NEPR
Received:
May 4, 2021
3:15 PM

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 in Compliance with March 26 Order

MOTION IN COMPLIANCE WITH THE RESOLUTION AND ORDER ENTERED ON APRIL 22, 2021

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

1. On April 22, 2021, the Energy Bureau of the Puerto Rico Public Service Regulatory Board entered *Resolution and Order* ("April 22 Order") regarding "[e]valuation of PREPA's Motion in Compliance with Resolution and Order Entered on March 26, 2021." The April 22 Order was in response to a document filed by PREPA on April 14, 2021 titled *Motion in Compliance with the Resolution and Order Entered on March 26, 2021* ("April 14 Motion")[1], which included a list of projects under the categories of transmission, distribution, and substations.

2. In the April 14 Motion, PREPA stated that in alignment with the March 26 Order it was submitting at least thirty (30) calendar days prior to submittal to the Puerto Rico Central Office for Recovery, Reconstruction and Resiliency (COR3) and/or the Federal Emergency Management Agency (FEMA) a subset of projects, or select scope from larger projects, contained in the February version of the 10-Year Plan reviewed by Energy Bureau and referenced in the Energy Bureau's March 26 Order.

3. In response to this filing, and upon reviewing the information submitted by PREPA, "the

[1] Please see *Motion in Compliance with the Resolution and Order Entered on March 26, 2021* for a detailed procedural background.

Energy Bureau found it lacked in-depth information, data, cost estimates and assessments necessary for the Energy Bureau to make an adequate evaluation." The Energy Bureau also found that "PREPA failed to inform the Energy Bureau the projects that it had already submitted to COR3 and/or FEMA" and therefor determined that additional information was required for the Energy Bureau to make a thorough evaluation of the projects submitted as part of the April 14 Motion and to evaluate PREPA's compliance with the March 26 Resolution.

4. Accordingly, the Energy Bureau ordered PREPA to:

    a. Provide the information listed below, on or before April 28, 2021, for each project PREPA had already submitted to COR3 and/or FEMA.
    b. Provide the information listed below, on or before May 21, 2021, for each project included in the April 14 Motion that will be submitted to COR3 and/or FEMA under the different project categories, including but not limited to Transmission Line Projects, Transmission and Distribution Substation Projects and Distribution System Projects.
    c. As part of the information required, PREPA shall include a list of all the substations to be relocated in order to mitigate against possible future flooding damages.

Required Information

a. Project Description (i.e., name, location, line number, voltage level, customer count, critical load);
b. Justification;
c. Detailed Scope of Work;
d. Detailed Class 5 Cost Estimate, broken down on the different cost items;
e. Assessment (include all details of the existing conditions, violations to codes and standards, photos, etc.);
f. Any Drawing, Schematic, Layout or Design;
g. Schedule or Timeline of completion; and
h. Any additional information PREPA may have available that may serve for an adequate evaluation.

5. In compliance with the April 22 Order PREPA hereby submits the files provided to COR3 and FEMA which contain the information requested by the Energy Bureau. The files have been shared with the Energy Bureau through a shared link identified as Exhibit A which contain the following files:

    a. 180692 Mega Gen SOW Submittal to FEMA

b. 164966 Generation - Aguirre Black Start - Initial SOW and Cost Estimate 12-7-20_vF.docx
c. 164988 Generation - Costa Sur Black Start - Initial SOW & Cost Estimate 12-7-20_vF.docx
d. 165208 Transmission - Access Roads Initial SOW & Cost Estimate 12-7-20_vF.docx
e. 165209 Substations - Culebra SUB 3801 - SOW & Cost Estimate 12-7-20_vF.docx
f. 165213 Transmission - Line 5400 Initial SOW Cost Estimate 12-7-20_vF.docx
g. 165225 Substations - Vieques Sub 2501 - SOW Cost Estimate 12-7-20_vF.docx
h. 165226 Distribution - Vieques Culebra Feeders Initial SOW & Cost Estimate 12-7-20_vF.docx
i. 165268 Substations - Rio Grande Estates CH - SOW & Cost Estimate 12-7-20_vF.docx
j. 166707 FAASt Transmission Line 51300 - Ponce TC to Costa Sur SP TC 1-21-21.docx
k. 166834 FAASt Transmission - Line 40100 & 40200 - Aguirre SP TC to Jobos TC (Transmission)1-21-21.docx
l. 166860 FAASt Transmission - Line 37800 - Jobos TC to Cayey TC Transmission - Line 37800 - Cayey TC to Caguas TC (Transmission) 1-21-21.docx
m. 166904 FAASt Transmission Line 37800 Caguas TC to Monacillos TC (TRANSMISSION) 1-21-21.docx
n. 167168 FAASt_TRANSMISSION-LINE-37100_COSTA SUR-ST_ACACIAS-TC 1-21-21.docx
o. 167443 FAASt - Line 36200 - Monacillos TC to Juncos TC (Transmission) 1-21-21.docx
p. 167446 FAASt - Line 36100 - Dos Bocas HP to Monacillos TC (Transmission) 1-21-21.docx
q. 167508 FAASt Transmission - Line 50100 - Cambalache GP TC to Manati TC (Transmission) 1-21-21.docx
r. 168226Transmission - San Juan 115kV Underground Loop - SOW Cost Estimate 12-21-20_.docx
s. 168483 Transmission - Line 36400 - Dos Bocas HP to Ponce TC Initial SOW Cost Estimate 12-29-20.docx
t. 169058 Substations - Llorens Torres MC 1106 - Equipment Repair Replacement Initial SOW CE 1-11-21.docx
u. 169266 Substations - Centro Medico 1327-1359 Equipment Repair Replacement Initial SOW CE 1-3-21_Dan Carbery Comments.docx
v. 169276 FAASt Viaducto TC - MC 1100 - Equip. Repair Replacement (Substations) 1-22.docx
w. 169340 FAASt Cambalache Power Plant - Flood Protection Barrier 1-21-2021.docx
x. 169495 Substations - Tapia GIS Rebuilt - Equip Repair Replacement Initial SOW & CE 1-11-21.docx
y. 169500 Substations - Bayamon TC MC-BKRS-Y1 Initial SOW CE 12-31-20.docx
z. 169503 Substations - Ceiba Baja TRF 7012 Intial SOW & CE 1-11-21.docx
aa. 169576 Buildings - Arecibo Regional Office Building Initial SOW & CE 1-21-

21.docx

bb. 169798 Buildings - Arecibo Electric Service Center Initial SOW & CE 1-21-21.docx
cc. 169804 Buildings - Aguadilla Electric Service Center Initial SOW & CE 1-21-21.docx
dd. 169896 Substations - Costa Sur SP TC Equipment Repair and Replacement Initial SOW & CS 1-11-21.docx
ee. 171118 FAASt Caridad - XFMR MC 1714 (Substation) 2-9-21.docx
ff. 174422 Catano - Rebuilt 1801 - FEMA SOW CE 1-27-21.docx
gg. 176913 FAASt Palo Seco SP to Catano Sect Line-9500 (Transmission) 02-05-21.docx
hh. 176954 FAASt Garzas 1 HP to Garzas 2 HP Line-1100 (Transmission) 02-19-21_vF.docx
ii. 176971 FAASt San Juan SP to Catano Sect Line-8200 (Transmission) 02-05-21.docx
jj. 177134 FAASt Guaraguao TC to Comerio TC Line-4100 (Transmission) 02-05-21.docx
kk. 177191 FAASt Aguas Buenas TC to Caguas TC - 39000 (Transmission) 03-11-21.docx
ll. 178258 Taft - MC 1105 - FEMA SOW CE 3-31-21.docx
mm. 178503 Aguirre TC - BKRS - FEMA SOW CE 4-7-21 .docx
nn. 178577 Cachete - MC 1526 - FEMA SOW CE 4-7-21.docx
oo. 178722 FAASt Caonillas 1 Hydro System (Dams Hydro) 4-7-21.docx
pp. 179558 FAASt Manati TC - BKRS 230 kV (Substation) 4-14-21.docx
qq. 179988 Las Lomas - XFMER 1525 - FEMA SOW CE 4-21-21.docx
rr. 180052 FAASt Ponce TC to Jobos TC Line-100 & 200 (Transmission) 4-21-21.docx
ss. 180326 FAASt Sabana Llana_Canovanas_Palmer Fajardo Line-36800 (Transmission) 4-21-21.docx
tt. 180723 Rio Blanco Hydro System Initial SOW & CE 4-21-21.docx

WHEREBY, PREPA hereby requests that the Energy Bureau FIND PREPA IN COMPLIANCE with the April 22 Order as related to the submittal of required information for each project PREPA has already submitted to COR3 and/or FEMA.

RESPECTFULLY SUBMITTED.

In San Juan Puerto Rico, this 28th day of April 2021.

/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

DÍAZ & VÁZQUEZ LAW FIRM, P.S.C.
290 Jesús T. Piñero Ave.
Oriental Tower, 8th Floor
San Juan, PR 00918
Tel. (787) 395-7133
Fax. (787) 497-9664

Exhibit A

https://diazvaz-my.sharepoint.com/:f:/g/personal/kbolanos_diazvaz_law/Ev0DhtzinYpKk9KoI2cZo3IBAzGZaEK-zIgrTs6fkV2WJQ?e=kaKATO

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

New Black Start System at Aguirre

164966

12/7/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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*
- *Project Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes

Table of Contents

Section 1. Project Information 4
Section 2. Facilities 5
2.1. Facilities List 5
2.2. Facilities Description 5
Section 3. Scope Scope of Work 5
3.1. Project Scope of Work 5
3.2. 30% Architectural and Engineering (A&E) Completed 5
3.3. Type of Work 5
Section 4. Codes and Standards 6
4.1. Codes and Standards List (add rows as needed) 6
4.2. Codes and Standards Integration 6
Section 5. Cost Estimates 6
Section 6. 406 Hazard Mitigation Proposal 6
6.1. 406 Mitigation Opportunity Scope of Work 6
6.2. 406 Mitigation Opportunity Cost Estimate 6
Section 7. Environmental and Historic Planning (EHP) Requirements 6
Section 8. Program Manager Certification 7
Section 9. PREPA Project Sponsor Comments 7
Section 10. Attachments 8
10.1. Project Detailed Cost Esimtates 8
10.2. Engineering Studies and Designs 8
10.3. Location Maps and Site Pictures 8
10.4. Other: (Please Describe) 8

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	New Black Start System at Aguirre
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number *(formerly Project Worksheet)*	164966
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The black start units being replaced are located at the Aguirre Power Plant. This site is located in Central Aguirre, Puerto Rico, within PREPA's Municipality of Salinas, in the Aguirre Seco Ward on the southern coast of Puerto Rico.

GPS Coordinates for the site are as follows: Latitude: 17.94588, Longitude: -66.230120.

2.2. Facilities Description

The facility consists of two 450 MW oil-fired steam electric generating units, two 20 MW gas turbine generator power units, and two 300 MW combined cycle units. The combined cycle units are comprised of four combustion turbines and one steam turbine per unit. The total electric generating capacity of the complex is 1540 MW. The existing black start system consists of two Frame 5 gas turbine units that suffered damage during Hurricane Maria. As a result, the units were not able to start after the storm.

Section 3. Scope of Work

3.1. Project Scope of Work

The SOW includes procuring and installing two (2) new 30 MW black start units capable of firing diesel or #2 fuel oil to replace the existing 20 MW black start units. In addition to the turbine generator and accessories, the balance of plant equipment to be installed includes:

- One common Generator Step Up (GSU) transformer for both turbine generators including foundation
- Connect utilities at the boundary of the existing location of the units including fuel oil piping, oily water drain system and separator, and electrical generator interconnection.
- Instrumentation and controls not provided with turbine generator package.

The two existing units, foundations, and auxiliary equipment will have to be demolished and removed before construction of the new units can begin.

Infrastructure that can be reused include current #2 diesel tanks and existing site fire protection system if capacity is adequate.

3.2. 30% Architectural and Engineering (A&E) Completed

No
This document is being submitted to obtain funding for A&E services necessary to develop a detailed SOW for the and replacement of the black start units.

3.3. Type of Work

To be Determined

Section 4. Codes and Standards

4.1. Codes and Standards List

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.

4.2. Codes and Standards Integration

Integration of Codes and Standards will be identified in the Plans and Specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Project Name	Total Cost ($M)	30% Engineering ($M)	Engineering Total ($M)
Aguirre Black Start	$45.2	$0.4	$1.5

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Hazard Mitigation Opportunity Scope of Work

PREPA will develop and propose multiple 406 Hazard Mitigation features for the black start project. BCAs will be provided during the A&E phase to document the benefits of these proposals. Proposals may include the construction of flood walls or elevation of equipment.

6.2. 406 Hazard Mitigation Opportunity Cost Estimate

Costs for proposed 406 Hazard Mitigation Proposals will be developed during the A&E phase of this projects along as part of the BCA.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for each black start unit during the 30% design phase and submitted to FEMA for review. This being a replacement project of the existing black start units, it is likely that it will not go through the PSD (Prevention of Significant Deterioration) process. However, limitation on operating hours will apply with a non-PSD process to stay below pollutants threshold. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

Section 8. Program Manager Lead Certification

Based on my knowledge and I belief, I certify that the documents above accurately reflect the project scope of work and cost estimates.

_____	_____
Program Manager's Printed Name	Date
_____	_____
Title	Signature

Section 9. PREPA Project Sponsor Comments

Decision

Section 10. Attachments

10.1. Project Detailed Cost Estimates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

New Black Start System at Costa Sur

164988

12/7/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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*
- *Project Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes

Table of Contents

Section 1. Project Information 4
Section 2. Facilities 5
2.1. Facilities List 5
2.2. Facilities Description 5
Section 3. Scope Scope of Work 5
3.1. Project Scope of Work 5
3.2. 30% Architectural and Engineering (A&E) Completed 5
3.3. Type of Work 6
Section 4. Codes and Standards 6
4.1. Codes and Standards List (add rows as needed) 6
4.2. Codes and Standards Integration 6
Section 5. Cost Estimates 6
Section 6. 406 Hazard Mitigation Proposal 6
6.1. 406 Mitigation Opportunity Scope of Work 6
6.2. 406 Mitigation Opportunity Cost Estimate 6
Section 7. Environmental and Historic Planning (EHP) Requirements 7
Section 8. Program Manager Certification 7
Section 9. PREPA Project Sponsor Comments 7
Section 10. Attachments 8
10.1. Project Detailed Cost Esimtates 8
10.2. Engineering Studies and Designs 8
10.3. Location Maps and Site Pictures 8
10.4. Other: (Please Describe) 8

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	New Black Start System at Costa Sur
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number *(formerly Project Worksheet)*	164988
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The black start units being replaced are located at the Costa Sur Power Plant. This site is located in Guayanilla, Puerto Rico, within PREPA's Municipality of Guayamilla on the southern coast of Puerto Rico.

GPS Coordinates for the site are as follows: Latitude: 18.0004173, Longitude: -66.7532194

2.2. Facilities Description

The facility consists of two 410 MW dual fuel oil/natural gas units for a total of 820 MW, two 85 MW oil-fired units (170 MW total) and two 22 MW gas turbine generator power units (44 MW total). The total electric generating capacity of the complex is 1034 MW. The existing black start system consists of two GE Frame 5 gas turbine units that suffered damage during Hurricane Maria. As a result, the units were not able to start after the storm.

Section 3. Scope of Work

3.1. Project Scope of Work

The SOW includes procuring and installing two (2) new 30 MW black start units capable of firing diesel or #2 fuel oil to replace the existing 20 MW black start units. In addition to the turbine generator and accessories, the balance of plant equipment to be installed includes:

- One common Generator Step Up (GSU) transformer for both turbine generators including foundation
- Connect utilities at the boundary of the existing location of the units including fuel oil piping, oily water drain system and separator, and electrical generator interconnection.
- Instrumentation and controls not provided with turbine generator package.

The two existing units, foundations, and auxiliary equipment will have to be demolished and removed before construction of the new units can begin.

Infrastructure that can be reused include current #2 diesel tanks and existing site fire protection system if capacity is adequate.

3.2. 30% Architectural and Engineering (A&E) Completed

No
This document is being submitted to obtain funding for A&E services necessary to develop a detailed SOW for the replacement of the two black start units.

3.3. Type of Work

To be Determined

Note: *If 30% 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 30% A&E work.*

Section 4. Codes and Standards

4.1. Codes and Standards

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.

4.2. Codes and Standards Integration

Integration of Codes and Standards will be identified in the Plans and Specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Project Name	Total Cost ($M)	30% Engineering ($M)	Engineering Total ($M)
Costa Sur Black Start	$45.2	$0.4	$1.5

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Hazard Mitigation Opportunity Scope of Work

PREPA will develop and propose multiple 406 Hazard Mitigation features for the black start project. BCAs will be provided during the A&E phase to document the benefits of these proposals. Proposals may include the construction of flood walls or elevation of equipment.

6.2. 406 Hazard Mitigation Opportunity Cost Estimate

Cost for proposed 406 Hazard Mitigation Proposals will be developed during the A&E phase of this projects along as part of the BCA.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for each black start unit during the 30% design phase and submitted to FEMA for review. This being a replacement project of the existing black start units, it is likely that it will not go through the PSD (Prevention of Significant Deterioration) process. However, limitation on operating hours will apply with a non-PSD process to stay below pollutants threshold. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

Section 8. Program Manager Lead Certification

Based on my knowledge and I belief, I certify that the documents above accurately reflect the project scope of work and cost estimates.

_____	_____
Program Manager's Printed Name	Date
_____	_____
Title	Signature

Section 9. PREPA Project Sponsor Comments

Decision

Section 10. Attachments

10.1. Project Detailed Cost Estimates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Transmission Access Roads

165208

11/24/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is an agency that provides electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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*
- *Project Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes

Table of Contents

Section 1. Project Information 4

Section 2. Facilities 5

2.1. Facilities List 5

2.2. Facilities Description 6

Section 3. Scope of Work 6

3.1. Project Scope of Work 6

3.2. 30% Architectural and Engineering (A&E) Completed 7

3.3. Type of Work 7

Section 4. Codes and Standards 7

4.1. Codes and Standards List 7

4.2. Codes and Standards Integration 7

Section 5. Cost Estimates 8

Section 6. 406 Hazard Mitigation Proposal 8

6.1. 406 Hazard Mitigation Opportunity Scope of Work 8

6.2. 406 Hazard Mitigation Opportunity Cost Estimate 8

Section 7. Environmental and Historic Planning (EHP) Requirements 8

Section 8. Program Manager Lead Certification 8

Section 9. PREPA Project Sponsor Comments 9

Section 10. Attachments 10

10.1. Project Detailed Cost Estimates 10

10.2. Engineering Studies and Designs 10

10.3. Location Maps and Site Pictures 10

10.4. Other: (Please Describe) 10

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	Transmission Access Roads
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formerly Project Worksheet)*	165208
Amendment Number	

Program Manager: ***Date: <insert date>***

<insert title>

PREPA Project Sponsor: ***Date: <insert date>***

<insert title>

Section 2. Facilities

2.1. Facilities List

The facilities are comprised of impacted pre-existing access roads (AR), new access roads, and temporary staging areas (SA). GPS Coordinates for the start and endpoint of each feeder project are noted in the table below and depicted on the feeder maps included in an Appendix. This submittal covers all ten of the Environmental asset category projects noted in the Near-Term priority category of the PREPA 10-Year Infrastructure Plan.

Project Group	Access Road Segment	Start Location		End Location	
		Latitude	Longitude	Latitude	Longitude
1	Transmission Line 36100, 37500 AR Segment A	18.395876	-66.13839	18.391702	-66.136848
	Transmission Line 36100, 37500 AR Segment B	18.382628	-66.134229	18.380619	-66.13479
2	Transmission Line 36200 AR Segment CC	18.25275	-65.7157	18.25062	-65.7164
	Transmission Line 36200 El Yunque AR Segment NN	18.23852	-65.75993	18.24192	-65.76768
	Transmission Line 36200 El Yunque AR Segment Q	18.24913	-65.72297	18.24897	-65.72422
	Transmission Line 36200 El Yunque AR Segment R	18.2492	-65.72244	18.2497	-65.72283
	Transmission Line 36200 El Yunque AR Segment Y	18.24689	-65.72215	18.24538	-65.72954
3	Transmission Line 36300 AR Segment A	18.01395	-65.89438	18.01448	-65.8946
	Transmission Line 36300 AR Segment AAA	18.005	-65.883	18.031	-65.867
	Transmission Line 36300 AR Segment D	18.014759	-65.894806	18.004288	-65.931331
	Transmission Line 36300 AR Segment F	18.02476	-65.87475	18.02582	-65.87313
	Transmission Line 36300 AR Segment H	18.01699	-65.89102	18.01605	-65.89251
	Transmission Line 36300 AR Segment HH	17.98257	-66.03046	17.9827	-66.02813
4	Transmission Line 37400 Cobra Tracks Access Road AR Segment A	18.13798	-65.83754	18.14501,	-65.8419
	Transmission Line 37400 Cobra Tracks Access Road AR Segment D	18.40351	-66.15015	18.40473	-66.15146
	Transmission Line 37400 Dorado-Vega Baja AR Segment C	18.422	-66.344	18.421	-66.345
	Transmission Line 37400 Dorado-Vega Baja AR Segment D	18.423	-66.321	18.422	-66.321
	Transmission Line 37400 Cobra Tracks Access Road AR Segment H	18.40287	-66.15268	18.40271	-66.14948
5	Transmission Line 37800 Cobra Tracks Access Road AR Segment N	18.11865	-66.17714	18.11798	-66.17661
	Transmission Line 37800 Cobra Tracks Access Road AR Segment A	18.1158	-66.17732	18.11394	-66.17573
6	Transmission Line 38900 Martin Pena-Berwind Access Road	18.413	-66.019	18.411	-66.011
7	Transmission Line 40300 Cobra Tracks Access Road AR Segment C	18.02053	-66.36555	18.01861	-66.36147
8	Transmission Line 50700 – Access Roads B	18.054	-65.997	18.056	-65.996
	Transmission Line 50700 - Access Road E	18.027	-66.048	18.03	-66.049
	Transmission Line 50700 – Access Roads Z	18.056	-65.997	18.055	-65.996
9	Transmission Line 51000 AR Segment K	18.043	-66.136	18.045	-66.136

	Transmission Line 51000 AR Segment II	18.031	-66.139	18.031	-66.139
	Transmission Line 51000 AR Segment LL	18.045	-66.135	18.043	-66.134
	Transmission Line 51000 AR Segment MM	18.045	-66.131	18.044	-66.133
	Transmission Line 51000 AR Segment GGG	18.047	-66.134	18.044	-66.136
	Transmission Line 51000 AR Segment OOO	18.005	-66.144	Lat 18.005	-66.144
	Transmission Line 51000 AR Segment FFF	18.047	-66.134	18.054	-66.133
	Transmission Line 51000 AR Segment JJJ	17.996	-66.154	17.998	-66.148
	Transmission Line 51000 AR Segment PPP	18.02	-66.141	18.038	-66.137
	Transmission Line 51000 AR Segment R	18.206	-66.119	18.203	-66.119
10	Whitefish SA – Aguirre Power Plant	17.94938	-66.23541	N/A	N/A

2.2. Facilities Description

Due to Hurricane Maria in 2017, Puerto Rico's power infrastructure was heavily damaged island-wide. Emergency repairs along PREPA transmission lines were vital to restoring energy to the population. The creation of new access roads or the use of existing roads to facilitate repairs were necessary, resulting in potential environmental impacts. Projects are driven by the following compliance requirements:

- EPA Clean Water Act, in correspondence to the National Pollutant Discharge Elimination System (NPDES) permit program, requires all earthwork activities that generate great than 1.0 acres of disturbance to be permanently stabilized to pre-existing conditions after the completion of construction activities.
- In compliance with USACE Nation Wide Permit #33 and C, all impacted USACE Jurisdictional Features need to be restored to pre-existing conditions and function.

