery Reinvestment Act funds unless otherwise specifically stated in the Contract. The version of any applicable FAR clause listed in this Article 20 shall be the one in effect on the effective date of this Contract.

20.3 If Buyer is an agency of the U.S. Government, then as permitted by FAR 12.302, Buyer agrees that all paragraphs of FAR 52.212-4 (except those listed in 12.302(b)) are replaced with these Terms and Conditions. Buyer further agrees the subparagraphs of FAR 52.212-5 apply only to the extent applicable for sale of COTS and/or commercial items and as appropriate for the Contract Price.

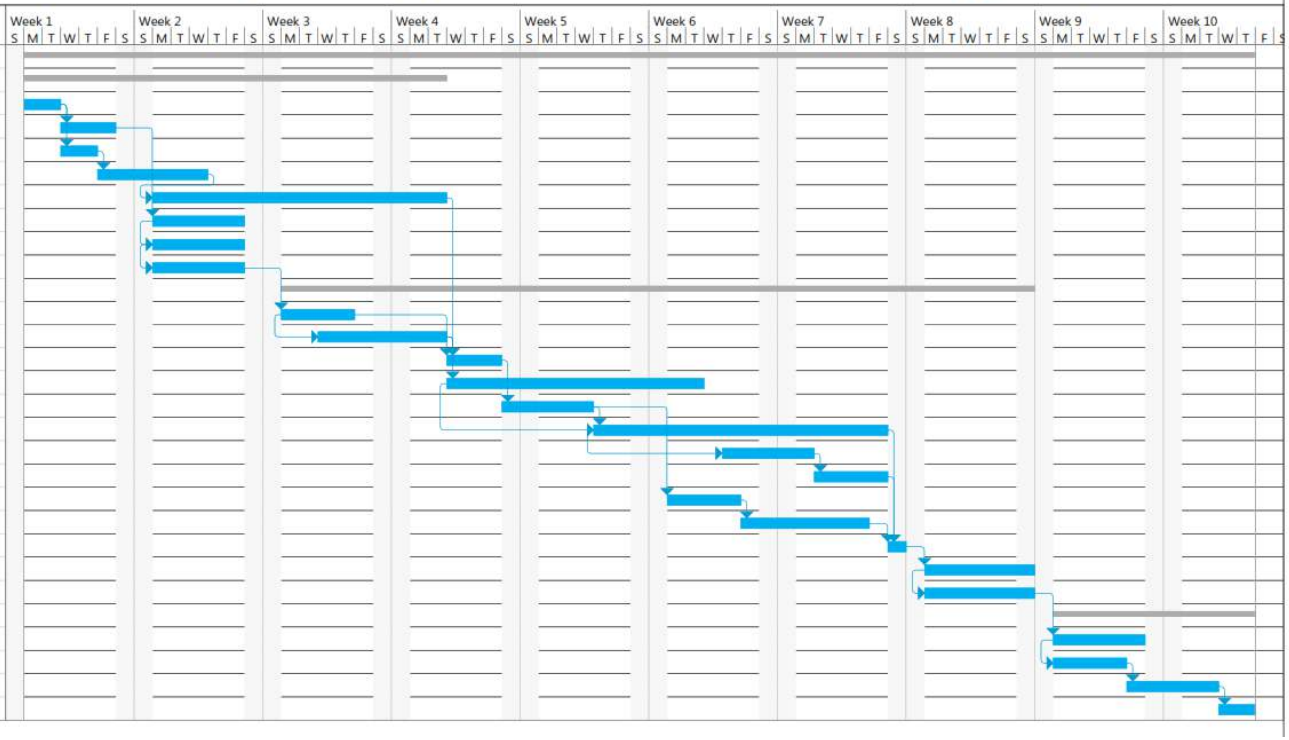
20.4 If Buyer is procuring the Products and/or Services as a contractor, or subcontractor at any tier, on behalf of any agency of the U.S. Government, then Buyer agrees that FAR 52 212-5(e) or 52.244-6 (whichever is applicable) applies only to the extent applicable for sale of COTS and/or commercial items and as appropriate for the Contract Price.