Section 3. Scope of Work

3.1. Project Scope of Work

Earthwork (grading), engineering, and vegetative restoration will be required to permanently stabilize the impacted Access Roads. Pre-construction work will be performed before the development of SOW and RFP to verify existing conditions. Project walkdowns are scheduled late Q4 2020, GIS capture features, and photo catalog of impacts. Soil sampling and testing may be necessary to evaluate soil conditions.

- Project walk downs
- Soil Sampling/Testing

Construction will include earthwork activities to repair the grade and contours along impacted access roads, staging areas, and PREPA work pads. Elevations need to be corrected within wetlands and FEMA flood management areas in accordance with Puerto Rico Vertical Datum of 2002 (PRVD02). As-built surveys will be necessary to complete closure packages to Owners

and applicable agencies. Landscaping methods will be performed dependent on identified environmental features, slope, and soil condition.

- Repair contours along impacted access roads
- Revegetate unstabilized access roads
- Repair elevations to NWI, FEMA Flood Hazard
- Remove eroded fill within USACE Surface Water features
- Install engineered erosion controls (permanent)
- Capture as-built topography data post-construction

Stewardship will be necessary for areas located within or adjacent to USACE jurisdictional features (i.e. streams, NWI). Field inspections will be necessary on a daily, weekly, or monthly basis. Monitoring should accomplish identifying BMP deficiencies, vegetation monitoring, and 3rd party impact monitoring. Stewardship events will complete BMP maintenance and repairs identified within field inspections. Supplementary seeding to upland and wetland areas.

- Inspections
  - BMP maintenance
  - Vegetative Monitoring
  - 3rd party impact monitoring
- BMP maintenance and repairs
- Supplementary seeding

3.2. 30% Architectural and Engineering (A&E) Completed

No
The proposed scope of work may not need significant engineering and design. The scope will primarily consist of vegetative restoration and landscaping.

3.3. Type of Work

Restores the facility/facilities to pre-disaster design and function to locally-adopted codes/standards

Note: *If 30% of 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 30% A&E work.*

Section 4. Codes and Standards

4.1. Codes and Standards List

Codes and standards will comply with state and federal guidelines. Codes and standards listed below are technical standards, general construction standards are assumed and will be utilized.

- Puerto Rico Vertical Datum of 2002 (PRVD02)
- 1987 Corps of Engineers Wetland Delineation Manual
- Puerto Rico Erosion & Sediment Control Handbook for Developing Areas (2005)

4.2. Codes and Standards Integration

Work will be performed in accordance with the Puerto Rico erosion and sediment control handbook. Vertical elevations will be restored using local benchmarks as close to pre-existing conditions as probable. USACE wetland manual will be used to establish wetland/stream identification during walkdown inspections.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies.

Project Name	FEMA 428 Class 4/5 Cost Estimate (includes A&E)	FEMA 428 A&E Cost Estimate	FEMA 406 Hazard Mitigation Estimate
FEMA Access Road Soil Stabilization	$15,186,702.6	$761,471.0	$417,274.2

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Hazard Mitigation Opportunity Scope of Work

PREPA intends to propose the addition of hazard mitigation features such as:

- Rip-rap installation
- Culvert installation
- Earthen water bars
- Engineered stream bank stabilization (i.e. gabion baskets, turf matting, etc.)

These proposals will be developed and submitted during the A&E phase of the work

6.2. 406 Hazard Mitigation Opportunity Cost Estimate

The cost of the proposed 406 Hazard Mitigation Proposals is listed in Section 5.

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

Section 7. Environmental and Historic Planning (EHP) Requirements

The proposed scope of work will be in compliance with EHP regulatory requirements and implemented prior to construction.

Section 8. Program Manager Lead Certification

Based on my knowledge and belief, I certify that the documents above accurately reflect the project scope of work and cost estimates.

_____ _____

Program Manager's Printed Name Date

_____ _____

Title Signature

PREPA Project Sponsor Comments

Decision

Section 9. Attachments

9.1. Project Detailed Cost Estimates

<Insert project detailed cost estimates from A&E here (if available)>

9.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

9.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

9.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Culebra SUB 3801

165209

12/7/2020

Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates 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 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 identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Planning (EHP) Requirements*
- *Project Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes

Table of Contents

Section 1. Project Information 4
Section 2. Facilities 5
2.1. Facilities List 5
2.2. Facilities Description 5
Section 3. Scope Scope of Work 5
3.1. Project Scope of Work 5
3.2. 30% Architectural and Engineering (A&E) Completed 5
3.3. Type of Work 5
Section 4. Codes and Standards 5
4.1. Codes and Standards List (add rows as needed) 5
4.2. Codes and Standards Integration 6
Section 5. Cost Estimates 6
Section 6. 406 Hazard Mitigation Proposal 6
6.1. 406 Mitigation Opportunity Scope of Work 6
6.2. 406 Mitigation Opportunity Cost Estimate 6
Section 7. Environmental and Historic Planning (EHP) Requirements 6
Section 8. Program Manager Lead Certification 7
Section 9. PREPA Project Sponsor Comments 7
Section 10. Attachments 8
10.1. Project Detailed Cost Esimtates 8
10.2. Engineering Studies and Designs 8
10.3. Location Maps and Site Pictures 8
10.4. Other: (Please Describe) 8

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	Culebra SUB 3801
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formely Project Worksheet)*	165209
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Culebra Substation	3801	18.304657, -65.302521	18.304657, -65.302521

2.2. Facilities Description

Culebra 3801 is a 4.16 kV substation consisting of a control house, components, and equipment located in a fenced yard.

Section 3. Scope Scope of Work

3.1. Project Scope of Work

The SOW will include repair and replacement of the control house HVAC, building waterproofing, protection & control features, auxiliary equipment, conduits, control cables, batteries, lights, grounding, finish grades, perimeter fence, and other components to restore functionality.

3.2. 30% Architectural and Engineering (A&E) Completed

No
This document is being submitted to request the funding of A&E services

3.3. Type of Work

To be Determined

Note: *If 30% 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 30% A&E work.*

Section 4. Codes and Standards

4.1. Codes and Standards

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.

4.2. Codes and Standards Integration

Integration of Codes and Standards will be identified in the Plans and Specifications documents.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Substation Name	Total Cost ($M)	30% Engineering ($M)	Engineering Total ($M)
Culebra 3801	$1.2	$0.0205	$0.0684

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide detailed cost estimates for each 406 Hazard Mitigation proposal for this substation.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

Section 8. Program Manager Lead Certification

Based on my knowledge and I belief, I certify that the documents above accurately reflect the project scope of work and cost estimates.

_____	_____
Program Manager's Printed Name	Date
_____	_____
Title	Signature

Section 9. PREPA Project Sponsor Comments

Decision

Section 10. Attachments

10.1. Project Detailed Cost Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



Culebra Substation Location Map.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Transmission – Line 5400 – Rio Blanco HP to Daguao TC to Punta Lima TO to Vieques 2501 to Culebra 3801

165213

12/7/2020

Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates 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 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 electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Planning (EHP) Requirements*
- *Project Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes

Table of Contents

Section 1. Project Information 4

Section 2. Facilities 5

2.1. Facilities List 5

2.2. Facilities Description 5

Section 3. Scope of Work 6

3.1. Project Scope of Work 6

3.2. 30% Architectural and Engineering (A&E) Completed 7

3.3. Type of Work 7

Section 4. Codes and Standards 7

4.1. Codes and Standards List 7

4.2. Codes and Standards Integration 7

Section 5. Cost Estimates 7

Section 6. 406 Hazard Mitigation Proposal 8

6.1. 406 Mitigation Opportunity Scope of Work 8

6.2. 406 Mitigation Opportunity Cost Estimate 8

Section 7. Environmental and Historic Planning (EHP) Requirements 8

Section 8. Program Manager Lead Certification 8

Section 9. PREPA Project Sponsor Comments 8

Section 10. Attachments 10

10.1. Project Detailed Cost Estimates 10

10.2. Engineering Studies and Designs 10

10.3. Location Maps and Site Pictures 10

10.4. Other: 10

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	Transmission Line 5400 - Rio Blanco HP to Daguao TC to Punta Lima TO to Vieques 2501 to Culebra 3801
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formerly Project Worksheet)*	165213
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 37 circuit miles of overhead transmission line from Rio Blanco HP to Daguao TC including overhead line segments within Vieques and Culebra islands. Line 5400 is part of the Near-Term Group #2 “21-Transmission Existing (38 kV)” project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Rio Blanco TC to Naguabo Pueblo Substation	5400	18.243183, -65.785194	18.207235, -65.732857
Naguabo Pueblo Substation to Punta Lima TO	5400	18.207235, -65.732857	18.184593, -65.697827
Punta Lima TO to Daguao T.C.	5400	18.184593, -65.697827	18.232731, -65.667397
Punta Arenas Vieques to 2501 Substation Vieques	5400	18.118745, -65.576968	18.142883, -65.443985
2501 Substation Vieques to Santa Maria Transition Site	5400	18.142883, -65.443985	18.158471, -65.422557
Playa Datiles Culebra to 3801 Substation Culebra	5400	18.300438, -65.301619	18.304657, -65.302521

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

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, grounding assemblies.

Line 5400 has terminals at PREPA Stations Rio Blanco HP and Daguao TC with a tap to provide power to Vieques and Culebra islands. Power comes to the islands from PREPA’s Punta Lima Station in Naguabo where the overhead 5400 transmission line connects to two submarine cables enroute to Vieques. The submarine cables are not part of this submission, only the overhead portion of the circuit.

The submarine cables reach Vieques Island at Punta Arenas where they transition back to an overhead line. The overhead line provides service to PREPA Substation 2501 and to two (2) privately owned 38 kV substations. PREPA Substation 2501 provides service to all residential, commercial, and industrial clients on the island, except for the industrials connected to the two privately owned substations. A distribution network of three distribution feeders at a voltage of

4.16 kV carries power through the island. Also, at Vieques, PREPA maintains an emergency backup power generation station that consists of two diesel-fueled units, each with a capacity of 4.125 MVA.

Overhead Line 5400 serves Vieques and the island of Culebra via submarine cables. The overhead line transitions to submarine cables at Vieques to reach Culebra, and then transitions back to an overhead line that provides service to PREPA Substation 3801. This PREPA substation provides service to all residential and commercial clients in the island through two distribution feeders at a voltage of 4.16 kV. PREPA also maintains an emergency backup power generation station in Culebra that consists of three diesel-fueled units, each with a capacity of 2.5 MVA.

Section 3. Scope of Work

3.1. Project Scope of Work

The scope of work for Line 5400 will consist of the repair and replacement of damaged elements of the overhead portion of the line and will bring to consensus-based codes both disaster damaged and non-damaged but functionally interdependent structures of the transmission line. Repair and replacement of line 5400 to consensus base codes is Phase 2 of Vieques and Culebra Master Plan as defined in DOE's "Energy Technical Coordination Team (TCT) Vieques and Culebra Working Group White Paper" to provide Vieques and Culebra residents with a sustainable and resilient energy infrastructure solution.

In certain circumstances, transmission structures may need to be replaced to ensure the transmission structure and its components conform to applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will help define the scope of restoration and upgrades to industry standards. Field surveys and geotechnical investigations may also be performed in order to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: replacing insulators with polymer type; repairing, replacing or adding guy wires; repairing or replacing anchors, structure connections, structure foundations or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring the communications associated with the transmission line; replacing conductor spans when broken or with splices, bird caged, pitting, burns, kinks, or stretched conductor; repairing or adding vibration and/or drag dampers, armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is one of the most important activities in maintaining a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also find that soil boring or testing is needed to make sure conditions are suitable for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

3.2. 30% Architectural and Engineering (A&E) Completed

No
This document is being submitted to obtain funding for A&E services necessary to develop a detailed SOW for the construction of repairs and replacement of the identified transmission circuit.

3.3. Type of Work

To be Determined

Note: *If 30% 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 30% A&E work.*

Section 4. Codes and Standards

4.1. Codes and Standards List

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.

4.2. Codes and Standards Integration

Integration of Codes and Standards will be identified in the Plans and Specifications

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost

Cost Type	**Amount ($M)**
Architectural & Engineering to Design (30%)	$1.20
Final Design and Engineering	$2.81
Construction	$69.05
Total Project Estimated Cost	$73.06

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of Transmission Line during the 30% design phase. These may include undergrounding sections of overhead lines and increasing the resiliency of transmission structures and hardware in higher risk exposed areas. BCAs will be developed and submitted with these proposals

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information as 406 Hazard Mitigation proposals are developed.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for Circuit 5400 from Rio Blanco HP to Daguao TC and within the overhead sections on the islands of Vieques and Culebra during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

Section 8. Program Manager Lead Certification

Based on my knowledge and I belief, I certify that the documents above accurately reflect the project scope of work and cost estimates.

_____ _____

Program Manager's Printed Name Date

_____ _____

Title Signature

Section 9. PREPA Project Sponsor Comments

Decision

Section 10. Attachments

10.1. Project Detailed Cost Estimates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

10.4. Other:

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Vieques SUB 2501

165225

12/7/2020

Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates 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 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 identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Planning (EHP) Requirements*
- *Project Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes

Table of Contents

Section 1. Project Information 4
Section 2. Facilities 5
2.1. Facilities List 5
2.2. Facilities Description 5
Section 3. Scope Scope of Work 5
3.1. Project Scope of Work 5
3.2. 30% Architectural and Engineering (A&E) Completed 5
3.3. Type of Work 5
Section 4. Codes and Standards 5
4.1. Codes and Standards List (add rows as needed) 5
4.2. Codes and Standards Integration 6
Section 5. Cost Estimates 6
Section 6. 406 Hazard Mitigation Proposal 6
6.1. 406 Mitigation Opportunity Scope of Work 6
6.2. 406 Mitigation Opportunity Cost Estimate 6
Section 7. Environmental and Historic Planning (EHP) Requirements 6
Section 8. Program Manager Lead Certification 7
Section 9. PREPA Project Sponsor Comments 7
Section 10. Attachments 8
10.1. Project Detailed Cost Esimtates 8
10.2. Engineering Studies and Designs 8
10.3. Location Maps and Site Pictures 8
10.4. Other: (Please Describe) 8

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	Vieques Sub 2501
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	165225
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Vieques Substation	2501	18.142883, -65.443985	18.142883, -65.443985

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

2.2. Facilities Description

Vieques 2501 is a 38/4.16 kV substation consisting of a control house, components, and equipment located in a fenced yard.

Section 3. Scope of Work

3.1. Project Scope of Work

The SOW will include repair and replacement of the control house, building waterproofing, protection & control features, auxiliary equipment, 38 kV circuit breaker & steel structure, foundations, conduit, control cables, batteries, lights, grounding, finish grade, perimeter fence and other components to restore functionality.

3.2. 30% Architectural and Engineering (A&E) Completed

No
This document is being submitted to request the funding of A&E services

3.3. Type of Work

To be Determined

Note: *If 30% 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 30% A&E work.*

Section 4. Codes and Standards

4.1. Codes and Standards

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.

4.2. Codes and Standards Integration

Integration of Codes and Standards will be identified in the Plans and Specifications documents.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Substation Name	Total Cost ($M)	30% Engineering ($M)	Engineering Total ($M)
Vieques 2501	$2.3	$0.04	$0.131

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide detailed cost estimates for each 406 Hazard Mitigation proposal for this substation.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

Section 8. Program Manager Lead Certification

Based on my knowledge and I belief, I certify that the documents above accurately reflect the project scope of work and cost estimates.

_____	_____
Program Manager's Printed Name	Date
_____	_____
Title	Signature

Section 9. PREPA Project Sponsor Comments

Decision

Section 10. Attachments

10.1. Project Detailed Cost Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



Vieques 2501
Substation Location M

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

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

Distribution – Vieques Feeders 2501-01, 2501-02, 2501-03 and Culebra Feeders 3801-01, 3801-02

165226

11/30/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Project Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes

Table of Contents

Section 1. Project Information 4
Section 2. Facilities 5
2.1. Facilities List 5
2.2. Facilities Description 5
Section 3. Scope Scope of Work 5
3.1. Project Scope of Work 5
3.2. 30% Architectural and Engineering (A&E) Completed 6
3.3. Type of Work 6
Section 4. Codes and Standards 6
4.1. Codes and Standards List 6
4.2. Codes and Standards Integration 7
Section 5. Cost Estimates 7
Section 6. 406 Hazard Mitigation Proposal 7
6.1. 406 Hazard Mitigation Opportunity Scope of Work 7
6.2. 406 Hazard Mitigation Opportunity Cost Estimate 7
Section 7. Environmental and Historic Planning (EHP) Requirements 7
Section 8. Program Manager Lead Certification 8
Section 9. PREPA Project Sponsor Comments 8
Section 10. Attachments 9
10.1. Project Detailed Cost Esimtates 9
10.2. Engineering Studies and Designs 9
10.3. Location Maps and Site Pictures 9
10.4. Other: (Please Describe) 9

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	Distribution – Vieques Feeders 2501-01, 2501-02, 2501-03, Culebra Feeders 3801-01, 3801-02
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	250081
Damaged Inventory/Asset Category	Island Wide Distribution Lines System
FEMA Project Number *(formely Project Worksheet)*	165226
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the Vieques 2501-01, 2501-02, 2501-03 and Culebra 3801-01, 3801-02 feeder systems and are a subset of the scope included in the Distribution Feeders - Short Term Group - Tier 1 - Carolina Region project in the PREPA 10-Year Infrastructure Plan. These feeders are located on the islands of Vieques and Culebra, Puerto Rico, within PREPA's Carolina operating region and Fajardo district. PREPA's interconnected and inter-functional distribution feeders (sites) establish the electrical distribution system. The feeders originate from the Vieques substation or Culebra substation (start) and serve customers along a route to various locations (end). GPS Coordinates for the start and end point of each electrical feeder project are noted in the table below and depicted on the attached feeder maps.

Vieques	Start	End
2501-01	18.142924, -65.444010	18.112820, -65.546152
2501-02	18.142924, -65.444010	18.108912, -65.469449
2501-03	18.142924, -65.444010	18.154167, -65.420029

Culebra	Start	End
3801-01	18.304682,-65.302501	18.290727,-65.285631
3801-02	18.304682,-65.302501	18.308362,-65.260511

2.2. Facilities Description

The specific facilities included in this project are: poles and structures (including their foundations), framing and insulators, load break switches (manual and automated), capacitor banks, voltage regulators, transformers (including lightning arresters and fuse cut-outs), conductors, guy wires, anchoring, grounding assemblies, underground cable, underground cable systems, and fault interrupting equipment (fuses, reclosers, and sectionalizers).

Section 3. Scope Scope of Work

3.1. Project Scope of Work

Feeders will undergo comprehensive distribution modeling, analysis, and simulation to validate planning criteria such as: conductor loading, voltage parameters, power factor, reliability metrics, distribution automation device placement, and coordination of protective devices. The engineering team will perform field inspections of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will help define the scope of restoration and upgrades to industry standards. For both overhead and underground facilities, the engineering team will conduct a route study to verify underground cable system routing, identify conflicts with foreign utilities, test subsurface conditions, research right-of-way and easement availability, identify environmental and cultural impact, and identify highway/rail/waterway crossings.

Strucure foundations will be designed and engineered to confirm structural soundness and stability. Damaged structures/poles will be replaced with higher class (strength) structures/poles made of steel, concrete, or fiberglass composite. Damaged crossarms will be replaced with galvanized or stainless steel crossarms. Porcelain insulators and any other damaged insulator will be replaced with silicon rubber insulators.

Missing or damaged grounding assemblies will be replaced to fulfill system grounding integrity. Damaged conductor spans will be replaced between poles and re-sagged per codes and standards. Damaged structure guying elements will be repaired or replaced, such as slack guy wires or pulled anchors.

This infrastructure needs to be compliant with consensus-based codes for the distribution line to fully perform its function. PREPA will perform the corresponding analysis on disaster damaged temporary repaired structures and anchoring system to bring to consensus-based codes as defined in current Distribution Design Criteria Documents (DCDs).

Vegetation management is one of the most important activities in maintaining a reliable distribution system. During construction, it may be necessary to remove vegetation that is encroaching on existing distribution facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also find that soil boring or testing is needed to make sure conditions are suitable for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

3.2. 30% Architectural and Engineering (A&E) Completed

No
This document is being submitted to obtain funding for A&E services necessary to develop a detailed SOW for the construction of repairs and replacement of the identified distribution feeders.

3.3. Type of Work

To be Determined

Note: *If 30% 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 30% A&E work.*

Section 4. Codes and Standards

4.1. Codes and Standards List

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.

4.2. Codes and Standards Integration

Integration of Codes and Standards will be identified in the Plans and Specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost. The estimates for the Underground and Distribution Automation features will be used for 406 Hazard Mitigation proposals and associated BCAs to be developed during the 30% design phase.

Vieques	Total Cost ($M)	30% Engineering ($M)	Engineering Total ($M)
2501-01	$10.56	$0.32	$0.58
2501-02	$7.31	$0.22	$0.40
2501-03	$1.26	$0.04	$0.07
Culebra			
3801-01	$2.67	$0.08	$0.15
3801-02	$5.46	$0.16	$0.30
Total	**$28.81**	**$0.82**	**$1.50**

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Hazard Mitigation Opportunity Scope of Work

PREPA will develop and propose multiple 406 Hazard Mitigation features for these five feeder systems. Work may include undergrounding feeds to critical services, adding distribution automation equipment for grid stability and outage mitigation, and additional strengthening and mitigation beyond codes and standards to above ground infrastructure in exposed areas. BCAs will be provided during the A&E phase to document the benefits and costs of these proposals.

6.2. 406 Hazard Mitigation Opportunity Cost Estimate

Cost for proposed 406 Hazard Mitigation Proposals will be developed during the A&E phase of this projects along as part of the BCA.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for each feeder system during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

Section 8. Program Manager Lead Certification

Based on my knowledge and I belief, I certify that the documents above accurately reflect the project scope of work and cost estimates.

_____	_____
Program Manager's Printed Name	Date
_____	_____
Title	Signature

Section 9. PREPA Project Sponsor Comments

Decision

Section 10. Attachments

10.1. Project Detailed Cost Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Rio Grande Estates - CH – 2306

165268

12/7/2020

Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates 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 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 identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Planning (EHP) Requirements*
- *Project Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes

Table of Contents

Section 1. Project Information 4
Section 2. Facilities 5
2.1. Facilities List 5
2.2. Facilities Description 5
Section 3. Scope Scope of Work 5
3.1. 30% Architectural and Engineering (A&E) Completed 5
3.2. Type of Work 5
Section 4. Codes and Standards 5
4.1. Codes and Standards List (add rows as needed) 5
4.2. Codes and Standards Integration 6
Section 5. Cost Estimates 6
Section 6. 406 Hazard Mitigation Proposal 6
6.1. 406 Mitigation Opportunity Scope of Work 6
6.2. 406 Mitigation Opportunity Cost Estimate 6
Section 7. Environmental and Historic Planning (EHP) Requirements 6
Section 8. Program Manager Lead Certification 7
Section 9. PREPA Project Sponsor Comments 7
Section 10. Attachments 8
10.1. Project Detailed Cost Esimtates 8
10.2. Engineering Studies and Designs 8
10.3. Location Maps and Site Pictures 8
10.4. Other: (Please Describe) 8

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	Rio Grande Estates - CH – 2306
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formely Project Worksheet)*	165268
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Rio Grande Estates Substation	Substation No. 2306	18.378645, -65.791504	18.378645, -65.791504

2.2. Facilities Description

Rio Grande Estates is a 38/13.2-kV substation that sustained considerable damage from Hurricane Maria's wind and flooding forces.

Section 3. Scope Scope of Work

The SOW will include demolition and replacement of control building, perimteter fence, 38 kV circuit breaker, 38/13.2 kV line tap pole, conductors and switches. In addition, repair of the retaining wall, relocation of the 13.2 kV feeders, grounding, yard gravel, drainage system, light fixtures and other components will be repaired and replaced to restore the function of the substation.

3.1. 30% Architectural and Engineering (A&E) Completed

No

This document is being submitted to request the funding of A&E services.

3.2. Type of Work

To be Determined

Note: *If 30% 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 30% A&E work.*

Section 4. Codes and Standards

4.1. Codes and Standards

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.

4.2. Codes and Standards Integration

Integration of Codes and Standards will be identified in the Plans and Specifications documents.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Substation Name	Total Cost ($M)	30% Engineering ($M)	Engineering Total ($M)
Rio Grande Estates 2306	$3.7	$0.063	$0.211

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide detailed cost estimates for each 406 Hazard Mitigation proposal for this substation.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review and approval. Requirements will be incorporated into the final design and construction documents/drawings prior to construction activities.

Section 8. Program Manager Lead Certification

Based on my knowledge and I belief, I certify that the documents above accurately reflect the project scope of work and cost estimates.

_____	_____
Program Manager's Printed Name	Date
_____	_____
Title	Signature

Section 9. PREPA Project Sponsor Comments

Decision

Section 10. Attachments

10.1. Project Detailed Cost Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures



Rio Grande Estates Location Map.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Transmission Line 51300 - Ponce TC to Costa Sur SP TC

166707

12/29/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Project 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	FAASt Transmission Line 51300 - Ponce TC to Costa Sur SP TC
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formely Project Worksheet)*	166707
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facility listed below is part of the 12 circuit miles of overhead transmission line from Ponce TC to Costa Sur SP TC. Line 51300 is part of the Near-Term Group #1: 12-Transmission Existing (115 & 230 kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Ponce TC to Costa Sur SP TC	51300	18.000851, -66.612411	18.002279, -66.754395

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Line 51300 consists of self-supported steel poles, guyed steel poles, and aluminum lattice structures. These structures are mostly situated in complex terrain surrounded by green forest.

Section 3. Scope of Work

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

The scope of work for Line 51300 will consist of the repair and replacement of damaged elements of the overhead portion of the line and will bring to consensus-based codes both disaster damaged and non-damaged but functionally interdependent structures of the transmission line.

In certain circumstances, transmission structures may need to be replaced to ensure the transmission structure and its components conform to applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will help define the scope of restoration and upgrades to industry standards. Field surveys and geotechnical investigations may also be performed in order to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: replacing insulators with polymer type; repairing, replacing or adding guy wires; repairing or replacing anchors, structure connections, structure foundations or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring the communications associated with the transmission line; replacing conductor spans when broken or with splices, bird caged, pitting, burns, kinks, or stretched conductor; repairing or adding vibration and/or drag dampers, armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is one of the most important activities in maintaining a reliable transmission system. During construction, it may be necessary to remove vegetation that is

encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also find that soil boring or testing is needed to make sure conditions are suitable for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

The final SOW (plans and specifications) will be completed by 07/20/2021 and construction work will be completed by 09/02/2022.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
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.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Applicable industry standards will be identified and incorporated into the final scope of work document, design plans, and project specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	$0.43
Final Design and Engineering (Including 30%)	$1.43
Construction	$24.65
Total Project Estimated Cost	$26.08

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of Transmission Line during the 30% design phase. These may include undergrounding sections of overhead lines and increasing the resiliency of transmission structures and hardware in higher risk exposed areas. BCAs will be developed and submitted with these proposals

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will procide cost and BCA information for each hazard mitigation proposal.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for Circuit 51300 from Ponce TC to Costa Sur SP TC during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



51300_Ponce_CostaSur_Overview.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

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

FAASt Transmission - Line 40100 & 40200 - Aguirre SP TC to Jobos TC (Transmission)

166834

12/29/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Project 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	FAASt Transmission - Line 40100 & 40200 - Aguirre SP TC to Jobos TC (Transmission)
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formely Project Worksheet)*	166834
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 9 circuit miles per line of overhead transmission line from Aguirre SP TC to Jobos TC. Line 40200/40100 are both part of the Near-Term Group #1: 12-Transmission Existing (115 & 230 kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Aguirre SP TC to Jobos TC	40200	17.95345, -66.23119	17.96167, -66.13965
Aguirre SP TC to Jobos TC	40100	17.95336, -66.23128	17.96173, -66.13945

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Line 40200 & 40100 both leave Aguirre SP TC substation on the same right of way and ends at Jobos TC substation. These lines use a combination of Aluminum Dead End III Structures, Aluminum DELTA Type I Structures, Aluminum GUY V Type I Structures, Steel Self Support Tower Structures, and Steel Single Pole Structures.

Section 3. Scope of Work

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

The scope of work for Line 40200 and 40100 will consist of the repair and replacement of damaged elements of the overhead portion of the line and will bring to consensus-based codes both disaster damaged and non-damaged but functionally interdependent structures of the transmission line.

In certain circumstances, transmission structures may need to be replaced to ensure the transmission structure and its components conform to applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will help define the scope of restoration and upgrades to industry standards. Field surveys and geotechnical investigations may also be performed in order to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: replacing insulators with polymer type; repairing, replacing or adding guy wires; repairing or replacing anchors, structure connections, structure foundations or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring the communications associated with the transmission line; replacing conductor spans when broken or with splices, bird caged, pitting, burns, kinks, or stretched conductor; repairing or adding vibration and/or drag

dampers, armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is one of the most important activities in maintaining a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also find that soil boring or testing is needed to make sure conditions are suitable for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

Line 40200 - Aguirre SP TC to Jobos TC - The final SOW (plans and specifications) will be completed by 09/08/2021 and construction work will be completed by 08/29/2022.

Line 40100 - Aguirre SP TC to Jobos TC Caguas TC - The final SOW (plans and specifications) will be completed by 08/10/2021 and construction work will be completed by 07/08/2022.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
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.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Applicable industry standards will be identified and incorporated into the final scope of work document, design plans, and project specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost

Cost Type – Line 40200	**Amount ($M)**
Architectural & Engineering to Design (30%)	$0.26
Final Design and Engineering (Including 30%)	$0.88
Construction	$15.1
Total Project Estimated Cost	$15.98

Cost Type – Line 40100	Amount ($M)
Architectural & Engineering to Design (30%)	$0.26
Final Design and Engineering (Including 30%)	$0.88
Construction	$15.1
Total Project Estimated Cost	$15.98

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of Transmission Line during the 30% design phase. These may include undergrounding sections of overhead lines and increasing the resiliency of transmission structures and hardware in higher risk exposed areas. BCAs will be developed and submitted with these proposals

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information as 406 Hazard Mitigation proposals are developed.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for Circuit 40100/40200 - Aguirre SP TC to Jobos TC during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

40100_Aguirre_Jobos_Overview.pdf

40200_Aguirre_Jobos_Overview.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Transmission - Line 37800 - Jobos TC to Cayey TC Transmission - Line 37800 - Cayey TC to Caguas TC (Transmission)

166860

12/29/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Project 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	FAASt Transmission - Line 37800 - Jobos TC to Cayey TC Transmission - Line 37800 - Cayey TC to Caguas TC (Transmission)
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formely Project Worksheet)*	166860
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 15 circuit miles of overhead transmission line from Jobos TC to Cayey TC and 12 circuit miles of overhead transmission line from Cayey TC to Caguas TC, respectively. Both lines are part of the Near-Term Group #1: 12-Transmission Existing (115 & 230 kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Jobos TC to Cayey TC	37800	17.96150, -66.13946	18.12075, -66.17094
Cayey TC to Caguas TC	37800	18.12075, -66.17094	18.23927, -66.03688

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Jobos TC to Cayey TC – The Jobos to Cayey segment consists of steel lattice towers, self-supported steel poles, guyed steel poles, and aluminum lattice structures. This line is mostly in rural semi-arid and forested areas with much of the line traversing mountainous and hilly terrain.

Cayey TC to Caguas TC - The Caguas to Cayey segment starts at the Caguas TC and runs southwest to the Cayey substation. This line primarily consists of self-supporting steel monopoles and multi-pole guyed wood structures. The structures along this line segment are accessible.

Section 3. Scope of Work

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

The scope of work for both segments of Line 37800 from Jobos TC to Cayey TC to Caguas TC will consist of the repair and replacement of damaged elements of the overhead portion of the line and will bring to consensus-based codes both disaster damaged and non-damaged but functionally interdependent structures of the transmission line.

In certain circumstances, transmission structures may need to be replaced to ensure the transmission structure and its components conform to applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will help define the scope of restoration and upgrades to industry standards. Field surveys and geotechnical investigations may also be performed to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: replacing insulators with polymer type; repairing, replacing or adding guy wires; repairing or replacing

anchors, structure connections, structure foundations or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring the communications associated with the transmission line; replacing conductor spans when broken or with splices, bird caged, pitting, burns, kinks, or stretched conductor; repairing or adding vibration and/or drag dampers, armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is one of the most important activities in maintaining a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also find that soil boring or testing is needed to make sure conditions are suitable for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

Line 37800 - Jobos TC to Cayey TC - The final SOW (plans and specifications) will be completed by 05/28/2021 and construction work will be completed by 08/26/2022.

Line 37800 - Cayey TC to Caguas TC - The final SOW (plans and specifications) will be completed by 09/29/2021 and construction work will be completed by 10/31/2022.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
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.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Applicable industry standards will be identified and incorporated into the final scope of work document, design plans, and project specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost

Cost Type – Line 37800 - Jobos TC to Cayey TC	**Amount ($M)**
Architectural & Engineering to Design (30%)	$0.44
Final Design and Engineering (Including 30%)	$1.48
Construction	$25.39
Total Project Estimated Cost	$26.87

Cost Type – Line 37800 - Cayey TC to Caguas TC	Amount ($M)
Architectural & Engineering to Design (30%)	$0.41
Final Design and Engineering (Including 30%)	$1.38
Construction	$23.75
Total Project Estimated Cost	$25.13

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of Transmission Line during the 30% design phase. These may include undergrounding sections of overhead lines and increasing the resiliency of transmission structures and hardware in higher risk exposed areas. BCAs will be developed and submitted with these proposals

6.2. 406 Mitigation Opportunity Cost Estimate

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

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for both segments for Circuit 37800 from Jobos TC to Cayey TC & from Cayey TC to Caguas TC during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



37800_Jobos_Cayey_Overview.pdf



37800_Cayey_Caguas_Overview.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Transmission Line 37800 Caguas TC to Monacillos TC (TRANSMISSION)

166904

12/29/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Project 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	FAASt Transmission Line 37800 Caguas TC to Monacillos TC (TRANSMISSION)
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formely Project Worksheet)*	166904
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 10 circuit miles of overhead transmission line from Caguas TC to Buen Pastor SECT and 5 circuit miles of overhead transmission line from Buen Pastor SECT to Monacillos TC, respectively. Both lines are part of the Near-Term Group #1: 12-Transmission Existing (115 & 230 kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Caguas TC to Buen Pastor SECT	37800	18.23927, -66.03688	18.31330, -66.08528
Buen Pastor SECT to Monacillos TC	37800	18.31330, -66.08528	18.37279, -66.07299

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Caguas TC to Buen Pastor SECT – The Caguas TC to Buen Pastor SECT segment consists of Concrete & Steel Single Poles, Self-Supported Steel Poles and Guyed Two/Three Wood Pole structures.

Buen Pastor SECT to Monacillos TC - The Buen Pastor SECT to Monacillos TC segment consists of Concrete & Steel Self-Supported Pole Structure as well as Guyed Two/Three Wood Pole structures. This section runs north from the Buen Pastor SECT substation to the Monacillos substation for about 5 miles. The structures along this line segment are accessible.

Section 3. Scope of Work

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

The scope of work for both segments of Line 37800 from Caguas TC to Buen Pastor SECT to Monacillos TC will consist of the repair and replacement of damaged elements of the overhead portion of the line and will bring to consensus-based codes both disaster damaged and non-damaged but functionally interdependent structures of the transmission line.

In certain circumstances, transmission structures may need to be replaced to ensure the transmission structure and its components conform to applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will help define the scope of restoration and upgrades to industry standards. Field surveys and geotechnical investigations may also be performed to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: replacing

insulators with polymer type; repairing, replacing or adding guy wires; repairing or replacing anchors, structure connections, structure foundations or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring the communications associated with the transmission line; replacing conductor spans when broken or with splices, bird caged, pitting, burns, kinks, or stretched conductor; repairing or adding vibration and/or drag dampers, armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is one of the most important activities in maintaining a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also find that soil boring or testing is needed to make sure conditions are suitable for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

Line 37800 – Caguas TC to Buen Pastor SECT - The final SOW (plans and specifications) will be completed by 05/21/2021 and construction work will be completed by 05/04/2022.

Line 37800 - Buen Pastor SECT to Monacillos TC - The final SOW (plans and specifications) will be completed by 10/06/2021 and construction work will be completed by 08/05/2022.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
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.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Applicable industry standards will be identified and incorporated into the final scope of work document, design plans, and project specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost

Cost Type – Line 37800 – Caguas TC to Buen Pastor SECT	**Amount ($M)**
Architectural & Engineering to Design (30%)	$0.37
Final Design and Engineering (Including 30%)	$1.23
Construction	$21.14
Total Project Estimated Cost	$22.37

Cost Type – Line 37800 - Buen Pastor SECT to Monacillos TC	**Amount ($M)**
Architectural & Engineering to Design (30%)	$0.18
Final Design and Engineering (Including 30%)	$0.61
Construction	$10.42
Total Project Estimated Cost	$11.03

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of Transmission Line during the 30% design phase. These may include undergrounding sections of overhead lines and increasing the resiliency of transmission structures and hardware in higher risk exposed areas. BCAs will be developed and submitted with these proposals

6.2. 406 Mitigation Opportunity Cost Estimate

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

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for both segments for Circuit 37800 from Caguas TC to Buen Pastor SECT & from Buen Pastor SECT to Monacillos TC during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



37800_Caguas_Buen Pastor_Overview.pdf



37800_BuenPastor_ Monacillos_Overview.

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt_TRANSMISSION-LINE-37100_COSTA SUR-ST_ACACIAS-TC

167168

12/29/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Project 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	FAASt_TRANSMISSION-LINE-37100_COSTA SUR-ST_ACACIAS-TC
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formely Project Worksheet)*	167168
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 38 circuit miles of overhead transmission line from Costa Sur SP to Acacias TC. Line 37100 is part of the Near-Term Group #1: 12-Transmission Existing (115 & 230 kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Costa Sur SP to Guanica TC	37100	18.002378, -66.754190	17.965921, -66.897519
Guanica TC to San German TC	37100	17.965921, -66.897519	18.074986, -67.009225
San German TC to Acacias TC	37100	18.074986, -67.009225	18.128677, -67.136048

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, grounding assemblies.

Line 37100 starts at Costa Sur SP and ends at the Acacia TC substation with two intermediate breaks into and out of the Guanica TC substation & San German TC substation. The line has a combination of steel self-supported poles, self-supported towers, guyed steel poles & two/three wood pole structures.

Section 3. Scope of Work

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

The scope of work for Line 37100 will consist of the repair and replacement of damaged elements of the overhead portion of the line and will bring to consensus-based codes both disaster damaged and non-damaged but functionally interdependent structures of the transmission line.

In certain circumstances, transmission structures may need to be replaced to ensure the transmission structure and its components conform to applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will help define the scope of restoration and upgrades to industry standards. Field surveys and geotechnical investigations may also be performed in order to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: replacing insulators with polymer type; repairing, replacing or adding guy wires; repairing or replacing anchors, structure connections, structure foundations or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring the communications associated with the transmission line; replacing conductor spans when broken or with splices,

bird caged, pitting, burns, kinks, or stretched conductor; repairing or adding vibration and/or drag dampers, armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is one of the most important activities in maintaining a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also find that soil boring or testing is needed to make sure conditions are suitable for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

The final SOW (plans and specifications) will be completed by 06/21/2021 and construction work will be completed by 03/31/2023.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
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.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Applicable industry standards will be identified and incorporated into the final scope of work document, design plans, and project specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	$1.52
Final Design and Engineering (Including 30%)	$5.06
Construction	$86.93
Total Project Estimated Cost	$91.99

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of Transmission Line during the 30% design phase. These may include undergrounding sections of overhead lines and increasing the resiliency of transmission structures and hardware in higher risk exposed areas. BCAs will be developed and submitted with these proposals

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information as 406 Hazard Mitigation proposals are developed.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for Circuit 37100 from Costa Sur SP to Acacias TC during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



37100_CostaSur_Acacias_Overview.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt - Line 36200 - Monacillos TC to Juncos TC (Transmission)

167443

12/30/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Project 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	FAASt - Line 36200 - Monacillos TC to Juncos TC (Transmission)
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formely Project Worksheet)*	167443
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 22 circuit miles of overhead transmission line from Monacillos TC to Juncos TC. Line 36200 is part of the Near-Term Group #1: 12-Transmission Existing (115 & 230 kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Monacillos TC to Juncos TC	36200	18.372791, -66.072991	18.227047, -65.915456

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, grounding assemblies.

Line 36200 leaves the Monacillos TC substation and is carried on double circuit structures parallel to the 3100 line (38 kV) for approximately 1 mile after which it runs on single-circuit structures to the Villa Betina TC substation. The line uses steel lattice structures for the double circuited portion and a combination of wood multi-pole guyed structures and self-supporting and guyed single-concrete poles. The line continues from the Villa Betina TC substation to the Quebrada Negrito TC substation. This part of the segment evaluated is comprised entirely of single-circuit structures. They consist of multi-pole guyed wood structures and self-supporting steel poles to Juncos TC.

Section 3. Scope of Work

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

The scope of work for Line 36200 will consist of the repair and replacement of damaged elements of the overhead portion of the line and will bring to consensus-based codes both disaster damaged and non-damaged but functionally interdependent structures of the transmission line.

In certain circumstances, transmission structures may need to be replaced to ensure the transmission structure and its components conform to applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will help define the scope of restoration and upgrades to industry standards. Field surveys and geotechnical investigations may also be performed in order to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: replacing insulators with polymer type; repairing, replacing or adding guy wires; repairing or replacing anchors, structure connections, structure foundations or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring the communications associated with the transmission line; replacing conductor spans when broken or with splices, bird caged, pitting, burns, kinks, or stretched conductor; repairing or adding vibration and/or drag

dampers, armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is one of the most important activities in maintaining a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also find that soil boring or testing is needed to make sure conditions are suitable for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

The final SOW (plans and specifications) will be completed by 06/21/2021 and construction work will be completed by 03/17/2023.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
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.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Applicable industry standards will be identified and incorporated into the final scope of work document, design plans, and project specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost

Cost Type	**Amount ($M)**
Architectural & Engineering to Design (30%)	$0.71
Final Design and Engineering (Including 30%)	$2.35
Construction	$40.38
Total Project Estimated Cost	$42.73

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of Transmission Line during the 30% design phase. These may include undergrounding sections of overhead lines and increasing the resiliency of transmission structures and hardware in higher risk exposed areas. BCAs will be developed and submitted with these proposals

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information as 406 Hazard Mitigation proposals are developed.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for Circuit 36200 from Monacillos TC to Juncos TC during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



36200_Monacillos_Juncos_Overview.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt - Line 36100 - Dos Bocas HP to Monacillos TC (Transmission)

167446

12/29/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Project 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	FAASt - Line 36100 - Dos Bocas HP to Monacillos TC (Transmission)
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formely Project Worksheet)*	167446
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 49 circuit miles of overhead transmission line from Dos Bocas HP to Monacillos TC. Line 36100 is part of the Near-Term Group #1: 12-Transmission Existing (115 & 230 kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Dos Bocas HP to Ciales TC	36100	18.335816, -66.666172	18.32748, -66.473846
Ciales TC to Morovis TC	36100	18.32748, -66.473846	18.322796, -66.406944
Morovis TC to Unibon/Corozal TC	36100	18.322796, -66.406944	18.329155, -66.359612
Unibon/Corozal to Monterrey TC	36100	18.329155, -66.359612	18.338388, -66.305199
Monterrey TC to Pina GIS TC	36100	18.338388, -66.305199	18.346813, -66.230965
Pina GIS TC to Cana TC	36100	18.346813, -66.230965	18.349501, -66.185867
Cana TC to Bayamon TC	36100	18.349501, -66.185867	18.398712, -66.140556
Bayamon TC to **Monacillos TC**	36100	18.398712, -66.140556	18.372793, -66.072998

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Line 36100 starts at the Dos Bocas Hydroelectric plant and runs east to Monacillos TC. Most of the construction along this line segment consists of wood multi-pole guyed structures with some interspersed self-supporting steel monopoles. Part of this segment carries distribution underbuild and traverses mountainous terrain.

Section 3. Scope of Work

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

The scope of work for Line 36100 will consist of the repair and replacement of damaged elements of the overhead portion of the line and will bring to consensus-based codes both disaster damaged and non-damaged but functionally interdependent structures of the transmission line.

In certain circumstances, transmission structures may need to be replaced to ensure the transmission structure and its components conform to applicable codes and standards. The

transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will help define the scope of restoration and upgrades to industry standards. Field surveys and geotechnical investigations may also be performed in order to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: replacing insulators with polymer type; repairing, replacing or adding guy wires; repairing or replacing anchors, structure connections, structure foundations or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring the communications associated with the transmission line; replacing conductor spans when broken or with splices, bird caged, pitting, burns, kinks, or stretched conductor; repairing or adding vibration and/or drag dampers, armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is one of the most important activities in maintaining a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also find that soil boring or testing is needed to make sure conditions are suitable for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

The final SOW (plans and specifications) will be completed by 07/20/2021 and construction work will be completed by 03/06/2024.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
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.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Applicable industry standards will be identified and incorporated into the final scope of work document, design plans, and project specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost

Cost Type	**Amount ($M)**
Architectural & Engineering to Design (30%)	$1.91
Final Design and Engineering (Including 30%)	$6.35
Construction	$109.14
Total Project Estimated Cost	$115.49

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of Transmission Lines during the 30% design phase. These may include undergrounding sections of overhead lines and increasing the resiliency of transmission structures and hardware in higher risk exposed areas. BCAs will be developed and submitted with these proposals

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information as 406 Hazard Mitigation proposals are developed.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for Circuit 36100 from Dos Bocas HP to Monacillos TC during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



36100_DosBocas_Mo
nacillos_Overview.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Transmission - Line 50100 - Cambalache GP TC to Manati TC (Transmission)

167508

12/29/2020

Introduction

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

Puerto Rico Electric Power Authority (PREPA) is agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Project 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	FAASt Transmission - Line 50100 - Cambalache GP TC to Manati TC (Transmission)
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formely Project Worksheet)*	167508
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facility listed below is part of the 20 circuit miles of overhead transmission line from Cambalache GP TC to Manati TC. Line 50100 is part of the Near-Term Group #1: 12-Transmission Existing (115 & 230 kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Cambalache GP TC to Manatí TC	50100	18.469086, -66.696838	18.433203, -66.455406

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Line 50100 consists of self-supported steel poles, guyed steel poles, and aluminum lattice structures. This line is mostly in forested and agricultural areas with a small number of poles in suburban areas.

Section 3. Scope of Work

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

The scope of work for Line 50100 will consist of the repair and replacement of damaged elements of the overhead portion of the line and will bring to consensus-based codes both disaster damaged and non-damaged but functionally interdependent structures of the transmission line.