Annex A: Estimated Schedule

Puerto Rico Electric and Power Authority
PALO SECO UNIT NO. 4
SH- 5 HEADER REPLACEMENT

FieldCore a GE company

ID	Task Name	Duration
1	**PALO SECO - SH-5 HEADER REPLACEMENT - UNIT 4**	**67 days**
2	**Preoutage Activities**	**23 days**
3	Mobilization	2 days
4	Facilities preparation	3 days
5	New Header Inspection	2 days
6	New header preparation	4 days
7	Temporary support rigging install	12 days
8	Preliminary element disassembly	5 days
9	Remove Insulation & Casing Vestibule	5 days
10	Remove seals and refractory	5 days
11	**Outage Activities**	**41 days**
12	Remove Piping Vestibule	4 days
13	Cut Nipples & Header	6 days
14	Unerection existing header	3 days
15	Prepare welds	12 days
16	Install new header	4 days
17	Weld, stress relief & NDE	14 days
18	Install sopports	4 days
19	Remove temporary support & rigging	4 days
20	Reinstall vestibule tubing	4 days
21	Install seal box	6 days
22	Hydrostatic Test	1 day
23	Refractory install	6 days
24	Insulation vestibule	6 days
25	**Post-outage Activities**	**11 days**
26	Casing Vestibule	5 days
27	Re-install interference elements	4 days
28	Clean up areas	3 days
29	Desmobilization	2 days



Attachment B

SOW	FACILITY NAME	PROJECT NAME	PROPOSED SCOPE OF WORK
2041	Aguirre Power Plant	Inner Barrel Bundle	Engineering and manufacture of an inner barrel bundle of the boiler feed water pump to be used in Units 1 or 2.
3056	Costa Sur Power Plant	Replacement of Excitation System Units 5 and 6	Procurement and installation of an upgrade for the excitation system. The manufacturer ceases the production of spare parts.
3065	Costa Sur Power Plant	Unit 6 LP-B Installation Work (Failure)	Installation and commissioning of the repaired Low-Pressure Rotor-B of the Power Turbine of Unit 6.
4071	Palo Seco Steam Plant	Fuel Tanks Level Measurement System	Procurement and delivery of an integrated measurement, accounting, control, monitoring and temperature system for the power plant's fuel tanks.
4072	Palo Seco Steam Plant	Water Retention Tank Num. 3	Removal of existing steel water condensate storage tank. Design and Build of a new 150,000 gallons steel water retention tank, including interior and exterior coating application, instrumentation system for reading water levels and improvements to the existing tank's concrete base.
4073	Palo Seco Steam Plant	Unit PS 4 Refractory, Insulation, scaffolding and Painting Application Works	Service of scaffolding installation, removal and installation of boiler's refractory and painting of stacks and other components of the Unit 4.
4074	Palo Seco Steam Plant	Contract, on request, for Crane Services PS4	Service of heavy equipment such as 30 Ton, 50 Ton, 70 Ton, 100 Ton and 350 Ton cranes, including mobilization for the performance of repairs and major maintenance works of the main and auxiliary components of Units 3 and 4.
4075	Palo Seco Steam Plant	Procurement Turning Gear System, Units 3 and 4	Purchase of new turning gear system for Units 3 or 4 replacement.
4078	Palo Seco Steam Plant	Upgrade OSI DCS	Supply and installation of new Human Machine Interphase for operation and GIS

SOW	FACILITY NAME	PROJECT NAME	PROPOSED SCOPE OF WORK
			control for both units 3, 4, Mega Gens 1, 2, 3 and Gas Turbines 1-6.
4080	Palo Seco Steam Plant	Unit 4, Superheater Header Num. 5 Material and Installation	Purchase and installation of Superheater 5 component of the Unit's 4 boiler.