In certain circumstances, transmission structures may need to be replaced to ensure the transmission structure and its components conform to applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will help define the scope of restoration and upgrades to industry standards. Field surveys and geotechnical investigations may also be performed in order to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: replacing insulators with polymer type; repairing, replacing or adding guy wires; repairing or replacing anchors, structure connections, structure foundations or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring the communications associated with the transmission line; replacing conductor spans when broken or with splices, bird caged, pitting, burns, kinks, or stretched conductor; repairing or adding vibration and/or drag dampers, armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is one of the most important activities in maintaining a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also find that soil boring or testing is needed to make sure conditions are suitable for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

The final SOW (plans and specifications) will be completed by 06/21/2021 and construction work will be completed by 03/31/2022.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
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.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Applicable industry standards will be identified andincorporated into the final scope of work document, design plans, and project specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	$0.72
Final Design and Engineering (Including 30%)	$2.39
Construction	$41.08
Total Project Estimated Cost	$43.47

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of Transmission Line during the 30% design phase. These may include undergrounding sections of overhead lines and increasing the resiliency of transmission structures and hardware in higher risk exposed areas. BCAs will be developed and submitted with these proposals

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost aand BCA information as 406 Hazard Mitigation proposals are developed.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for Circuit 50100 from Cambalache GP TC to Manati TC during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



50100_Cambalache_
Manati_Overview.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Transmission - San Juan 115-kV Underground Transmission Loop

168226

2/2/2021

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 agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Project 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	San Juan 115-kV Underground Transmission Loop
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formely Project Worksheet)*	168226
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
115kV Line from San Juan SP Manhole #8 to Isla Grande (New-UG) Manhole #9	115 kV Line 38000 - Manhole #8 to Manhole #9	18.441915, -66.080692	18.437594, -66.084989
San Juan Steam Plant Install Circuit Breakers to Complete the UG Loop	Breakers 38040 & 41640	18.42778, -66.1052	18.42778, -66.1052
Isla Grande TC 49 Upgrade P&C	P&C L38000 & L39200	18.45421, -66.0867	18.45421, -66.0867
Martin Pena TC 57 Upgrade P&C	P&C L39300 & L40000	18.4342, -66.0602	18.4342, -66.0602
Bayamon TC 13: Replace Circuit Breaker and Upgrade P&C	Breaker 40730, P&C L40600 & L40700	18.39868, -66.1405	18.39868, -66.1405
Palo Seco TC 43: Terminate 115kV Line to Breaker, Upgrade P&C	Breaker 41620, P&C L41600 & L47000	18.45454 -66.1488	18.45454 -66.1488
Viaducto 13: Upgrade P&C	P&C L39200 & L40000	18.44627, -66.0779	18.44627, -66.0779
Hato Rey TC 55 Replace Circuit Breaker, Upgrade P&C	Breaker 39350, P&C L39300 & 40500	18.42707, -66.0677	18.42707, -66.0677
Monacillos TC 65 Upgrade P&C	P&C L40500 & L40600	18.37306, -66.0729	18.37306, -66.0729

2.2. Facilities Description

San Juan 115kV Underground Loop is meant to provide a highly reliable power path around San Juan that will be protected from severe weather. The Loop ties together the most significant TCs around San Juan that PREPA relies on to supply power to the metropolitan area.

The 115kV Line 38000 is a portion of the Loop that is routed between the San Juan Steam Plant Switchyard and the Isla Grande TC. The cable crosses under the Martin Pena Canal near the Constitution Bridge. This section of submarine cable was damaged by a third party between 115 kV Manhole #8 and 115 kV Manhole #9.

The Underground Loop connects seven large TC substations around San Juan listed in Section 2. Circuit breakers require repair or replacement at Bayamon and Hato Rey. A breaker at Palo Seco will be placed in service and L41600 terminated to the breaker.

Protection and Control (grid modernization) upgrades are required at Viaducto TC, Monacillos TC, Bayamon TC, Isla Grande TC, Palo Seco SP, Martin Pena TC and Hato Rey TC for 115kV lines 38000, 39200, 40000, 39300, 40500, 40600, 40700 and 41600.

Section 3. Scope Scope of Work

3.1. Plan for Repair Description

The SOW will include three replacement and upgrade tasks:

1. **Line 38000 Damage Replacement.** Replacing the damaged cable section of Line 38000.
    a. **MH-8 Component Replacement.** A subtask of Task 1.
2. **115kV Circuit Breaker Replacements**. Replacing the 115-kV circuit breakers at Bayamon TC (40730) and Hato Rey TC (39350).
3. **Protection Upgrade.** Upgrading Protection and Control (grid modernization) are required at Viaducto TC, Monacillos TC, Bayamon TC, Isla Grande TC, Palo Seco SP, Martin Pena TC and Hato Rey TC for 115kV lines 38000, 39200, 40000, 39300, 40500, 40600, 40700 and 41600.
4. **115kV Breaker Installations and Line Terminations.** At San Juan SP two new GIS circuit breakers will be installed with P&C, and transmission lines will be terminated to the new breakers. Scope at San Juan SP will be funded by the San Juan 11kV GIS project.

For Task 1 – Line 38000 Damage Replacement, there are two options to replace the damaged section of cable. These options will be considered during the 30% engineering phase and are:

- **Option 1.** Install the cable in conduit and attach it to the underside of Constitution Bridge spanning the Martin Peña Canal.
- **Option 2.** Make a directional bore, installing the cable on the floor of the canal. (This option would put the cable in a similar position to where it was installed when it was damaged.)

Because time has elapsed since the initial damaging event, corrosion has occurred on the cable and connections at MH-8. The extent of the damage and this corrosion mean that the cable conductors and cable splice bodies are **not** repairable. Every component must be replaced in this damaged section.

Additional, saltwater residues found in the 115-kV MH-8 cable ends indicate that an additional section of cable between MH-7 and MH-8 is required.

A summary for the scope of work for the MH-8 Component Replacement is:

1. Replace the water sump pump. Restore the water management system.
2. Replace three 2750-Kcmil feeder cables going to MH-7 to ensure system reliability.
3. Replace feed cables and supports to MH-9 (Martin Peña Canal). Replace temperature monitor fiber optic cable and 5000 MCM grounding cable to MH-9 (Martin Peña Canal).

For MH-9, will need to replace feeder cables and supports to MH-8 (Martin Peña Canal). Replace temperature monitor fiber optic cable and 5000 MCM grounding cable to MH-8 (Martin Peña Canal).

3.2. Improvements

Does the intended plan include any other improvements, not required by codes and standards, including changes in facility size, capacity, dimension, or footprint?
No
<Description of the changes in facility size, capacity, dimension, or footprint>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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
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.

4.2. Industry Standards

Yes
Industry standards will be identified during the A&E work

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Substation Name	Total Cost ($M)	30% Engineering ($M)	Engineering Total ($M)
115kV San Juan Underground Loop	$10M*	$0.6	$1.0

**PREPA intends to offset the total cost of the project by approximately $2M received from the settlement with the contractor that damaged the cable*

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide detailed cost estimates for each 406 Hazard Mitigation proposal for this substation.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

Environmental issues associated with Martin Pena Canal will be evaluated. If the cables are attached to the bridge, coordination with the Department of Transportation will be required.

Section 8. Program Manager Lead Certification

Based on my knowledge and I belief, I certify that the documents above 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 Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>



San Juan UG Loop Input.pdf

San Juan UG Loop Input



Line 38000115 KV Martin Pena-Damag

Line 38000 115kV Damage Assessment

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



115kV UG LOOP SENDOUT.pdf

115kV UG Loop Diagram

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Transmission - Line 36400 - Dos Bocas HP to Ponce TC

168483

2/2/2021

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 agency that provides the electric service to the entire island of Puerto Rico. As such the facilities identified in this Scope of Work are considered to provide a BBA-eligible critical service and will be constructed to an approved industry standard. 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 Esimtate*
- *406 Hazard Mitigation Proposal*
- *Project 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	Transmission - Line 36400 - Dos Bocas HP to Ponce TC
PREPA Project Number	
PREPA Project Sponsor	
Program Manager Lead	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formely Project Worksheet)*	168483
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 36 circuit miles of overhead transmission line from Dos Bocas HP to Ponce TC. Line 36400 is part of the Near-Term Group #1: 12-Transmission Existing (115 & 230 kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Dos Bocas HP to Ponce TC	36400	18.335816, -66.666172	18.000851, -66.612411

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Line 36400 starts at the Dos Bocas Hydroelectric Plant and ends at the Ponce substation with an intermediate break into and out of the Jayuya substation. For the first couple of structures out of the Ponce substation, line 36400 runs on double-circuit towers along with circuit 39000. Shortly after, it breaks off into single-circuit wood structures. There is some distribution underbuild that is carried on the same 36400 wood structures.

Section 3. Scope of Work

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

The scope of work for Line 36400 will consist of the repair and replacement of damaged elements of the overhead portion of the line and will bring to consensus-based codes both disaster damaged and non-damaged but functionally interdependent structures of the transmission line.

In certain circumstances, transmission structures may need to be replaced to ensure the transmission structure and its components conform to applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will help define the scope of restoration and upgrades to industry standards. Field surveys and geotechnical investigations may also be performed in order to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: replacing insulators with polymer type; repairing, replacing or adding guy wires; repairing or replacing anchors, structure connections, structure foundations or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring the communications associated with the transmission line; replacing conductor spans when broken or with splices, bird caged, pitting, burns, kinks, or stretched conductor; repairing or adding vibration and/or drag dampers, armor rods; and other repairs necessary to conform with codes and standards based

upon engineering design specifications and requirements.

Vegetation management is one of the most important activities in maintaining a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also find that soil boring or testing is needed to make sure conditions are suitable for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

The final SOW (plans and specifications) will be completed by 07/13/2021 and construction work will be completed by 06/26/2023.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
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.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Applicable industry standards will be identified and incorporated into the final scope of work document, design plans, and project specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	$1.44
Final Design and Engineering (Including 30%)	$4.81
Construction	$82.63
Total Project Estimated Cost	$87.44

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of Transmission Line during the 30% design phase. These may include undergrounding sections of overhead lines and increasing the resiliency of transmission structures and hardware in higher risk exposed areas. BCAs will be developed and submitted with these proposals

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information as 406 Hazard Mitigation proposals are developed.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated for Circuit 36400 from Dos Bocas HP to Ponce TC during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Substations - Llorens Torres MC 1106 - Equipment Repair & Replacement

169058

2/2/2021

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	
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	169058
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Llorens Torres Substation	1106	18.44647, -66.04438	n/a

2.2. Facilities Description

Llorens Torres No. 1106 Substation includes a control house, metalclad switchgear, transformers, structures, cables, surge arresters, and other related components in a fenced yard.

Section 3. Scope of Work

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

The SOW will include replacement of the metalclad switchgear, feeder cables & conduits and corresponding foundations, grounding, and other related components as necessary. This equipment was not damaged by the disaster but needs to be replaced to restore the functionality of the substation.

The final SOW (plans and specifications) will be completed by 7/15/2021 and construction will be completed by 12/15/2021.

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 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 If yes, describe how incorporated below.
Appropriate codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes If yes, describe how incorporated below.
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.1
Final Design and Engineering (Including 30%)	0.3
Construction	3.7
Total Project Estimated Cost	4.0

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

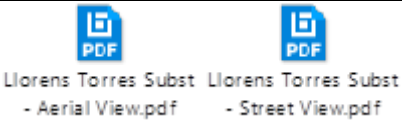
10.1. Project Detailed Cost Estimates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Substations - Centro Medico 1327/1359 Equipment Repair & Replacement

169266

2/2/2021

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	Centro Medico 1327/1359 Equipment Repair & Replacement
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	169266
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Centro Medico Substations	n/a	18.39259536350792, -66.07265717668531	n/a

2.2. Facilities Description

Centro Medico 38/4.16 kV Substations No. 1327 & 1359 include a control house, metalclad switchgear, transformers, structures, cables, surge arresters, and other related components in fenced yards.

Section 3. Scope of Work

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

The SOW will include replacement of the metalclad switchgear, control house, protection & control, feeder cables and conduits and corresponding foundations, conduits, cables, grounding, and other related components as necessary. This equipment was not damaged by the disaster but needs to be replaced to restore the functionality of the substation.

The final SOW (plans and specifications) will be completed by 7/15/2021 and construction will be completed by 3/15/2022.

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 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 If yes, describe how incorporated below.
Appropriate codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes If yes, describe how incorporated below.
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.1
Final Design and Engineering (Including 30%)	0.5
Construction	11.2
Total Project Estimated Cost	11.7

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



Centro Medico Substations.pdf



Centrol Medico Location.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Viaducto TC - MC 1100 - Equipment Repair & Replacement (Substations)

169276

2/2/2021

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	FAASt Viaducto TC - MC 1100 - Equipment Repair & Replacement (Substations)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	169276
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Viaducto Transmission Center (TC)	1100	18.44655, -66.07787	n/a

2.2. Facilities Description

Viaducto TC 38 kV includes a control house, metalclad switchgear, circuit breakers, power transformer, structures, cables, surge arresters, and other related components in a fenced yard.

Section 3. Scope of Work

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

The SOW will include replacement of the metalclad switchgear, feeder cables, conduits and corresponding foundations, grounding, and other related components as necessary. This equipment was not damaged by the disaster but needs to be replaced to restore the functionality of the substation.

The final SOW (plans and specifications) will be completed by 7/15/2021 and construction will be completed by 12/15/2021.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 If yes, describe how incorporated below.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes If yes, describe how incorporated below.
Applicable industry standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.1
Final Design and Engineering (Including 30%)	0.3
Construction	3.7
Total Project Estimated Cost	4.0

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

Viaducto TC - Aerial View-2.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Cambalache Power Plant – Flood Protection Barrier (Generation)

169340

2/2/2021

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	FAASt Cambalache Power Plant – Flood Protection Barrier (Generation)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number *(formerly Project Worksheet)*	169340
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Cambalache Power Plant		18.4700840, -66.6983951	

2.2. Facilities Description

The Cambalache Power Plant, engineered from 1993 to 1995, and constructed from 1996 to 1997, provides the island grid of Puerto Rico with 240 MW of flexible gas turbine power. Due to Hurricane Maria, this site has suffered damage to many components including the flood protection barrier.

Section 3. Scope of Work

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

The flood protection barrier at the Cambalache Power Plant was severely damaged, losing structural integrity, by erosion and sediment accumulation by Hurricane Maria. This site is located within PREPA's Municipality of Arecibo, in the Northern coast of Puerto Rico.

The overall goal of this project is to repair and upgrade the current flood protection barrier, taking into consideration future potential weather events and hazards.

The final SOW (plans and specifications) will be completed by December 2021 and construction will be completed by December 2022.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
Appropriate codes and standards will be identified and incorporated into the final SOW and plans and specifications.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Appropriate industry standards will be identified and incorporated into the final SOW and plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design to 30%	$0.25
Final Design and Engineering (includes 30%)	$0.61
Construction	$6.59
Total Project Estimated Cost	$7.20

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide detailed cost estimates for each 406 Hazard Mitigation proposal for this project.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



Cambalache - SOW.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Substations - Tapia GIS Rebuilt - Equipment Repair & Replacement

169495

2/2/2021

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	Tapia GIS Rebuilt - Equipment Repair & Replacement
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	169495
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Tapia Substation	1102	18.44690762324036, -66.05269399429783	n/a

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

2.2. Facilities Description

Tapia 38/4.16.2 kV substation is currently located in a floodplain and it will be rebuilt on-site. Hurricane Maria wind forces and flood currents caused damaged to the electrical components inside the control house enclosure and at the yard including washed out insulating gravel, portions of the fence, poles, and lighting fixtures.

This facility includes a power transformer, metal-clad switchgear, control house, circuit breakers, structures, cables, conduits and other related components.

Section 3. Scope of Work

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

To engineer and rebuild the existing substation facility above the flood plane and on existing site using elevated platforms. This work includes the conversion of the 38 kV and 4.16 kV gas-insulated switchgear equipment, protection & control panels, and other components into one modular prefabricated building. The relocation of transmission lines 6700 and No. 1102 substation feeders' entrances will also be required.

The final SOW (plans and specifications) will be completed by 12/15/2021 and construction will be completed by 12/15/2022.

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 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 If yes, describe how incorporated below.
Appropriate codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes If yes, describe how incorporated below.
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.2
Final Design and Engineering (Including 30%)	01.1
Construction	21.9
Total Project Estimated Cost	23.0

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



Tapia Substation Aerial View.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Substations – Bayamon TC – MC-BKRS-Y1

169500

2/2/2021

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	Bayamon TC – MC-BKRS-Y1
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	169500
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Bayamon Transmission Center	1711	18.398562526552183, -66.1405995513187	

2.2. Facilities Description

Bayamon TC is a 230/115/13.2 kV transmission center that includes a control house, circuit breakers, transformers, equipment structures, cables, surge arresters, and other related components in a fenced yard.

Section 3. Scope of Work

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

The SOW will include repair of the control house, replacement of two 230 kV circuit breakers and corresponding protection and controls, one metalclad switchgear, foundations, conduits, cables, grounding, and other related components as necessary. Not all facilities were damaged by the disaster; however, additional equipment repairs are needed to restore the functionality of the TC.

The final SOW (plans and specifications) will be completed by 7/15/2021 and construction will be completed by 12/15/2021.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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.
Appropriate codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	**Amount ($M)**
Architectural & Engineering to Design (30%)	0.1
Final Design and Engineering (Including 30%)	0.4
Construction	5.3
Total Project Estimated Cost	5.7

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

Bayamon TC - Aerial View.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Substations - Ceiba Baja TRF 7012

169503

2/2/2021

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	Ceiba Baja TRF 7012
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formely Project Worksheet)*	169503
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Ceiba Baja Substation	n/a	18.453069905331088, -67.08966531779784	n/a

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

2.2. Facilities Description

The Ceiba Baja Substation includes a control house, breakers, trasnformers, structures, cables, surge arresters, and other related components in a fenced yard.

Section 3. Scope of Work

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

The SOW will include replacement of the 38/4.16 kV power transformer, fuses, corresponding foundations, oil containment, conduits, cables, grounding, and other related components as necessary. This equipment was not damaged by the disaster, but needs to be replaced to restore the functionality of the substation.

The final SOW (plans and specifications) will be completed by 7/15/2021 and construction will be completed by 3/15/2022.

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, Improvement or Alternate) *If improvement, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
Appropriate codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.4
Final Design and Engineering (Including 30%)	0.5
Construction	2.2
Total Project Estimated Cost	2.7

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Esimtates

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

Ceiba Baja Substation 7012 - Aerial View.pdf

Ceiba Baja Substation 7012 - Street View.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Buildings - Arecibo Regional Office Building

169576

2/2/2021

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	Arecibo Regional Office Building
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	250080
Damaged Inventory/Asset Category	Island Wide Buildings
FEMA Project Number *(formerly Project Worksheet)*	169576
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Arecibo Regional Office Building		18.4691, -66.7167	

2.2. Facilities Description

This site includes the 3-story, concrete structured Regional Office Building originally constructed in 1999. The site and building were flooded with approximately 4' of water. The exterior and interior of the building were damaged by high winds, wind-blown debris, and wind-driven rain. The objective of the project is to repair and/or replace the damaged equipment, utilities, and finishes to bring the entire Office Building into proper working order.

Section 3. Scope of Work

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

Repair and/or replace water and wind damage to site items (fencing, gates, lighting), exterior shell of the buildings (roof, façade, openings), mechanical, electrical and plumbing equipment (HVAC, lighting), and finishes (paint, ceiling, flooring). The design and construction will also bring the facilities to the current building codes.

The site will require the replacement of asphalt and concrete paving, pavement striping/painting, fencing and gates, and lighting poles with fixtures.

The building scope of work will include but is not limited to the following:

- Repair or replacement of membrane roofing and associated flashing and counterflashing
- Repair of exterior walls – Painting of concrete walls, replacement of metal wall panels, patching of plaster finish
- Repair or replacement of exterior doors and windows – Aluminum storefront or hollow metal
- Repair or replacement of exterior signage
- Repalcement of HVAC equipment
- Cleaning, repair, or replacement of interior flooring and wall base – Non-slip floor paint, vinyl composition tile, terrazzo, wood wall base, vinyl wall base
- Repair or replacement of interior walls – replace metal studs, replace gypsum board sheathing, wood paneling, paint
- Replacement of interior doors and windows – Wood and aluminum frames, aluminum doors, wood doors
- Replacement of acoustical ceiling system – Ceiling tiles and suspended grid
- Replacement of intereior lighting
- Replacement of electric elevator

The final SOW (plans and specifications) will be completed by 05/01/2021 and construction will be completed by 02/01/2022.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
Appropriate codes and standards will be identified and incorporated into the plans and specification for this project >

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design	$0.054
Final Design and Engineering	$0.18
Construction	$1.62
Total Project Estimated Cost	$1.80

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA will develop and propose 406 Hazard Mitigation features for this project.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated for each building during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Buildings - Arecibo Electric Service Center

169798

2/1/2021

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	Arecibo Electric Service Center
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	250080
Damaged Inventory/Asset Category	Island Wide buildings
FEMA Project Number *(formerly Project Worksheet)*	169798
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Arecibo Electric Service Center		18.4721, -66.7318	

2.2. Facilities Description

The Arecibo Electric Service Center (ESC) was originally built in 1970. The facility includes the following buildings and site amenities:

- Concrete Buildings:
  - 10,000 SF administration building
  - 1200 SF dispatch building
  - 7200 SF crew tool/equipment buildings/crew locker room
  - 6500 SF material warehouse with loading dock
  - 3500 SF warehouse/mechanical shop
- Metal Pre-Engineered Buildings
  - 2500 SF transformer building with Gantry Crane
  - 2700 SF mechanical building
  - 5200 SF material warehouse
  - 8200 SF mechanical shop with truck lifts and maintenance pits
- Parking Lot
  - 1 acre of asphalt car parking
  - 2 acres of asphalt truck parking
  - 1.5 acres of Pole and Material Storage yard with pole racks and material stands
  - 0.5 acres of recycling yard for material recycling and disposal bin storage
- Helipad
  - 5000 SF Concrete FAA Certified Helicopter landing pad
- Ancillary Facilities
  - Guard Shack
  - 6’ Perimeter Fence with 3 strand barb wire with security gates
  - Security Camera System
  - Yard Lights

Section 3. Scope of Work

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

The site experienced 7-8’ of water across the entire 8 acres of the site. The water covered the site and the surrounding flood zone for multiple days which limited the operations that could be based out of the Service Center. Service Centers are essential staging areas after a major event, as they contain the material and equipment to quickly mobilize crews for repairs. With the Arecibo site located in a large flood zone, it limited the ability for crews to stage and prepare to commence repairs with the critical supplies located at the flooded yard.

This site did not have a Damage Assessment report so the scope of of work was extrapolated

and is assumed to include repair and/or replacement of water and wind damage to exterior shell of the buildings (roof, façade, openings), mechanical, electrical, and plumbing equipment (HVAC, lighting, storm drainage), and finishes (paint, ceiling, flooring) of all buildings. The design and construction will also bring the facilities to the current building codes.

The final SOW (plans and specifications) will be completed by 05/01/2021 and construction will be completed by 02/01/2022.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
Appropriate codes and standards will be identified and incorporated into the plans and specifications for this project

4.2. Industry Standards

Yes/No. **If yes, describe how incorporated below.**
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
30% Design and Engineering	$0.07
Total Design and Engineering	$0.22
Construction	$2.10
Total Project Estimated Cost	$2.32

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA will develop and propose 406 Hazard Mitigation for the ESC buildings and site. They will include the relocation of the 8 acre Service Center to a site within the Arecibo Region outside of the current FEMA Flood Zones. The new facilities will meet the current codes and standards.

The Service Center is critical to typical operations and essential to staging during disaster events. The necessary repairs required to maintain operational functionality at the current location will be completed concurrently to the Hazard Mitigation program developed for the new facility. A complete replacement of the Service Center outside the flood zone will take approximately 36 months to develop and complete.

PREPA will develop and submit a 406 Hazard Mitigation proposal during the initial engineering and design phase.

6.2. 406 Mitigation Opportunity Cost Estimate

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
30% Design and Engineering	$0.53
Total Design and Engineering	$1.77
Land Acquisition	$2.0
Construction	$20.92
Total Project Estimated Cost	$24.69

Section 7. EHP Requirements

EHP considerations will be identified and evaluated for each building during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Buildings - Aguadilla Electric Service Center

169804

2/1/2021

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	Aguadilla Electric Service Center
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	250080
Damaged Inventory/Asset Category	Island Wide Buildings
FEMA Project Number *(formerly Project Worksheet)*	169804
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Aguadilla Electric Service Center		18.4048, -67.154	

2.2. Facilities Description

The Aguadilla Electric Service Center (ESC) is a complex originally constructed in 1962. The overall ESC site is approximately 19,476.52 m^2 and includes the Administrative Building, Mechanical Shop, Sanitary and Conference Facilities, Brigade Storage, General Warehouse, Transformers Warehouse, Control House, Services Dispatch Building, Services Dispatch Guardhouse, and Generator Shed.

There are buildings with cast-in-place concrete walls, concrete masonry unit walls, and concrete roof decks or steel framed walls and roof with metal wall and roof panels. All buildings are built on a concrete slab-on-grade.

The site has asphalt or concrete paving with fencing to separate various areas.

Section 3. Scope of Work

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

The site was flooded with approximately 4' of water and mud. In addition, the exterior and interior of the buildings were damaged by high winds, wind-blown debris, and wind-driven rain. The objective of the project is to repair and/or replace the damaged structures, utilities, and finishes to bring the entire Electric Service Center into proper working order. A flood study will be performed to determine if additional hazard mitigation will be required to avoid future damage from storms.

The site will require the replacement of asphalt and concrete paving, pavement striping/painting, fencing and gates, and lighting poles with fixtures.

The individual buildings will require some or all of but is not limited to the following work:

- Repair or replacement of roofing and associated flashing and counterflashing – Membrane, metal roof panels, or translucent acrylic roof panels
- Repair of exterior walls – Painting of concrete walls, replacement of metal wall panels, patching of plaster finish
- Repair or replacement of exterior doors and windows – Aluminum storefront or hollow metal
- Repair or replacement of exterior security grilles
- Repair or replacement of exterior signage
- Repalcement of rooftop condensing units
- Cleaning, repair, or replacement of interior flooring and wall base – Non-slip floor paint, vinyl composition tile, terrazzo, wood wall base, vinyl wall base

- Repair or replacement of interior walls – replace metal studs, replace gypsum board sheathing, wood paneling, paint
- Replacement of interior doors and windows – Wood and aluminum frames, aluminum doors, wood doors
- Replacement of acoustical ceiling system – Ceiling tiles and suspended grid
- Replacement of intereior lighting
- Replacement of kitchenette base cabinets
- Evaluation of existing electrical system due to flooding

The finalized SOW (plans and specifications) will be completed by 05/01/2021 and the construction work will be completed by 02/01/2022.

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

<Description of the improvement changes or rationale for alternate project here>

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
Appropriate Codes & Standards will be identified and included in the plans and specifications.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Appropriate industry standards will be identified and incorporated in the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
30% Design and Engineering	$0.087
Total Design and Engineering	$0.29
Construction	$3.21
Total Project Estimated Cost	$3.50

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA will develop and propose 406 Hazard Mitigation features for these buildings to protect them from future disasters.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will include cost information and BCAs to document 406 Hazard Mitigation proposals.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated for each building during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Substations – Costa Sur SP TC – Equipment Repair and Replacement

169896

2/1/2021

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 SP TC
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	169896
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Costa Sur Power Plant - Transmission Center	n/a	18.000592322893027, -66.75320312558209	n/a

2.2. Facilities Description

Costa Sur SP TC is a generation plant and transmission center that includes a control house, breakers, transformers, structures, cables, surge arresters, and other related components in a fenced yard.

Section 3. Scope of Work

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

The SOW will include repair of the control house, replacement of three 115kv and four 230 kV circuit breakers and corresponding protection & controls, foundations, conduits, cables, grounding, and other related components as necessary. This equipment was not damaged by the disaster but needs to be repaired to restore the functionality of the TC.

The final SOW (plans and specifications) will be completed by 7/15/2021 and construction will be completed by 12/15/2021.

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 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 If yes, describe how incorporated below.
Appropriate codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes If yes, describe how incorporated below.
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.1
Final Design and Engineering (Including 30%)	0.3
Construction	3.3
Total Project Estimated Cost	3.6

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



Costa Sur Power Plant Location Map.pc

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Caridad – XFMR MC 1714 (Substation)

171118

2/9/2021

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 Lead 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	FAASt Caridad - XFMR MC 1714 (Substation)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	171118
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Caridad Substation	1714	18.39836, -66.14126	

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

2.2. Facilities Description

Caridad is a 38/4.16kV substation located inside Bayamón Transmission Center. The facility includes a distribution switchgear, a transformer, structures, switches and other electrical components and elements. The switchgear, transformer, and other related components were damaged by Hurricane Maria. The metal-clad switchgear enclosure structure leaked water and caused failure to the circuit breakers and to the transformer. The objective is to replace these components to PREPA & industry standards, improve system resiliency, and to mitigate any safety hazards due to equipment age or environmental concerns.

Section 3. Scope of Work

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

Replace the existing 4.16 kV, five (5) feeders, metal-clad switchgear, and the main power transformer. Design and install footings/foundations for new equipment. Replace jumpers, conduits, and manholes as required. Replace feeder cables and conduits to the next pole, manhole, or structure as required. Ground equipment to main ground grid. Clean, level and add gravel in all disturbed areas.

The final SOW (plans and specifications) will be completed by 12/31/2021 and construction will be completed by 12/31/2022. Dates will be finalized upon preparation of detailed project schedules.

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

Please see the scope of work description for the improved project information.

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 If yes, describe how incorporated below.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes If yes, describe how incorporated below.
Applicable industry standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.15
Final Design and Engineering (Including 30%)	0.35
Construction	5.15
Total Project Estimated Cost	5.50

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures





10.4. Other: (Please Describe)

(Electronic copies of images presented in Section 10.3)

caridad - side view.pdf

caridad - aerial view.pdf

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Substations - Cataño – Rebuilt 1801

174422

3/5/2021

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 Lead 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	Cataño – Rebuilt 1801
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	174422
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Cataño Substation	1801 & Sectionalizer	18.423513, -66.140299	n/a

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

2.2. Facilities Description

The Cataño substation and sectionalizer sustained damage during prior hurricanes, which also caused flooding of the control building. The following repairs will be implemented to modernize and harden the Cataño substation:

1. Repair associated distribution feeder circuits to meet the latest PREPA and industry codes and standards.
2. Improve reliability and resiliency of the grid and mitigate potential flood concerns.
3. Replace all existing 38 kV circuit breakers, one (1) 13.2 kV power distribution enclosure, and one (1) 38/13.2 kV step down auto-transformer.
4. Expand one (1) 38 kV bus bay to accommodate two (2) new transmission lines positions.
5. Add one (1) new drop in a prefabricated 13.2 kV control enclosure, which will include the protection and controls and 38kV and 13.2 kV remote conforming to new IEC 61850 standards.
6. Reroute the entrance of existing 38 kV sub transmission lines to connect to the two (2) new 38 kV bus bays and raise equipment above flood level.

Electrical facilities consist of:

7. One (1) 12/22 MVA, 38/13.2 kV step down transformer.
8. An ABB Power Distribution Substation (PDS) with five (5) 1200 Amp. circuit breakers and (1) 2000 Amp. Main circuit breaker protected with electromechanical and IED (intelligent electronic device) relays.
9. 38 kV, 1200 Amp. oil circuit breakers (OCB), OCB 6260, OCB 8260, OCB 9560, OCB 9660.
10. Gas Circuit Breakers (GCB), GCB 9760 (2000 Amp) and GCB 0010 (1200 Amp).
11. 38 kV hot dipped galvanized lattice sectionalizer structure with air circuit breakers, potential transformer, current transformer, lightning arrester, insulators, copper bus bar and hardware.
12. Control house with protection and control relays, communication equipment, RTU and SCADA, and battery banks installed. There is also a bathroom within the control house.
13. Concrete driveway for substation equipment maintenance.
14. All within a 22,500 sq. ft. yard enclosed by a concrete and chain link fence.

The following 38 kV power lines converge in the site:

15. Line 6200 connects to Caribbean Petroleum.
16. Line 8200 connects to Amelia Sectionalizer and San Juan Steam Plant.
17. Line 9500 connects to Palo Seco Sectionalizer.
18. Line 9600 connects to Bayamon Transmission Center.

19. Line 9700 connects to Bay View Sectionalizer.

Section 3. Scope of Work

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

Grid Modernization Project – Modernize the Cataño substation and associated distribution feeders:

1. Replace the existing six (6) 38kv circuit breakers, switches, and structures.
2. Add one (1) new 38 kV bay with two (2) new 38 kV circuit breakers to accommodate two (2) new transmission lines.
3. Replace one (1) 13.2 kV power distribution substation with new 13.2 kV arc resistant switchgear.
4. Replace one (1) 38/13.2 kV step down auto-transformer.
5. Replace one (1) existing control building with a prefabricated drop in control enclosure.
6. Upgrade the controls and protective relays within the substation per IEC 61850 standards.
7. Upgrade protection at the two (2) remote ends of the 38 kV sub transmission lines that feed into Cataño.
8. Modify the 38 kV sub transmission lines entering the Cataño substation to match up with the new 38 kV bays.
9. Remove existing equipment.
10. Install new foundations.
11. Install one (1) new ground conductor.
12. Install new crushed rock.
13. Implement distribution automation on the distribution feeders. Distribution will provide funding.
14. Rebuild/harden distribution feeders. Distribution will provide funding.
15. Modernize the IT/Telecom system and SCADA.
16. Implement flood mitigation recommendations to raise the equipment, eliminating flood issues.

The final SOW (plans and specifications) will be completed by 12/31/2021 and construction will be completed by 2/28/2023.

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

Please see the scope of work description for the improved project information.

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 If yes, describe how incorporated below.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes If yes, describe how incorporated below.
Applicable industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimate

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.3
Final Design and Engineering (including 30%)	1
Construction	10
Total Project Estimated Cost	11.3

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

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

FAASt Palo Seco SP to Catano Sect Line-9500 (Transmission)

176913

3/26/2021

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	FAASt Palo Seco SP to Catano Sect Line-9500 (Transmission)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formerly Project Worksheet)*	176913
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 3.4 circuit miles of overhead transmission line from Palo Seco SP to Catano Sect. Line 9500 is part of the Near-Term Group #2 - 22-Transmission Existing (38 kV)" project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Palo Seco SP to Catano Sect	9500	18.454540, -66.148880	18.423343, -66.139902

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

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Line 9500 starts at Palo Seco SP substation and runs south approximately 3.4 miles to Catano Sect substation.

Most of the construction along this line segment consists of wood monopole guyed structures with some interspersed self-supporting steel and concrete monopoles.

Section 3. Scope of Work

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

The scope of work for Line 9500 will consist of the repair and replacement of damaged elements of the overhead portion of the line. Both disaster-damaged and non-damaged facilities, which are functionally interdependent, will be designed and constructed to meet current consensus-based codes.

In certain circumstances, transmission structures may need to be replaced to meet applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will be used to define the scope of restoration and upgrades to meet industry standards. Field surveys and geotechnical investigations may also be performed to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: Replacing insulators with polymer type; repairing, replacing, or adding guy wires; repairing or replacing anchors, structure connections, structure foundations, or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring communications associated with the transmission line; replacing conductor spans when broken with splices, bird cages, pitting, burns, kinks, or stretched conductors; repairing or adding vibration and/or drag dampers or armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is necessary to maintain a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also dictate a need for soil boring or testing to evaluate suitability for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

The final SOW (plans and specifications) will be completed by 06/15/2021and construction will be completed by 07/01/2022.

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

See scope description above for details regarding improvement changes or rationale for alternate projects.

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.11
Final Design and Engineering (Including 30%)	0.37
Construction	6.34
Total Project Estimated Cost	6.71

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

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

Section 7. EHP Requirements

EHP considerations will be identified and evaluated for during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Garzas 1 HP to Garzas 2 HP - Line 1100 (Transmission)

176954

3/26/2021

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	FAASt Garzas 1 HP to Garzas 2 HP - Line 1100 (Transmission)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formerly Project Worksheet)*	176954
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facility listed below is part of the 1.7 circuit miles of overhead transmission line for Line 1100 from Garzas 1 HP to Garzas 2 HP. Line 1100 is part of the Near-Term Group #2: 22-Transmission Existing (38kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Garzas 1 HP to Garzas 2 HP	1100	18.094212, -66.734619	18.073391, -66.730303

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

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Line 1100 is a 1.7-mile 38 kV PREPA transmission line connecting Hydro Generation Plants Garzas 1 and Garzas 2. This line experienced hurricane-related disaster damage after hurricanes Irma and Maria. PREPA performed temporary emergency repairs on the hurricane-related disaster-damaged structures for system restoration purposes. This line is out of service and it is necessary to allow power generated at the Garzas 2 Hydro power facility to the grid.

Section 3. Scope of Work

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

The scope of work for Line 1100 will consist of the repair and replacement of damaged elements of the overhead portion of the line. Both disaster-damaged and non-damaged facilities, which are functionally interdependent, will be designed and constructed to meet current consensus-based codes.

In certain circumstances, transmission structures may need to be replaced to meet applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will be used to define the scope of restoration and upgrades to meet industry standards. Field surveys and geotechnical investigations may also be performed to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: Replacing insulators with polymer type; repairing, replacing, or adding guy wires; repairing or replacing anchors, structure connections, structure foundations, or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring communications associated with the transmission line; replacing conductor spans when broken with splices, bird cages, pitting, burns, kinks, or stretched conductors; repairing or adding vibration and/or drag dampers or armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is necessary to maintain a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also dictate a need for soil boring or testing to evaluate suitability for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

The final SOW (plans and specifications) will be completed by 07/28/2021 and construction work will be completed by 03/08/2022.

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

See scope description above for details regarding improvement changes or rationale for alternate projects.

***Note:** If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type - Line 1100 - Ponce TC to Jobos TC	**Amount ($M)**
Architectural & Engineering to Design (30%)	0.06
Final Design and Engineering (Including 30%)	0.20
Construction	3.38
Total Project Estimated Cost	3.58

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

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

Section 7. EHP Requirements

EHP considerations will be identified and evaluated for during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

1100_Garzas1HP_Garzas2HP_Overview.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt San Juan SP to Catano Sect Line-8200 (Transmission)

176971

3/26/2021

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	FAASt San Juan SP to Catano Sect Line-8200 (Transmission)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formerly Project Worksheet)*	176971
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the four (4) circuit miles of overhead transmission line from San Juan SP to Catano Sect and to multiple taps. Line 8200 is part of the Near-Term Group #2 - 22-Transmission Existing (38 kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
San Juan SP to Pole (Marginal Carr 165)	8200	18.427055, -66.104744	18.424504, -66.111004
Pole (Marginal Carr 165) to Amelia Sect	8200	18.424504, -66.111004	18.432217, -66.114784
Pole (Marginal Carr 165) to Catano Sect	8200	18.424504, -66.111004	18.423346, -66.139893

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

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Line 8200 starts at the San Juan SP and runs northwest approximately 1.15 miles to a three-way dead-end steel self-supported monopole located on Marginal Carr 165. One side goes northwest towards Amelia Sect approximately 0.56 miles and the other side runs west towards Catano Sect approximately 2.24 miles to complete the four (4) circuit mile section.

Most of the construction along this line segment consists of concrete and steel monopole guyed structures with some interspersed self-supporting steel and concrete monopoles.

Section 3. Scope of Work

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

The scope of work for Line 8200 will consist of the repair and replacement of damaged elements of the overhead portion of the line. Both disaster-damaged and non-damaged facilities, which are functionally interdependent, will be designed and constructed to meet current consensus-based codes.

In certain circumstances, transmission structures may need to be replaced to meet applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will be used to define the scope of restoration and upgrades to meet industry standards. Field surveys and geotechnical investigations may also be performed to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: Replacing insulators with polymer type; repairing, replacing, or adding guy wires; repairing or replacing

anchors, structure connections, structure foundations, or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring communications associated with the transmission line; replacing conductor spans when broken with splices, bird cages, pitting, burns, kinks, or stretched conductors; repairing or adding vibration and/or drag dampers or armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is necessary to maintain a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also dictate a need for soil boring or testing to evaluate suitability for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

The final SOW (plans and specifications) will be completed by 06/15/2021 and construction will be completed by 08/11/2022.

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

See scope description above for details regarding improvement changes or rationale for alternate projects.

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
Applicable industry standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.13
Final Design and Engineering (Including 30%)	0.44
Construction	7.63
Total Project Estimated Cost	8.07

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

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

Section 7. EHP Requirements

EHP considerations will be identified and evaluated for during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Guaraguao TC to Comerio TC Line-4100 (Transmission)

177134

3/26/2021

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	FAASt Guaraguao TC to Comerio TC Line-4100 (Transmission)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formerly Project Worksheet)*	177134
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 12.8 circuit miles of overhead transmission line from Guaraguao TC to Comerio TC. Line 4100 is part of the Near-Term Group #2 - 22-Transmission Existing (38 kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Guaraguao TC to Comerio TC	4100	18.378165, -66.143790	18.198257, -66.209503

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

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Line 4100 starts at the Guaraguao TC substation and runs south approximately 12.8 miles to the Comerio TC substation. Half of this line segment runs parallel to Rio de la Plata between Bayamon and Naranjito.

Most of the construction along this line segment consists of wood monopole guyed structures with some interspersed self-supporting steel and concrete monopoles.

Section 3. Scope of Work

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

The scope of work for Line 4100 will consist of the repair and replacement of damaged elements of the overhead portion of the line. Both disaster-damaged and non-damaged facilities, which are functionally interdependent, will be designed and constructed to meet current consensus-based codes.

In certain circumstances, transmission structures may need to be replaced to meet applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will be used to define the scope of restoration and upgrades to meet industry standards. Field surveys and geotechnical investigations may also be performed to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: Replacing insulators with polymer type; repairing, replacing, or adding guy wires; repairing or replacing anchors, structure connections, structure foundations, or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring communications associated with the transmission line; replacing conductor spans when broken with splices, bird cages, pitting, burns, kinks, or stretched conductors; repairing or adding vibration and/or drag dampers or armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is necessary to maintain a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also dictate a need for soil boring or testing to evaluate suitability for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

The final SOW (plans and specifications) will be completed by 09/01/2021 and construction will be completed by 11/15/2022.

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

See scope description above for details regarding improvement changes or rationale for alternate projects.

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.42
Final Design and Engineering (Including 30%)	1.39
Construction	23.89
Total Project Estimated Cost	25.28

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project

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

Section 7. EHP Requirements

EHP considerations will be identified and evaluated for during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Aguas Buenas TC to Caguas TC - 39000 (Transmission)

177191

3/26/2021

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	FAASt Aguas Buenas TC to Caguas TC - 39000 (Transmission)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formerly Project Worksheet)*	177191
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 5 circuit miles of overhead transmission line for Line 39000 from Aguas Buenas TC to Caguas TC. This line is a Near-Term priority identified by PREPA in its 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Aguas Buenas TC to Hacienda San Jose	39000	18.247087, -66.106018	18.249739, -66.073006
Hacienda San Jose to Caguas TC	39000	18.249739, -66.073006	18.239317, -66.036804

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

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Line 39000 consists of self-supported steel poles, guyed steel poles, and aluminum lattice structures. This line primarily traverses forested areas between Aguas Buenas TC substation and Caguas TC substation.

Section 3. Scope of Work

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

The scope of work for Lines 39000 from Aguas Buenas TC to Caguas TC will consist of the repair and replacement of damaged elements of the overhead portions of these lines. Both disaster-damaged and non-damaged facilities, which are functionally interdependent, will be designed and constructed to meet current consensus-based codes.

In certain circumstances, transmission structures may need to be replaced to meet applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will be used to define the scope of restoration and upgrades to meet industry standards. Field surveys and geotechnical investigations may also be performed to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: Replacing insulators with polymer type; repairing, replacing, or adding guy wires; repairing or replacing anchors, structure connections, structure foundations, or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring communications associated with the transmission line; replacing conductor spans when broken with splices, bird cages, pitting, burns, kinks, or stretched conductors; repairing or adding vibration and/or drag dampers or armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is necessary to maintain a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also dictate a need for soil boring or testing to evaluate suitability for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

Line 39000 (Aguas Buenas TC to Caguas TC): The final SOW (plans and specifications) will be completed by 10/4/2021 and construction work will be completed by 8/30/2022.

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

See scope description above for details regarding improvement changes or rationale for alternate projects.

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type – Line 39000 – Aguas Buenas TC to Caguas TC	Amount ($M)
Architectural & Engineering to Design (30%)	0.16
Final Design and Engineering (Including 30%)	0.53
Construction	9.17
Total Project Estimated Cost	9.70

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

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

Section 7. EHP Requirements

EHP considerations will be identified and evaluated for during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

39000_AguasBuenas_ Caguas_Overview.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Substations – Taft – MC 1105

178258

3/31/2021

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 Lead 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	Taft – MC 1105
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	178258
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Taft Substation	1105	18.45091, -66.06074	n/a

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

2.2. Facilities Description

Taft is a 38/4.16kV substation. The 4.16-kV metal-clad switchgear enclosure structure is leaking and causing failures indicating end of life has been reached. Because spare parts are hard to find, the objective is to replace this switchgear to PREPA and industry standards, improve system resiliency, and to mitigate safety hazards due to equipment age and environmental concerns.

Section 3. Scope of Work

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

Replace existing metal-clad switchgear enclosure with a new 15 kV metal-clad switchgear. Design and install footings/foundations for new 15-kV metal-clad switchgear. Replace jumpers, conduits, and manholes as required. Replace feeder cables and conduits up to next pole, manhole or structure as required. Install ground equipment grounding conductor to main ground grid. Clean, level and add gravel in all disturbed areas. Finished grade is to be restored and surface gravel rock replenished in all disturbed areas.

These components were not damaged but need to be replaced to restore the system functionality and to mitigate safety hazards.

Target Completion Dates:

Final SOW (plans and specifications)	8/30/2021
Construction	6/30/2022

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, Improvement or Alternate) *If improvement, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
Appropriate codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimate

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.1
Final Design and Engineering (Including 30%)	0.3
Construction	3.7
Total Project Estimated Cost	4.1

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation documentation consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Estimate

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

Taft Aerial View.pdf

Taft Street View.pdf

10.4. Other: (Please Describe)

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Substations – Aguirre TC - BRKS

178503

4/7/2021

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 Lead 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 TC - BRKS
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	178503
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Aguirre Transmission Center (TC)	n/a	17.95254, -66.23121	n/a

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

2.2. Facilities Description

Aguirre TC is a 230/115 kV transmission center serving the Aguirre Electric Power Plant. Both the 230 & 115 kV switchyards consist of five diameters in a breaker-and-a-half bus configuration. Various circuit breakers at these two switchyards are beyond their useful service life, are non-standard oil-based design, and obsolete. Spare parts are difficult to locate and the ability for these breakers to meet current required electrical and short circuit ratings is unknown. Retaining the oil-filled breakers further poses environmental concerns. The objective is to replace the end-of-life, oil-filled breakers with new SF6 gas circuit breakers to conform this facility to PREPA and industry standards, improve system resiliency, and to mitigate safety hazards due to equipment age and environmental concerns.

Section 3. Scope of Work

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

Remove and replace (9) 230 kV and (11) 115 kV oil-circuit breakers with new SF6 gas circuit breakers. Replace foundations, conduits, and control cables up to the control house. Replace high-voltage jumper cables to corresponding disconnect switches and grounding connections to the main ground grid. Restore finished grade and replenish surface gravel rock in disturbed areas.

These components were not damaged but need to be replaced to restore system functionality and to mitigate safety hazards.

Target Completion Dates:

Final SOW (plans and specifications)	8/30/2021
Construction	12/30/2022

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, Improvement or Alternate) *If improvement, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
Appropriate codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimate

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.2
Final Design and Engineering (Including 30%)	0.7
Construction	11.3
Total Project Estimated Cost	12.2

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation documentation consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Estimate

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

Aguirre TC - Aerial View- Switchyards.pdf

Aguirre TC - Aerial View.pdf

10.4. Other: (Please Describe)

One Line

Aguirre System One Line.pdf

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Substations – Cachete – MC 1526

178577

4/7/2021

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 Lead 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	Cachete – MC 1526
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	178577
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Cachete Substation - 1	1526	18.39808, -66.09903	n/a

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

2.2. Facilities Description

Cachete is a 38/4.16kV substation. The 4.16-kV metal-clad switchgear enclosure is leaking and causing failures indicating end of life has been reached. Because spare parts are hard to find, the objective is to replace this switchgear to PREPA and industry standards, improve system resiliency, and to mitigate safety hazards due to equipment age and environmental concerns.

Section 3. Scope of Work

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

Replace existing metal-clad switchgear enclosure with a new 15 kV metal-clad switchgear. Design and install footings/foundations for new 15-kV metal-clad switchgear. Replace jumpers, conduits, and manholes as required. Replace feeder cables and conduits up to next pole, manhole or structure as required. Install equipment grounding conductor to main ground grid. Clean, level and add gravel in all disturbed areas. Finished grade is to be restored and surface gravel rock replenished in all disturbed areas.

These components were not damaged but need to be replaced to restore system functionality and to mitigate any safety hazards.

Target Completion Dates:

Final SOW (plans and specifications)	8/30/2021
Construction	6/30/2022

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, Improvement or Alternate) *If improvement, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
Appropriate codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimate

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.1
Final Design and Engineering (Including 30%)	0.3
Construction	3.7
Total Project Estimated Cost	4.0

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation documentation consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Estimate

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

Cachete 1526 - Aerial View.pdf

Cachete 1526 - Street View.pdf

10.4. Other: (Please Describe)

One Line

Cachete 1526 - System One Line.pdf

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Caonillas 1 Hydro System (Dams/Hydro)

178722

4/7/2021

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	FAASt Caonillas 1 Hydro System (Dams/Hydro)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	298984
Damaged Inventory/Asset Category	Island Wide Dams and Hydroelectric Power Plants
FEMA Project Number *(formerly Project Worksheet)*	178722
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Caonillas Hydropower Plant No. 1		18.296832, -66.643203	-
Caonillas Dam		18.276140, -66.657054	-
Caonillas Reservoir		18.265583, -66.654858	-

2.2. Facilities Description

Part of the Arecibo River Basin is the Caonillas Reservoir, Caonillas Dam, and the Caonillas 1 Hydro-electric Power Plant. These facilities, constructed in 1948, are located in the north-central part of the island. Water discharges from the Caonillas Dam via an overflow spillway, low level flood gate and through a 9 ft. diameter buried penstock to the hydro power facility. This water from the penstock drives two turbine-generators, producing up to 9MW of power each. The Caonillas Reservoir also serves as an equalizing reservoir for Lake Dos Bocas, which is one of the main reservoirs that provides domestic drinking water for the people of Puerto Rico.

Section 3. Scope of Work

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

Repair and restoration of the building structure including:

1. Removal and replacement of damaged building structure components including windows, ceiling and floor tiles, and stairway railing.
2. Removal of paint and repair of concrete and plaster surfaces. Application of paint on repaired surfaces.
3. Replacement of ribbed steel galvalume roof and siding sheeting that was damaged or stripped from the building in the storm and repair/replacement of associated steel framing, as required.
4. Due to the age of the facility, testing for lead and asbestos will be required prior to demolition of existing building materials. Proper removal and disposal of hazardous materials, if discovered, would be required.

Repair or replacement of building Mechanical systems:

1. Evaluation and repair of the Fire Alarm system and PA loudspeaker system as necessary. Certification will be required for all Fire systems.
2. Evaluation of the damaged air condition units will be required to determine required repair or replacement, as necessary.

Repair or replacement of electrical systems:

1. An engineering assessment, including site inspection, and design alternatives will be completed to determine conceptual repair and refine construction costs for the

balance of plant electrical system repairs. The Design Engineer will make an evaluation of the most appropriate conceptual repair design, considering equipment condition, available technology, reliability and durability, constructability, and construction costs. Final scope determination will be made following preliminary engineering studies.

2. Repair and/or replacement of electrical systems will require proper disposal of hazardous materials (potentially: oils, chemicals, etc.) contained within the equipment.

Repair of site:

1. Evaluate damage to the station sump pump system and provide a design to replace the existing system with two new pumps and related controls and discharge piping. Discharge piping and valve configuration will utilize the existing discharge point and will provide a new alternate discharge point through the powerhouse wall.
2. Provide means of accessing, inspecting and restoring the water passages of the Caonillas Hydro Power Plant, including dewatering the tailrace with a cofferdam, removing sediment and debris, inspecting for erosion and other structural damage to the powerhouse structures, draft tubes, tailrace, and discharge channel in anticipation of restarting plant operations.
3. Provide labor and equipment necessary to restore the stream channel downstream of the Caonillas Hydro Power Plant's discharge point to restore flow of the released water towards the Dos Bocas Reservoir, thus improving the hydraulic efficiency of the hydro generator once plant operations resume.
4. Remove and dispose of original chain-link fence, including posts, barbed wire, concrete footings, and cross pieces. Install new 8 ft chain-link fence including posts, concrete footings cross pieces 3 strand barbed wire, and supports.
5. Restoration of and stabilization of eroded areas around the structures to original design basis as required for global stability.

Repair/restore generation systems and equipment:

1. An engineering assessment to be conducted, including site inspection, and design alternatives will be completed to determine conceptual repair and refine construction costs for generation unit repairs. The Design Engineer will make an evaluation of the most appropriate conceptual repair design, considering equipment condition, available technology, reliability and durability, constructability, and construction costs. Final scope determination will be made following preliminary engineering studies.
2. Proper disposal of hazardous materials (potentially: oils, paint, etc.) associated with equipment being repaired or replaced will be required.

Dredging of Caonillas Reservoir:

A preliminary engineering study will be completed, including a bathymetric survey to determine quantity of sediment removal from the reservoir necessary to support required water storage for the Caonillas 1 Hydroelectric facility. Sediment sampling will be performed to determine if sediment is contaminated and provide recommendations for the disposal of the material. Evaluation of site disposal options will be completed to determine acceptable sediment spoil and drying locations for material dredged from the

reservoir. Final scope and refined cost estimate determination will be made following the preliminary engineering studies.

Repair of Caonillas Dam:

The scope of work for the Caonillas Dam will consist of the repair and replacement of damaged elements of the structure, foundation, equipment, and slopes to provide the required consistent, safe, and reliable water source of water to the Caonillas 1 Hydroelectric facility. A preliminary engineering study will include field inspection of the different dam components and develop design alternatives and recommendations. Final scope and refined cost estimate determination will be made following preliminary engineering studies.

The repair or replacement of the dam structure and components may include:

1. Damaged equipment in the dam gallery which includes but is not limited to pumps, piping, hydraulic power units, gauges, and motors.
2. Removal of sedimentation build up with in the dam gallery, dam foundation drains, and sluiceway intake.
3. Restoration of and stabilization of eroded areas around the structures to original design basis as required for global stability.
4. Other repairs necessary to safely operate the dam per FEMA and USACE guidelines.

The above work will restore facilities to pre-disaster function. All work will be performed in accordance with locally adopted codes/standards and or FEMA-approved industry standards. If replacements are required for repairs to generation systems and equipment, replacement design will be updated to comply with current codes and standards and Prudent Utility Practice.

The final SOW (plans and specifications) will be completed by 12/01/2023 and construction will be completed by 12/01/2026.

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

In addition to the above “Plan for Repair”, PREPA intends to repair and or replace other systems and components not damaged by the disaster in parallel with the above work that are required to support the system(s) & facility function or improve its resiliency.

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes If yes, describe how incorporated below.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a Class 5 level, which is between -50% and +100% of the final project cost. This estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Caonillas 1 Hydropower Plant No. 1 Amount ($M)
Architectural & Engineering to Design (30%)	$1.12
Final Design and Engineering (Including 30%)	$2.21
Construction	$25.81
Total Project Estimated Cost	$28.02

Cost Type	Caonillas Dam Amount ($M)
Architectural & Engineering to Design (30%)	$0.03
Final Design and Engineering (Including 30%)	$0.07
Construction	$0.44
Total Project Estimated Cost	$0.51

Cost Type	Caonillas Reservoir Amount ($M)
Architectural & Engineering to Design (30%)	$3.84
Final Design and Engineering (Including 30%)	$9.60
Construction	$41.74
Total Project Estimated Cost	$51.34

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of the hydroelectric facility, dam structure, and reservoir. They may include, but are not limited to:

- Site modifications to mitigate future site erosions/flooding during heavy rains,
- Shutters or storm resilient windows,
- Building drainage system modifications,
- Anchoring systems for exterior equipment,
- Generation equipment improvements to update and restore operation of the power plant to meet current codes and standards.
- Dam structure and equipment modifications to mitigate future damage due to flooding and heavy rain.

- Modification in the upstream reaches of the reservoir to promote sediment deposits prior to moving downstream towards dam and intake structures.
- Restore erosion protection features (gabions) along the shoreline of the Caonillas River downstream of the powerhouse.

All submitted proposals will clearly demonstrate cost effectiveness through one of the criteria detailed in FEMA's Public Assistance Policy and Procedure Guide.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost for proposed 406 Hazard Mitigation Proposals during the A&E phase of these projects along with documentation demonstrating cost effectiveness.

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

Section 7. EHP Requirements

EHP considerations will be identified and evaluated for each system during the 30% design phase and each will be submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

See Appendix 10.3 for the below documents:

10.3.a. Caonillas System Schematic
10.3.b. Caonillas 1 Hydroelectric Aerial
10.3.c. Caonillas Reservoir and Dam



Dams and Hydro - Caonillas 1 Hydro Sys

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Manatí TC - BRKS 230 kV (Substation)

179558

4/14/2021

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 Lead 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	FAASt Manatí TC - BRKS 230 kV
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	179558
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Manatí TC		18.43369, -66.45609	

Note: The GPS coordinates listed are the most accurate available at this time.

2.2. Facilities Description

Manatí TC is a 230/115/38-kV switchyard with multiple circuit breakers, transformers, disconnect switches, control house, a distribution substation, and other electrical components and related equipment. Various existing 230-kV oil-circuit breakers are now beyond useful recommended service life, are obsolete, or unreliable. Spare parts are difficult to locate and the ability for these circuit breakers to meet the required electrical and short circuit ratings are unknown. Retaining oil-filled circuit breakers further poses environmental concerns and mitigation is necessary. The objective is to replace these oil-filled circuit breakers with new SF6 gas circuit breakers to conform these facilities to PREPA and industry standards, improve system resiliency, and to mitigate safety hazards due to equipment age or environmental concerns.

Section 3. Scope of Work

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

Scope

Remove and replace the oil-circuit breakers listed below with new 230 kV SF6 circuit breakers. This work includes replacement of foundations, conduit, breaker relaying, and control cables to support installation of the new breaker. High-voltage jumpers to adjacent disconnect switches and grounding connections to the main ground grid will also be replaced as required. Finished grade will be restored and surface gravel rock will be replenished in all disturbed areas.

List of circuit breakers to be replaced:

No. 230-00-40-07 (50214)
No. 230-00-40-06 (0090T)
No. 230-00-40-05 (0092T)

The final SOW (plans and specifications) will be completed by 12/31/2021 and construction will be completed by 12/31/2022. Dates will be finalized upon preparation of detailed project schedules.

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

See scope description above for details regarding improvement changes or rationale for alternate projects.

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 If yes, describe how incorporated below.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes If yes, describe how incorporated below.
Applicable industry standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.03
Final Design and Engineering (Including 30%)	0.10
Construction	1.70
Total Project Estimated Cost	1.80

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

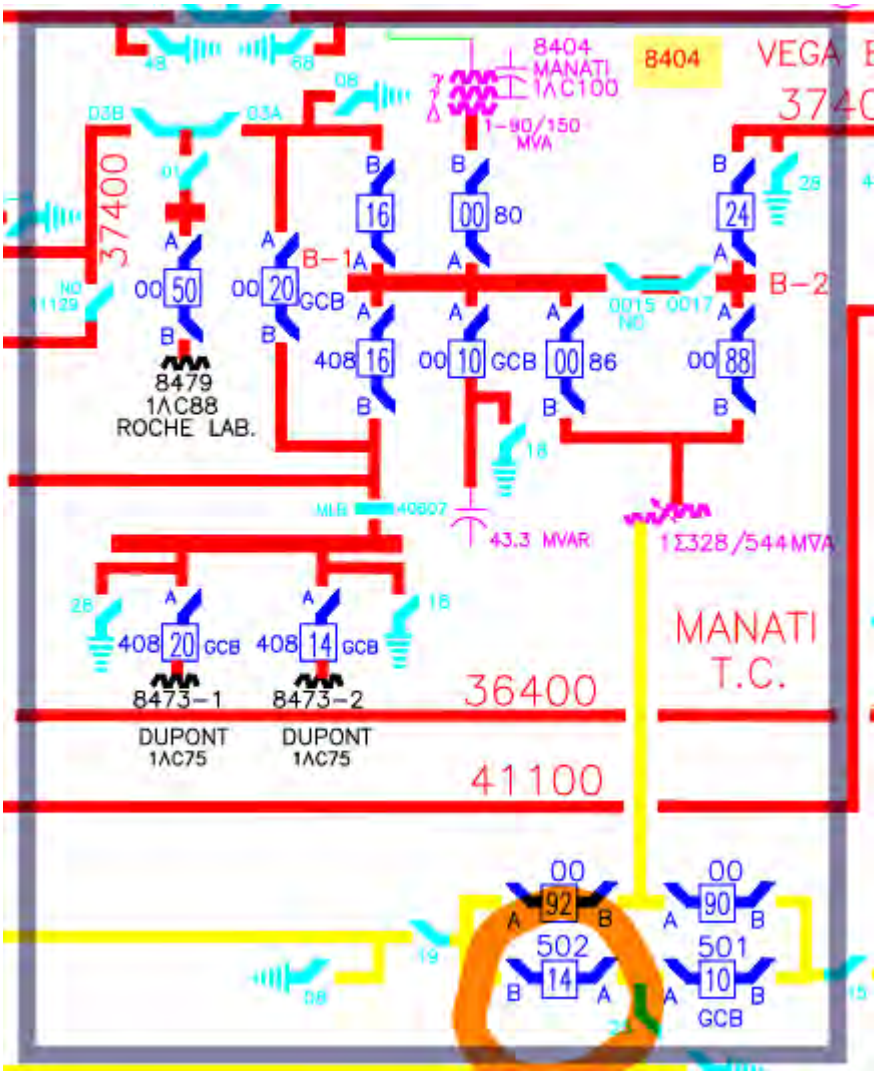
<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

System One Line



Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Substations – Las Lomas – XFMR 1525

179988

4/21/2021

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 Lead 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	Las Lomas – XFMR 1525
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	223189
Damaged Inventory/Asset Category	Island Wide Substations
FEMA Project Number *(formerly Project Worksheet)*	179988
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Las Lomas Substation	1525	18.39000, -66.09444	n/a

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

2.2. Facilities Description

Las Lomas is a 38/4.16kV substation. The power transformer has reached its end of serviceable life and will be decommissioned. The objective is to replace and to conform this critical asset to PREPA and industry standards, improve system resiliency, and to mitigate safety hazards due to equipment age and environmental concerns.

Section 3. Scope of Work

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

Specify, procure, and replace the 38/4.16 kV power transformer. Design and re-build transformer foundation with oil containment (SPCC). Install new high voltage leads, protective relays, conduit, and cabling. Install new transformer ground conductor to main ground grid. Restore finished grade and add surface gravel rock in disturbed areas.

These components were not damaged but need to be replaced to restore system functionality and to mitigate safety hazards.

Target Completion Dates:

Final SOW (plans and specifications)	8/30/2021
Construction	12/30/2022

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, Improvement or Alternate) *If improvement, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.*
Restores to Codes/Standards

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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 **If yes, describe how incorporated below.**
Appropriate codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes **If yes, describe how incorporated below.**
Appropriate industry standards will be identified and incorporated into the plans and specifications for this project.

Section 5. Cost Estimate

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Amount ($M)
Architectural & Engineering to Design (30%)	0.05
Final Design and Engineering (Including 30%)	0.15
Construction	2.25
Total Project Estimated Cost	2.40

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation documentation consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. Environmental and Historic Planning (EHP) Requirements

EHP considerations will be identified and evaluated during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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 Estimate

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

Las Lomas - Aerial View.pdf

Las Lomas - Street View.pdf

10.4. Other: (Please Describe)

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Ponce TC to Jobos TC - 100 (Transmission)
FAASt Ponce TC to Jobos TC - 200 (Transmission)
180052

4/21/2021

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	FAASt Ponce TC to Jobos TC - 100 (Transmission) FAASt Ponce TC to Jobos TC - 200 (Transmission)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formerly Project Worksheet)*	180052
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 43.5 circuit miles of overhead transmission line for Line 100 from Ponce TC to Jobos TC and 35.8 circuit miles of overhead transmission line for Line 200 from Ponce TC to Jobos TC. Both lines are part of the Near-Term Group #2: 22-Transmission Existing (38kV) project in the PREPA 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Ponce TC to Aguilita	100/200	18.000851, -66.612411	18.001135, -66.539055
Aguilita to Santa Isabel Sect.	100/200	18.001135, -66.539055	17.964182, -66.40007
Santa Isabel Sect to Salinas Urbano	100/200	17.964182, -66.40007	17.975433, -66.293198
Salinas Urbano to Salinas Rural	100/200	17.975433, -66.293198	17.967518, -66.257095
Salinas Rural to Jobos TC	100/200	17.967518, -66.257095	17.961508, -66.139465

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

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Line 100/200 are two 38-kV transmission lines that runs parallel from each other from Ponce TC to Jobos TC mostly on double-circuit structures. Both lines consist of direct embedded concrete poles, direct embedded steel poles, and direct embedded wood structures. These lines have relatively good access as they travel through a lot of urban residential areas near the southern coast of Puerto Rico. Many poles are slightly out of plumb and are leaning to the north (away from the coast). Many structures on this segment support telecommunication and distribution wires.

Section 3. Scope of Work

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

The scopes of work for Lines 100 and 200 will consist of the repair and replacement of damaged elements of the overhead portions of these lines. Both disaster-damaged and non-damaged facilities, which are functionally interdependent, will be designed and constructed to meet current consensus-based codes.

In certain circumstances, transmission structures may need to be replaced to meet applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will be used to define the

scope of restoration and upgrades to meet industry standards. Field surveys and geotechnical investigations may also be performed to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: Replacing insulators with polymer type; repairing, replacing, or adding guy wires; repairing or replacing anchors, structure connections, structure foundations, or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring communications associated with the transmission line; replacing conductor spans when broken with splices, bird cages, pitting, burns, kinks, or stretched conductors; repairing or adding vibration and/or drag dampers or armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is necessary to maintain a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also dictate a need for soil boring or testing to evaluate suitability for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

Line 100 (Ponce TC to Jobos TC): The final SOW (plans and specifications) will be completed by 08/11/2021 and construction work will be completed by 12/21/2023.

Line 200 (Ponce TC to Jobos TC): The final SOW (plans and specifications) will be completed by 08/24/2021 and construction work will be completed by 07/24/2023.

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

See scope description above for details regarding improvement changes or rationale for alternate projects.

***Note:** If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type - Line 100 - Ponce TC to Jobos TC	**Amount ($M)**
Architectural & Engineering to Design (30%)	1.42
Final Design and Engineering (Including 30%)	4.72
Construction	81.14
Total Project Estimated Cost	85.86

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

Cost Type - Line 200 - Ponce TC to Jobos TC	Amount ($M)
Architectural & Engineering to Design (30%)	1.17
Final Design and Engineering (Including 30%)	3.89
Construction	66.80
Total Project Estimated Cost	70.69

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

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

Section 7. EHP Requirements

EHP considerations will be identified and evaluated for during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>

100_PonceTC_JobosT C_Overview.pdf

200_PonceTC_JobosT C_Overview.pdf

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

FAASt Canovanas TC to Sabana Llana TC - 36800 (Transmission)
FAASt Canovanas TC to Palmer-Fajardo TC - 36800 (Transmission)

180326

4/21/2021

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	FAASt Canovanas TC to Sabana Llana TC - 36800 (Transmission) FAASt Canovanas TC to Palmer-Fajardo TC - 36800 (Transmission)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	206253
Damaged Inventory/Asset Category	Island Wide Transmission Line System
FEMA Project Number *(formerly Project Worksheet)*	180326
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

The facilities listed below are part of the 8 circuit miles of overhead transmission line for Line 36800 from Canovanas TC to Sabana Llana TC and 23 circuit miles of overhead transmission line for Line 36800 from Canovanas TC to Palmer Fajardo TC. These two lines Near-Term priorities identified by PREPA in its 10-Year Infrastructure Plan.

Name	Number	GPS Start	GPS End
Canovanas TC to Sabana Llana TC	36800	18.374962, -65.909523	18.394779, -65.980698
Canovanas TC to Palmer-Fajardo TC	36800	18.374962, -65.909523	18.363953, -65.770912

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

2.2. Facilities Description

The specific facilities included in this proposed project are structures (including their foundations), framing and insulators, load break switches (manual and automated), conductors, guy wires, anchoring, and grounding assemblies.

Canovanas TC to Sabana Llana TC - This line segment primarily consists of steel self-support poles, steel self-support towers, steel single pole structures, and steel Spanish structures. This line traverses a variety of terrain and includes structures in urban/suburban environments and forested areas. Some structures were inaccessible due to challenging terrain and overgrown vegetation. Vegetation management is needed along portions of the line.

Canovanas TC to Palmer-Fajardo TC - This line segment primarily consists of concrete single poles, steel self-support poles, steel single and two poles, steel Spanish structures, wood three poles, and two pole structures. This line traverses a variety of terrain and includes structures in urban/suburban environments and forested areas. Vegetation management is needed along portions of the line.

Section 3. Scope of Work

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

The scopes of work for Line 36800 from Canovanas TC to Sabana Llana TC and Canovanas TC to Palmer-Fajardo TC will consist of the repair and replacement of damaged elements of the overhead portions of these lines. Both disaster-damaged and non-damaged facilities, which are functionally interdependent, will be designed and constructed to meet current consensus-based codes.

In certain circumstances, transmission structures may need to be replaced to meet applicable codes and standards. The transmission lines will undergo modeling and analysis to validate design criteria, including electrical clearances and mechanical loading requirements. The engineering team will perform field inspection of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed inspection will be used to define the scope of restoration and upgrades to meet industry standards. Field surveys and geotechnical investigations may also be performed to assist in the scoping efforts.

The repair or replacement of a transmission structure and components may include: Replacing insulators with polymer type; repairing, replacing, or adding guy wires; repairing or replacing anchors, structure connections, structure foundations, or portions of the foundations; restoring the integral ground of the structure and overhead ground conductor; restoring communications associated with the transmission line; replacing conductor spans when broken with splices, bird cages, pitting, burns, kinks, or stretched conductors; repairing or adding vibration and/or drag dampers or armor rods; and other repairs necessary to conform with codes and standards based upon engineering design specifications and requirements.

Vegetation management is necessary to maintain a reliable transmission system. During construction, it may be necessary to remove vegetation that is encroaching on existing transmission facilities or where new facilities will be installed. The scope of vegetation removal will be defined during the 30% engineering phase. The 30% engineering phase may also dictate a need for soil boring or testing to evaluate suitability for installation of structures/poles or underground cable systems. When possible, facilities will remain along their existing route and within the existing right-of-way.

Line 36800 (Canovanas TC to Sabana Llana TC): The final SOW (plans and specifications) will be completed by 11/30/2021 and construction work will be completed by 11/23/2022.

Line 36800 (Canovanas TC to Palmer-Fajardo TC): The final SOW (plans and specifications) will be completed by 1/7/2022 and construction work will be completed by 12/11/2023

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

See scope description above for details regarding improvement changes or rationale for alternate projects.

***Note:** If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
Applicable codes and standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type - Line 36800 - Canovanas TC to Sabana Llana TC	**Amount ($M)**
Architectural & Engineering to Design (30%)	0.25
Final Design and Engineering (Including 30%)	0.83
Construction	14.22
Total Project Estimated Cost	15.05

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

Cost Type - Line 36800 - Canovanas TC to Palmer-Fajardo TC	Amount ($M)
Architectural & Engineering to Design (30%)	0.91
Final Design and Engineering (Including 30%)	3.04
Construction	52.22
Total Project Estimated Cost	55.26

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

During the 30% design phase, PREPA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. These proposals will be documented with BCAs.

6.2. 406 Mitigation Opportunity Cost Estimate

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

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

Section 7. EHP Requirements

EHP considerations will be identified and evaluated for during the 30% design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA prior to construction activities.

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

<Insert project detailed cost estimates from A&E here (if available)>

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures

<Insert a map of sufficient scale identifying the project area and any additional location maps and site pictures (if available)>



36800_Canovanas_PalmerFajardo_36800_Ca

10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Rio Blanco Hydroelectric System (Dams/Hydro)

180723

4/21/2021

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	Rio Blanco System Hydroelectric System (Dams/Hydro)
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	298984 (06-05-245497-00002, 06-05-298984-00003, 06-02-298978-00020, 06-01-298989-00034)
Damaged Inventory/Asset Category	Island Wide Dams and Hydroelectric Power Plants
FEMA Project Number *(formerly Project Worksheet)*	180723
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Location
Rio Blanco Water Conveyance System		18.26300, -65.79158
Sabana Dam		18.26676, -65.79439
Icacos Dam		18.26158, -65.78436
Rio Blanco Penstock		18.25312, -65.78384
Rio Blanco Hydroelectric Power Plant		18.24348, -65.78517

2.2. Facilities Description

The Rio Blanco Hydroelectric System, commissioned in 1929, supports an electric micro-grid in El Yunque National Park in eastern Puerto Rico. The Hydroelectric plant receives water via a concrete pipeline (Water Conveyance) that gravity feeds water from Rio Cubuy, Sabana, and Mucara to the Rio Icacos Reservoir, which supplies water to the hydroelectric power plant. Approximately 200 linear feet of the water conveyance pipeline and supporting structures was destroyed during Hurricane Maria at a location where the pipeline crossed a small gulch. Channelized water and debris from the intense rainfall runoff are suspected to have caused severe erosion and collapse of an aluminum bridge that supported the pipeline across the gulch. As a result, the hydroelectric power plant downstream of the broken pipeline is unable to receive water from the above reservoirs. Repairing the gravity pipeline and aerial crossing is necessary to restore connection between the diversion dams and the Rio Blanco Hydroelectric system.

The Rio Blanco Power Plant operates with a capacity of 6.2MW and supplies power to the southeast part of the island.

Section 3. Scope of Work

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

The proposed work includes assessment of existing conditions and design of necessary pipe repairs for the water conveyance pipeline and powerhouse penstock within the Rio Blanco System to restore full service to the power plant and ensure long-term operations and a reliable water supply. All work will be designed in accordance with locally adopted codes and standards and/or FEMA-approved industry standards. The associated scope includes the following:

- **Water Conveyance System** – Complete an Engineering Assessment, including a site visit, to determine existing internal and external conditions of the missing section of the existing 30-inch concrete pipe and structural supports. Based on the engineering assessment, the extent of repairs required will be outlined, and conceptual design options for repair

developed. Preliminary engineering studies will evaluate repair options and recommend the most appropriate repair for each damaged segment. Selection of the preferred design solution will consider site conditions, accessibility, reliability, durability, constructability, and construction costs.

- **Sabana Dam** – The scope of work for the Sabana Dam will consist of inspection and recommendation of repairs to the existing sluice gate and inlet structure. Repair recommendations will result in reliable operation of the sluice gate structure to maintain water conveyance downstream.
- **Icacos Dam** – The scope of work for the Icacos Dam will consist of inspection and recommendation for repair of an existing inlet control valve building. Design will address the sluice valve operator within the control building to provide improved reliability of the sluice gate operation.
- **Powerhouse Penstock** – Complete an Engineering Assessment, including a site visit, to determine existing internal and external conditions of the 32-inch steel pipe and supports from the conveyance outlet portal to the hydroelectric plant. Based on the engineering assessment, the extent of repairs required will be outlined, and design options will be developed. Preliminary engineering will evaluate and recommend the most appropriate repair based on site conditions, accessibility, reliability, durability, constructability, and construction costs.
- **Hydroelectric Power Plant**– Complete an Engineering Assessment, including a site visit, of the Hydroelectric Power Plant to assess the extent of damage to turbine, generator and associated electrical equipment and from being out-of-service for an extended period (5± years) due to the break in the water conveyance system upstream. The work shall include recommended repairs to restore to hydroelectric components to full operations status, including system start-up. Preliminary engineering will evaluate and recommend the most appropriate repairs based on site conditions, accessibility, reliability, durability, constructability, and construction costs.
- **Preliminary Engineering** - Perform up to a 30% design necessary to further develop chosen repair methods and determine preliminary opinions of probable construction cost. As part of this 30% design, the EHP scoping document and checklist must be completed.

Development of the final design package, including detailed plans, specifications and permits will be completed on or before 4/21/2021 and construction completed on or before 9/1/2029.

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 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

Yes

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. If yes, describe how incorporated below.
Yes, applicable codes and standards will be identified and incorporated into the plans and specifications.

4.2. Industry Standards

Yes. If yes, describe how incorporated below.
Yes, applicable industry standards will be identified and incorporated into the plans and specifications.

Section 5. Cost Estimates

Cost estimates to complete the work have been generated at a class 5 level, which is between -50% and +100% of the final project cost. The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. For the engineering estimates provided, the 30% Engineering estimate is a subset of the Engineering Total, which is a subset of the Total Cost.

Cost Type	Rio Blanco Water Conveyance System, Sabana Dam, Icacos Dam, and Penstock Amount ($M)
Architectural & Engineering to Design (30%)	$2.74
Final Design and Engineering (including 30%)	$6.86
Construction	$37.28
Total Project Estimated Cost	$44.14

Cost Type	Rio Blanco Hydroelectric Power Plant Amount ($M)
Architectural & Engineering to Design (30%)	$0.26
Final Design and Engineering (including 30%)	$0.53
Construction	$3.45
Total Project Estimated Cost	$3.98

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

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

PREPA intends to develop 406 Hazard Mitigation proposals for the repair of the Water System Conveyance System's 30-inch diameter gravity pipeline. These improvements may include, but are not limited to:

- Aerial crossing structure modifications to mitigate future damage due to flooding and erosion from heavy rainfall. Similar damage had occurred prior to Hurricane Maria, and alternatives should be considered that will provide improved reliability in similar future events.
- Other pipe modifications to mitigate future damage due to flooding and heavy rain.
- Increasing pipe capacity to handle 100-year flooding event

In addition, PREPA intends to develop 406 Hazard Mitigation proposals for the Rio Blanco Hydroelectric Power Plant. They may include, but are not limited to:

- Equipment automation and controls redundancy to prevent down time and operation interruption when site access is blocked due to severe weather events and poor road conditions.
- Building structure modification to mitigate future water damage and prevent water penetration into the building, likely to follow FEMA's Wind Retrofit Memo
- Equipment upgrades to mitigate future water and wind damage due to natural disaster conditions. "Upstream" mitigation actions away from exact damage locations will also be considered.

BCAs will be provided during the preliminary engineering phase to document the benefits of these proposals.

PREPA will provide cost information and BCAs for 406 Hazard Mitigation proposals submitted for this project.

Section 7. EHP Requirements

EHP considerations will be identified and evaluated during the preliminary engineering (30% design) phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents approved by FEMA prior to construction activities

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

PREPA Project Sponsor Comments

Comments
<Insert any comments here>

_____	_____
PREPA Project Sponsor's Printed Name	Date
_____	_____
Title	Signature

Section 8. Attachments

8.1. Project Detailed Cost Estimates

<Insert project detailed cost estimates from A&E here (if available)>

8.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

8.3. Location Maps and Site Pictures



Water - Rio Blanco System Connection ar

8.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

Government of Puerto Rico

Puerto Rico Electric Power Authority

DR-4339-PR Public Assistance

PROJECT SCOPE OF WORK WITH COST ESTIMATES

Submittal to COR3 and FEMA

Mobile Generation Units Purchases (Generation)

180692

4/21/2021

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	Mobile Generation Units Purchase at Palo Seco
PREPA Project Number	

Federal Information

(provided by FEMA)

Damage Number	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants (Note: this project was included in the FCE under Damage Number 206253, Island Wide Transmission System
FEMA Project Number *(formerly Project Worksheet)*	180692
Amendment Number	

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

<Insert title here>

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

<Insert title here>

Section 2. Facilities

2.1. Facilities List

Name	Number	GPS Start	GPS End
Palo Seco Power Plant		18.45469, -66.14791	

2.2. Facilities Description

The Palo Seco Power Plant is located in the Municipality of Toa Baja and consists of six simple cycle gas turbines (126MW) and four steam turbines (602MW) with a total capacity of 728MW. After Hurricane Maria, three PWPS Mobile Gas Turbines “mega gens” (model FT-8 MobilePac) were acquired to provide emergency generation.

The purchase, delivery, installation, testing, and commissioning costs for the three mobile generators were included in the Fixed Cost Estimate (FCE) under the Transmission inventory. The following text is from the document titled *PREPA Consolidated 428 Grant FEMA DR-4339-PR, Grants Manager Project 136271, Damage Inventory 206253, PREPA Transmission Assets, Attachment 4, Section 4.1, Other Eligible Costs (pages 8-9 of 394)*.

“In addition to the infrastructure restoration and BBA costs, FEMA included $58,093,016.00 in this asset category to fund the purchase of mobile generation units (Mega Gens). These “Mega Gens” will be used as a temporary power source to bypass the needs of certain transmission lines and/or generation power plants. This is required to maintain electrical service to customers while eligible work is performed on the transmission lines, generation plants, and other PREPA infrastructure. PREPA provided the purchase contract for these “Mega Gens” (executed on May 20, 2019) which indicates that PREPA acquired these units following their standard procurement procedures at a total cost of $58,093,016.00. To establish the length of time that these units will be engaged in eligible work, PREPA created a construction schedule based on dollar volume of work it can contract in a year. PREPA’s maximum construction pending capacity is approximately $800 million dollars per year. FEMA has approved $10.68 billion dollars in the PREPA 428 capped grant. At the $800 million per year burn rate, PREPA will be executing eligible work for 13.35 years. PREPA expects to use mobile Mega Gens to support the generation, transmission, and distribution of electricity during repairs to the electrical system. Given the work and time required to repair the electrical system, PREPA expects to purchase these mobile units. FEMA has conducted a purchase to lease cost analysis and found that purchased is reasonable. When the purchased equipment is no longer needed to support repairs to the electrical system, the Subrecipient must report to FEMA the fair market value of each item of purchased equipment. If the fair market value of the individual pieces of equipment is $5,000 or more, FEMA will reduce the eligible funding by this amount per requirements in 2 CFR § 200.313(e)(2).”

Section 3. Scope of Work

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

As part of the work to permanently restore damages after Maria, PREPA required the use of

mobile generating units to be used as temporary power sources to bypass the needs of certain transmission lines and/or generation power plants. This was required to maintain electrical service to customers while eligible work is performed on the transmission lines, generation plants, and other PREPA infrastructure.

PREPA entered into an agreement (Contract 2019-P00112) with ARG Precision for the purchase and installation for these Mobile Generation Units “Mega Gens” (executed on May 20, 2019) which indicates that PREPA acquired these units following their standard procurement procedures at a total cost of $58,093,016.00.

The Mega Gens were purchased and installed per the contract. PREPA issued the Substantial Completion Certificate on November 27, 2019 with Final Completion delayed due to the 6.8 earthquake on January 7, 2020 and COVID-19 Restrictions per Amendment F of the contract.

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

See scope of work above.

Note: *If 30% 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 30% A&E work.*

3.3. 30% Architectural and Engineering (A&E)

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

No

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

No **If yes, describe how incorporated below.**
The Mega Gens were purchased and installed in accordance with typical industry standards for these combustion turbine generators. They have been installed, commissioned, and operated according to the purchase order contract.

4.2. Industry Standards

No If yes, describe how incorporated below.
The Mega Gens were purchased and installed in accordance with typical industry standards for theses combustion turbine generators. They have been installed, commissioned, and operated according to the purchase order contract.

Section 5. Cost Estimates

This project is complete and incurred costs are provided in the documentation attached.

Cost Type	**Amount ($M)**
Purchase and Installation (Contract 2019-P00112)	59.81
Total Project Estimated Cost	59.81

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

This project does not qualify for any additional 406 Mitigation Opportunity Scope of Work.

6.2. 406 Mitigation Opportunity Cost Estimate

This project does not qualify for any additional 406 Mitigation Opportunity Scope of Work.

Section 7. EHP Requirements

EHP Scoping Document and Checklist have been completed and are provided as attachments.

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

See the attached Purchase Order, Invoices and Payment documents for the cost incurred to complete this project.

10.2. Engineering Studies and Designs

<Insert engineering studies and designs (if available)>

10.3. Location Maps and Site Pictures


Palo Seco Plant
Mobile Generation Units Purchase
Latitude: 18.232089
Longitude: -65.667432
Diesel Tanks
158' 4"
100' 3 3/4"
Mobile Unit Area
Google Earth
400 ft
N




2



10.4. Other: (Please Describe)

<Insert other documents attached to this submittal>

EHP Scoping Document

Mobile Generation Units Purchases

Authors: Brian Wolken

Rev Date: 3/31/2021

Introduction: 3

Project Scope: 3

Engineering Design: 3

Construction: 4

Debris Removal: 4

Water Crossings: 4

Structure age: 5

Ground disturbance: 5

Soil Stabilization: 5

Permanent source of air emissions: Generators 5

Permits and other 6

Appendix A – MAPS AND TECHNICAL DWGS 7

Appendix B – Pictures of Installation 9

Appendix C– Flood Plain / Zone Map 12

PREPA - EHP Scoping Document

Introduction:

As part of the work to permanently restore damages after Hurricane Maria, PREPA required the use of mobile generating units to be used as temporary power sources to bypass the needs of certain transmission lines and/or generation power plants.

These temporary power sources have been installed at the Palo Seco Power Plant. This application is for the already completed installation of the Mobile Generation Units (Mega Gens) at the Palo Seco Power Plant. All installation work has been completed that is being submitted in this EHP Scoping Document.

Project Scope:

Engineering Design:

Detailed scope of work with the description of the tasks and/or activities to be performed. Identify and describe:

1. The type of work being performed
    a. The purchase and installation of three (3) Mobile Generation Units that consist of zero-hour FT8 MobilePac Gas Turbine Unit. Each mobile unit will provide a generating capacity of 22.583MW, that will utilize both distillate #2 fuel (diesel) and natural gas (NG).
2. Physical address
    a. Road 165 km. 31.8
    Toa Alta, PR
3. Project coordinates
    a. 18.232089 , -65.667432
4. Aerial photo maps identifying the complete area of the project
    a. See Palo Seco Aerial Map attached.
5. Change in footprint
    a. This project is contained within the existing Palo Seco Power Plant footprint. The area was previously an already graveled switchyard area.
6. Extension of ground disturbance
    a. See Palo Seco Aerial Map attached.
7. Dimensions
    a. Area is approximately 159ft x 101ft.
8. Demolition activities
    a. No demolition or equipment removal was performed for this project.
9. New construction activities
    a. Installation of Trailer Mounted Gas Turbines. Above ground fuel piping from the existing above ground lines to the gas turbines. Concrete pads for electrical hookups and fuel valve/control stations.
10. Specify Locally Adopted Codes/Standards and/or FEMA-Approved Industry Standards
    a. Codes/standards used are listed.

        a. The Mega Gens were purchased and installed in accordance with typical industry standards for these combustion turbine generators. They have been installed, commissioned, and operated according to the purchase order contract.
    b. Description of how codes/standards are incorporated into the restoration is included.
        a. The Mega Gens were purchased and installed in accordance with typical industry standards for these combustion turbine generators. They have been installed, commissioned, and operated according to the purchase order contract.
    c. The appropriate codes/standards were applied.
        a. The Mega Gens were purchased and installed in accordance with typical industry standards for these combustion turbine generators. They have been installed, commissioned, and operated according to the purchase order contract.

Construction:

Method(s) of construction including specifications dimensions and equipment to be used

1. Provide source of fill, gravel, sand, etc. Include provider company name and address.
    a. Construction is complete. Approximately 450m^3 of gravel was placed in the area to provide a solid and flat surface for the installation of these trailer mounted generators.
2. Removal of vegetation
    a. The construction area is within an existing outdoor storage facility. The area was previously rocked.
    b. No vegetation was removed for the installation of this project.
3. Access Roads
    a. No Access Roads were required for the installation of this project.

Debris Removal:

1. Debris Removal/Staging Areas
    a. The project did not require any debris removal or staging areas.

Water Crossings:

1. Effect to waterway or body of water: Is the project in, near or likely to affect any type of waterway or body of water?
    a. This project does not affect any type of waterway or body of water.
2. Modification of a body of water or wetland: Does the project require dredging, excavation, disposal of material, adding fill material that might result in any modification of a body of water or wetland designated as "waters of the U.S." ?
    a. This project does not modify or impact any body of water or wetland.
3. Does the project alter a watercourse, water flow patterns, or a drainage way, regardless of its floodplain designation?
    a. This project does not alter a watercourse, water flow pattern or a drainage way. The existing area was level with a gravel cover and the after construction area is level with a gravel cover.
4. Flood zone: Is the project located in a flood zone, floodway or will it have a negative impact to the flood zone?
    a. See Appendix C for the flood plan map. The area for this project is outside of the flood zone.

PREPA - EHP Scoping Document

Structure age:

1. Provide the construction date of any buildings or structures within the project. Including those in close proximity to the project.
    a. There are no buildings structures within the project.
2. Provide date and information of any prior repairs, remodeling and/or rehabilitation of the property. Include current and previous use of building or structure.
    a. Not applicable.
3. If a building includes both older and newer sections, confirm which section of the building the work is being done.
    a. Not applicable.
4. Include plans, drawings, blueprints, any architectural documentation available for new construction or substantial improvements regardless of the age of the building or structure.
    a. Not applicable
5. For all buildings (regardless of the age) describe method of repair, changes in materials and include any cleaning methods (if applicable).
    a. Not applicable
6. Provide at least five color pictures of every structure or building, showing the four facades and the contextual view. Include additional pictures of architectural details. Also provide pictures of buildings (45 years old or older) on the proximities.
    a. Not applicable.
7. Provide an aerial photo map with the GPS coordinates of each structure.
    a. Not applicable.

Ground disturbance:

1. Does the project involve any ground disturbance?
    a. The previous area is a gravel outdoor storage facility. The area was approximately 159ft x 101ft. A few concrete slab foundations were installed to a depth of 2ft. Depth of original grade unknown. See the attached Palo Seco Aerial Map for the area in question.

Soil Stabilization:

1. Does the project involve any soil stabilization measures?
    a. Not applicable.

Permanent source of air emissions: Generators

1. If a generator will be installed, provide EQB (Environmental Quality Board) permit or copy of completed application.
    a. Currently these units are being operated under a No Action Assurance for Puerto Rico Power Authority for Fuel Consumption and Analysis that was issued on January 31, 2020 with an extension provided on May 18, 2020.
2. If a new concrete pad is required, provide dimensions and construction details.
    a. Multiple concrete pads were installed for tie-down, stair landings, and electrical tie-ins. Concrete pads vary from 2ft x 6ft to 8ft x 8ft with a depth of 2ft to 3ft.
3. If excavation is required to connect to facility, provide details.
    a. Not applicable.

Permits and other

1. Identify any required construction permits, include copy or completed application of permit from the PR Central Permit Office (OGPe).
    a. Construction is complete. No construction permit has been issued for this project. These units were installed through an Emergency Variance granted by DRNA in October 2019. DRNA has the construction permit application under evaluation and communications are underway. Also, the air permit application for the Palo Seco MobilePacs was submitted to DRNA in January 2020.
    b. OGPe provided certification of environmental compliance by categorical exclusion in June of 2019.
2. Identify any Municipal Permits required from the Autonomous Municipality Office, include copy of the permit of completed application.
    a. Construction is complete. No municipal permits identified.
3. Provide copy of any other required communications with any regulatory agency, federal agency, local agency and municipality about the project.
    a. Construction is complete. DRNA has the construction permit application under evaluation and communications are underway. Communications with the EPA are also in process.
4. Identify any federal permits from EPA.
    a. Communication with EPA is in process.

Appendix A – MAPS AND TECHNICAL DWGS


Palo Seco Plant
Mobile Generation Units Purchase
Latitude: 18.232089
Longitude: -65.667432
Diesel Tanks
870
158' 4"
100' 3 3/4"
Mobile Unit Area
Google Earth
© 2021 Google
N
400 ft

Appendix B – *Pictures of Installation*




PW Power Systems


2

Appendix C– *Flood Plain / Zone Map*



Source: FEMA Floodzone layer: https://bmcd-gis.maps.arcgis.com/apps/webappviewer/index.html?id=d9fb02d2eb684745af796104ac672a02

Federal Emergency Management Agency Federal
Environmental and Historic Preservation Compliance
FEMA-DR-PR-4339

Project Name: Mobile Generation Units Purchases
Project Location: Palo Seco Power Plant
Grant Manager #: **EMMIE #:**
Applicant: **Sector/Branch:**

WSB1	Requirements	YES	NO	N/A	Comments
	Location				Include this information for existing and new site acquisitions
1	Physical address	X			Road 165 km. 31.8 Toa Alta, PR
2	Project Location coordinates. Coordinates must be accurate and in decimal degrees to at least five decimal digits (100- thousandth decimal place).	X			If the project is on an area, include the coordinates necessary to define the area, including start and end.
3	Aerial photo map identifying the complete area of the project including coordinates.	X			Aerial Photo is provided
	Scope of Work				
4	Detailed scope of work with the description of the tasks and/or activities to be performed. Identify and describe - change in footprint - extension of ground disturbance - removal of vegetation - dimensions - demolition activities - new construction activities	X			Project is complete and footprint is provided on the aerial photo.
5	Method(s) of construction including specifications dimensions and equipment to be used	X			The construction is complete and was completed within the existing footprint of the power plant.
6	Maps, photographs and/or technical drawings	X			
	Debris removal/Staging Area: Does the project required debris removal/staging areas?		X		No staging area was utilized.
7	Type of debris (vegetative debris, demolition debris, household hazardous waste, sandbags, biological waste, hazardous waste, electrical component, etc.)			X	
8	Source of debris			X	
9	Location and description of staging area, include: - Physical address (at least Municipality) - Coordinates must be in decimal degrees format to at least five decimal digits - Dimension of the staging area - An aerial photo map identifying the complete footprint			X	
10	Describe the expected use of the staging area(e.g. vegetative debris, demolition debris, chemical waste, hazardous waste, equipment, electrical components, etc.). Include on the description if the staging area is new or existing/temporary or permanent.			X	Temporary emergency staging and reduction sites (TDRS's) requires EQB approval.
11	Description of any additional work to prepare the area (e.g. vegetation removal, grading, widening, demolition, etc...).			X	
12	Final disposal location site and method. Include Landfill permit number.			X	Final disposal site must be approved for the specific debris type.
	Hazardous Material: Do any activity involve the removal of hazardous material? Will the project generate or required disposal of hazardous material?		X		No Hazardous Material was removed.
13	Describe the activity and the hazardous material involved. Calculate the quantity to be generated or disposed, and include the management and disposal plan.			X	
14	If the project includes building demolition with asbestos, provide copy EQB approved plan or evidence of plan submission.			X	
15	If project includes disposal of damaged transformers or wood poles with creosote, include the management and disposal plan. Plan must include final disposition site.			X	
	Backfill: Does the project involve backfill?		X		The Project does not include Backfill
16	Provide source of fill, gravel, sand, etc. Include provider company name and address.			X	
	Remove or affect vegetation: Does the project remove or affect vegetation?				* If the project have more than one area affected, please include the information for every area.
17	Location of the area with coordinates in degree format to at least five decimal digits.	X			Only vegetation removed is weeds growing within the existing graveled area. Additional gravel was placed to allow for a clean surface.
18	Aerial photo map showing the extend of the affected area. Include dimensions.			X	
19	Specify volume of vegetation.			X	
20	Include pictures or digital images of the vegetation affected and its surroundings.			X	
	Access roads: Does the project required the use of an access road? If yes, answer the following questions. If the answer is no proceed to next section		X		No access roads were needed.
21	Location of access road include: -Coordinates must be in decimal degrees format, rounded to the nearest 100-thousandth decimal place - Dimension of access road (length, width) - An aerial photo map identifying the complete footprint - Specify if access road is new/existing and temporary/permanent			X	Include the coordinates necessary to define the area, including start and end.

22	Describe any additional work to prepare the area (e.g., vegetation/debris removal, grading, widening, excavation, work mat etc...).			X	
23	Detail how materials will be stockpiled and disposed. Specify final disposition site.			X	
	Effect to waterway or body of water: Is the project in, near or likely to affect any type of waterway or body of water?				
24	Provide information of the dimensions of the project area and the proximity (distance in meters) to the body of water. Explain the expected and possible changes to the body of water, if any.	X			Project is located along the coast. No changes are expected due to this project.
25	Provide photos and aerial photo maps of the area and the body of water that might be affected.	X			See the aerial photo
26	Provide information of the alternatives considered to eliminate or minimize impacts to the body of water.			X	
27	Provide proof of contact with USACE that shows applicant inquire and USACE response. If a permit is required, attach completed application or official permit.			X	
	Modification of a body of water or wetland: Does the project require dredging, excavation, disposal of material, adding fill material that might result in any modification of a body of water or wetland designated as "waters of the U.S." ?		X		No modification required to a body of water or wetland.
28	Provide information of the dimensions of the project area and the proximity (distance in meters) to a body of water or wetland. Explain the expected and possible changes.			X	
29	Provide photos and aerial photo maps of the project area including the body of water or wetland.			X	
30	Provide proof of contact with USACE that shows applicant inquiry and USACE response. If permit is required, attach completed application and official permit authorization should be included.			X	
31	Include detailed information of the alternatives considered to eliminate or minimize impacts to water bodies or wetlands.			x	
	Does the project alter a watercourse, water flow patterns, or a drainage way, regardless of its floodplain designation?				
32	Hydrologic/hydraulic report from a qualified engineer (submitted and approved by DNER) to demonstrate how drainage and flood flow patterns will be changed and to identify down and upstream effects.			X	
33	Provide proof of contact with USACE that shows applicant inquiry and USACE response. If permit is required, include copy of completed application or official permit.			X	
	Flood zone: Is the project located in a flood zone, floodway or will it have a negative impact to the flood zone?				
34	ABFE Map of the project area. For maps use PR Planning Board March 23, 2018 tool (hppt://cedd.pr.gov/fema/) or latest database.				
35	Include the alternatives evaluated to eliminate or minimize the impacts to the floodplain.				
	Structure age:		X		No existing structures were affected in this project.
36	Provide the construction date of any buildings or structures within the project. Including those in close proximity to the project.			X	
37	Provide date and information of any prior repairs, remodulation and/or rehabilitation of the property. Include current and previous use of building or structure.			X	
38	If a building includes both older and newer sections, confirm which section of the building the work is being done.			X	
39	Include plans, drawings, blueprints, any architectural documentation available for new construction or substantial improvements regardless of the age of the building or structure.			X	
40	For all buildings (regardless of the age) describe method of repair, changes in materials and include any cleaning methods (if applicable).			X	
41	Provide at least five color pictures of every structure or building, showing the four facades and the contextual view. Include additional pictures of architectural details. Also provide pictures of buildings (45 years old or older) on the proximities .			X	
42	Provide an aerial photo map with the GPS coordinates of each structure.			X	
	Ground disturbance: Does the project involve any ground disturbance?				If the project have more than one ground disturbing area, please include the information for every site.
43	Provide a description of the new ground disturbance by giving the dimensions (area, depth, volume, etc.) Include aerial photo map showing the extent of the disturbance with GPS coordinates	X			Concrete pads were installed to an approximate depth of 2ft - 3ft.
44	Identify utilities in a map. Indicate if any utility will be upgraded, rerouted or replaced.			X	
45	Indicate the prior/current use of the area to be impacted.				
46	Detail how materials will be stockpiled and disposed of. Specify final disposition site.			X	
	Soil Stabilization: Does the project involve any soil stabilization measures?				
47	Location with coordinates in decimal degrees format, rounded to the nearest 100-thousandth decimal place.			X	
48	Identify the total footprint of each area with aerial photo maps.			X	
49	Specify the type of soil stabilization (e.g. rip-rap, gabions, piles, etc.).			X	
50	Detail the excavation proposal.			X	
	Permanent source of air emissions: Generators				
51	If a generator will be installed, provide EQB (Environmental Quality Board) permit or copy of completed application.	X			Currently these units are being operated under a No Action Assurance for Puerto Rico Power Authority for Fuel Consumption and Analysis that was issued on January 31, 2020 with an extension provided on May 18, 2020.

52	If a new concrete pad is required, provide dimensions and construction details.	X			Multiple concrete pads were installed for tie-down, stair landings, and electrical tie-ins. Concrete pads vary from 2ft x 6ft to 8ft x 8ft with a depth of 2ft to 3ft.
53	If excavation is required to connect to facility, provide details.			X	
	Permits and other				
54	If the project required a construction permit, include copy or completed application of permit from the PR Central Permit Office (OGPe).			X	Construction is complete. DNER has the construction permit application under evaluation and communications are underway. OGPe provided certification of environmental compliance by categorical exclusion in June of 2019.
55	If the project requires a Municipal Permit from the Autonomous Municipality Office, include copy of the permit of completed application.			X	Construction is complete.No municipal permits identified.
56	Provide copy of any other communications with any regulatory agency, federal agency, local agency and municipality about the project			X	Construction is complete. DNER has the construction permit application under evaluation and communications are underway. Communications with the EPA are also in process.

NOTES

*Hazard Mitigation actions must be reviewed by EHP. Proposed actions must comply with the previously mentioned requirements .

Prepared by: Brian Wolken

Title: Generation Program Manager
Date: 3/10/2021
Contact Information: bwolken@burnsmcd.com
816-782-6001

Autoridad de Energía Eléctrica

INFORME DE EVALUACIÓN Y SELECCIÓN

Solicitud de Propuestas RFP 82695 Mobile Generation Units

INTRODUCCIÓN

El 20 de septiembre de 2017, el huracán María impactó directamente a Puerto Rico, siendo el mayor desastre natural sobre la isla en los últimos cien años. El huracán ocasionó daños en sobre un 80 por ciento de la infraestructura de transmisión y distribución de la Autoridad, dejando a toda la isla sin servicio eléctrico. El área sureste fue la primera zona geográfica que recibió el impacto del huracán y el balance de daños por reparar aún es sustancial, lo que provoca fallos frecuentes y diversos en la red. La Autoridad posee solo una unidad generadora *Frame V* disponible en el este, en la Estación de Hidro Gas de Yabucoa, que no puede suplir la demanda total de la zona, ni servir de resguardo para alimentar el lazo de transmisión del este en caso de falla del sistema eléctrico. La limitación de generación en la zona norte y este del país y la reparación de líneas de transmisión que proveen redundancia al sistema eléctrico requieren atención inmediata.

La Agencia Federal para Manejo de Emergencias (FEMA, por sus iniciales en inglés) autorizó una misión al Cuerpo de Ingenieros del Ejército de los Estados Unidos (USACE, por sus iniciales en inglés), para proveer generación en el norte y este mediante turbinas móviles. Se instalaron temporeramente dos generadores de 28 MW cada uno en la Central Palo Seco y uno de la misma capacidad en el Centro de Transmisión y Estación Hidro Gas, Yabucoa. Los términos de renta del generador de USACE instalado en Yabucoa ya concluyó y el equipo fue removido. El contrato de los dos generadores instalados en Palo Seco está próximo a concluir y la Autoridad necesita la adquisición inmediata de unidades que puedan sustituir los tres equipos rentados pues la red eléctrica aún está vulnerable y en reparación, lo que aumenta el riesgo de apagones. Comprar nuevas unidades generatrices se convertirá en una economía, pues el costo de renta de las tres unidades provistas por USACE es de unos $4.5 millones mensuales y se estimó el costo total de compra en casi $58 millones por tres unidades de similar capacidad, incluyendo equipos auxiliares e infraestructura.

EL 29 de agosto de 2018, la Junta de Gobierno de la Autoridad de Energía Eléctrica de Puerto Rico mediante la Resolución 4640, autorizó la adquisición de las tres unidades generatrices portátiles mediante el proceso competitivo de RFP, en conformidad con la Sección 15(2) (f) de la Ley Núm. 83.

PROCESO

El 5 de septiembre de 2018, la Autoridad de Energía Eléctrica inició el proceso de Solicitud de Propuestas 82695 para la adquisición de tres unidades generatrices. Se invitaron a través de la plataforma electrónica PowerAdvocate© a las compañías Siemens Energy (Siemens), Pratt & Whitney (PW) y General Electric (GE), tres manufactureros de turbinas en configuración móvil, que cuentan con los rangos de generación requeridos.

Se autorizó a los manufactureros a participar a través de un representante autorizado. Para efecto de este evento, un representante autorizado es una empresa que tiene un contrato con el fabricante para la representación exclusiva de sus equipos. Por tanto, se requirió que de interesar conceder acceso a este evento a un representante exclusivo/autorizado, el fabricante deberá solicitar acceso a este y proporcionar copia del contrato o declaración jurada donde establece la relación contractual de negocios como evidencia. A tales efectos, recibimos declaraciones juradas por parte de GE, identificando su acuerdo comercial con RG Engineering, Inc. (RG) y PW indicando su acuerdo comercial con ARG Precision, Inc. (ARG)

El 24 de septiembre de 2018, cerró dicho evento y se recibieron propuestas por parte de las siguientes compañías:

1. Siemens Energy, Inc.
2. RG Engineering, Inc.
3. ARG Precision, Corp.

Estas tres compañías fueron evaluadas de conformidad con los criterios establecidos en el RFP, los cuales se mencionan más adelante.

EVALUACIÓN Y ANÁLISIS DE LAS PROPUESTAS

Para la evaluación de las propuestas, Principal Oficial Ejecutivo, José F. Ortiz Vázquez, designó mediante memorando con fecha del 24 de septiembre de 2018, un comité evaluador (Comité) compuesto por los siguientes funcionarios:

Miguel A. Del Valle Morales
División de Ingeniería y Servicios Técnicos
Directorado de Generación

José M. Cruz Pérez
División de Ingeniería y Servicios Técnicos
Directorado de Generación

Félix A. Hernández Caban
Directorado de Asuntos Jurídicos

José A. Roque Torres
Directorado de Finanzas

Natalia Martínez Lugo
División de Suministros

Además, el Comité contó con la asesoría de María V. Mercado Rondón de la División de Protección Ambiental y Matt Lee de Filsinger Energy Partners. Las propuestas fueron

Price Proposal (60 points)

PREPA will evaluate the proposals based on the lowest all-inclusive price submitted by the proponent. Part of the evaluation may include analysis of the cost assuming some level of unit dispatch. This evaluation may or may not include incorporating the cost and performance parameters in a system dispatch model to determine PREPA's least cost alternative.

Units Pricing:

a. *Shall submit a price per unit (including all its BOP equipment and accessories)*
b. *Shall provide an installation price per unit, with all necessary equipment, materials, labor, testing, and commissioning*
c. *Shall provide price for Operation and Maintenance as required in this document*

Experience and Capacity (15 points)

Proponents shall demonstrate experience and success in fabricating, installing, testing, and commissioning mobile gas turbines. Proponents that demonstrate all or a portion of the proposed units can be operable in less than specified in Section 2.1 Schedule of Deliveries and Installation will be favored compared to those who need more time, or whose responses are vague.

Offeror's Experience:

a. *Shall submit an abbreviated history of firm*
b. *Shall provide evidence of applicable experience and performance in at least two related scope projects within the past five years, and references.*
c. *Shall provide qualifications and resumes of experienced key personnel (project manager, engineers, supervisors, etc.) of the proponent with at least ten (10) years of experience in similar projects.*
d. *Shall provide qualifications and resumes of experienced key personnel (project manager, engineers, supervisors, etc.) of the installation subcontractor (if any) with at least five (5) years of experience in similar projects.*

Schedule of Project Delivery:

a. *Shall provide a proposed project schedule based on continuous work with key and critical tasks.*

Approach and Methodology (15 points)

Proponents that outline a clear and straightforward approach to providing fast track generation projects will score higher, than those that do not. Proponents shall identify key goals and objectives, and methods for providing the facilities described herein or exceeding these goals. Proponents shall explain how they will be organized to effectively deploy

support for this project clearly identify key personnel responsible for implementing the project.

Work Plan:

a. *Shall submit a description of the proposed working plan, including working methods, logistics, list of resources (manpower and equipment), and subcontractors, if any.*

Compliance with all Applicable Federal, and Puerto Rico Regulations (10 points)

Proponents who demonstrate compliance with all applicable federal and Puerto Rico regulations. Adherence to strong ethical and integrity practices and unequivocal commitment to solid administrative practices is essential for PREPA. Understanding of federal and local requirements is essential and will be highly considered.

EVALUACIÓN TÉCNICA DE LAS PROPUESTAS

El proceso de evaluación de propuestas efectuado por el Comité, en conformidad con los criterios establecidos en la Sección 3 Selection Criteria de este RFP, requirió el análisis individual de cada propuesta para determinar el cumplimiento de los proponentes. Además, se evaluaron los requisitos para el alcance de trabajo, según indicado en la Sección 2 Scope of Services y cualificaciones de los proponentes requeridos en la Sección 4 Proponent Requirements, Inciso 4.2 Required Qualifications of Proponent. Del análisis realizado se incluye como anejos lo siguiente:

- ***Performance Proposal*** – En esta tabla se resume las capacidades de los generadores incluidos en cada propuesta. Esto incluye la capacidad de generación en mega watts (MW) utilizando diésel y gas natural, tiempo requerido para alcanzar esta capacidad y heat rate de cada modelo propuesto.

- ***Price Proposal*** – Esta tabla indica los precios de cada proponente por generador, su instalación y costos de operación y mantenimiento por los primeros cuatro años.

- ***Comparison Model*** – Se utilizó una hoja de cálculos en Microsoft Excel para comparar las propuestas en termino de *Net Present Value* (NPV), *Equivalent Uniform Annualized Cost* (EUAC) y *Levelized Cost of Energy* (LCOE). La evaluación se realizó con una proyección de 20 años, utilizando diésel como combustible y con factores de capacidad de 25% y 5.7% (500 horas). Para detalles adicionales ver documento *Comparison Model Explanation*.

- ***Price Comparison*** – Para facilitar la comparación de precios, se tabularon los resultados del Comparison Model y se convirtieron los resultados a la escala de 1 al 5, según requerido en la Sección 3.1 Scoring Criteria. Utilizamos los resultados del factor de capacidad de 5.7% porque el permiso requerido es el de fuente generatriz

de emergencia emitido por la Oficina de Gerencia de Permisos (OGPe) y la Junta de Calidad Ambiental (JCA).

- ***Scoring Table*** – Esta tabla muestra las puntaciones provista por el Comité a los proponentes con los resultados obtenidos.

Evaluación de Proponentes:

1. **RG Engineering, Inc.:** La propuesta presentada por esta compañía cumple con todos los criterios establecidos en el RFP. Proveyeron una Declaración Jurada que establece su relación contractual con GE y los autoriza a participar del evento como representante exclusivo de dicha empresa. La evaluación de su capacidad financiera la realizó el representante del Directorado de Finanzas, quien determinó que la compañía tiene la capacidad para cumplir con el financiamiento de este proyecto de acuerdo con la información provista de Camino Group, su compañía matriz. La evaluación de los representantes de Generación indicó que esta propuesta cumple con el alcance técnico requerido en este RFP.

   El precio ofrecido por el proponente por el suplido e instalación de las tres unidades fue de $60,200,100.

2. **ARG Precision, Inc.:** Esta compañía presentó una propuesta que cumple con todos los criterios incluidos en el RFP. PW suministró una declaración jurada en la que certifica su relación contractual con ARG y le autoriza a participar del evento como representante exclusivo de sus equipos. El representante del Directorado de Finanzas evaluó su capacidad financiera a base de los estados financieros de Mitsubishi Heavy Industries Group, compañía matriz de PW, provistos por ARG. Además, esta compañía suministró un compromiso de financiamiento por parte Bostonia Partners con el cual financiaría dicho proyecto en conjunto con PW. En esta se demuestra que la compañía tiene la capacidad para cumplir con el financiamiento del proyecto. La propuesta cumple con los requisitos técnicos del RFP, basado en la evaluación de los representantes del Directorado de Generación.

   El precio ofrecido por el proponente por el suplido e instalación de las tres unidades fue de $57,897,492.

3. **Siemens Energy.:** Esta propuesta cumple con todos los criterios establecidos en el RFP. Se evaluó la capacidad financiera de Siemens a base de la información provista y se determinó que posee el capital para cumplir con el financiamiento del proyecto, según evaluado por el representante del Directorado de Finanzas. La propuesta también cumple técnicamente con lo requerido en los documentos del RFP, conforme a la evaluación realizada por los representantes del Directorado de Generación.

El precio ofrecido por el proponente por el suplido e instalación de las tres unidades fue de $94,999,998.

DETERMINACIÓN

Luego de evaluar las propuestas a base de los criterios de evaluación, según la Sección 3 Scoring Criteria, la propuesta de ARG obtuvo la mejor puntuación. Además, esta propuesta cumple con las especificaciones, términos y condiciones establecidos en el RFP 82695. El Comité, en reunión el 2 de octubre de 2018, seleccionó por unanimidad a la compañía ARG Precision, Corp.

Comité Evaluador:

Miguel A. Del Valle Morales
División de Ingeniería y Servicios Técnicos
Directorado de Generación

José M. Cruz Pérez
División de Ingeniería y Servicios Técnicos
Directorado de Generación

Félix A. Hernández Caban
Directorado de Asuntos Jurídicos

José A. Roque Torres
Directorado de Finanzas

Natalia Martínez Lugo
División de Suministros

RFP 82695 MOBILE GENERATION UNITS
PERFORMANCE PROPOSAL

QUESTIONS		Siemens Energy, Inc Submitted: 09/24/2018	ARG Precision Submitted: 09/24/2018	RG ENGINEERING, INC. Submitted: 09/24/2018
Guaranteed net unit output (diesel) @ specified conditions without water or steam injection	MW	36.6	22,583	28,643
Guaranteed net unit output (NG) @ specified conditions without water or steam injection	MW	38.2	23,842	30,021
Unit minimum load for continuous operation	MW	0.0	1	Unlimited
Time from shutdown to guaranteed net unit output	minutes	6.3	10	8
Unit Heat Rate (diesel – LHV) Assume 18,646 BTU/Lb energy content @ guaranteed net unit output	BTU/KW-hr	9038.6	9,759	9,393
Unit Heat Rate (NG – LHV) Assume 21,414 BTU/Lb energy content @ guaranteed net unit output	BTU/KW-hr	8894.9	9,574	9,246
(1) If energy price varies with output, provide data related to this variation. Provide output vs. Energy Price curves if applicable.				

RFP 82695 MOBILE GENERATION

PRICE PROPOSAL

ITEM		ARG Precision Submitted: 09/24/2018	RG ENGINEERING, INC. Submitted: 09/24/2018	Siemens Energy, Inc Submitted: 09/24/2018
Price per unit (including all its BOP equipment and accessories)	unit	$ 17,995,708.00	$ 16,952,250.00	$ 29,881,685.00
Installation price per unit, with all necessary equipment, materials, labor, testing, and commissioning	unit	$ 1,303,458.00	$ 3,114,450.00	$ 1,784,981.00
Price for Operation and Maintenance as required in this document	2 years	$ 12,946,025.38	$ 19,065,550.00	$ 14,948,273.00
	first addt'l year	$ 4,580,000.00	$ 8,102,240.00	$ 6,116,789.00
	second addt'l year	$ 4,720,000.00	$ 8,530,320.00	$ 5,418,714.00

COMPARISON MODEL EXPLANATION

Introduction

PREPA received proposals to provide mobile generators and associated equipment from General Electric, Siemens, and Pratt & Whitney. The proposals were in response to a Request for Proposals (RFP), where PREPA requested pricing for equipment, installation, operations and maintenance (O&M), and major maintenance. As part of the evaluation process, PREPA Staff developed a high-level Alternatives Comparison Model (Model) to evaluate the relative economic merits of the proposals. The Model was developed in Microsoft Excel and was designed to allow for a side-by-side comparison of the options in terms of Net Present Value (NPV), Equivalent Uniform Annualized Cost (EUAC), and Levelized Cost of Energy (LCOE).

The Model is a "high-level" annual cost-based model which means that certain assumptions have been simplified to provide a summary level comparison between proposals. For instance, the model assumes full year availability, the model is pre-tax, and availability is not adjusted to account for major maintenance events.

Model Structure and Functionality

The Model was structured to provide the user with the ability to vary key inputs and evaluate the relative impacts to project results. The single, Microsoft Excel-based model has three "worksheets" that provide for fuel and O&M calculations, capital costs, and financial results. Key model inputs are summarized on a worksheet entitled "Inputs&Results." This worksheet also presents Project results in terms of NPV, EUAC, and LCOE. The following is a brief overview of the Model's worksheets:

- **Inputs&Results** – Key model inputs are consolidated on the Inputs&Resultss worksheet to provide a single location to support analysis of various scenarios. The worksheet allows the user to vary the term, net capacity, capacity factor, availability, starts, heat rate, fuel assumptions, escalation assumptions, major maintenance costs and timing, and annual 3rd-party O&M costs. The Model is also provisioned to allow for sensitivity cases related to changes in capital costs, O&M costs, and major maintenance. The Inputs&Results worksheet provides a summary of calculated results.
- **O&M** – The O&M worksheet calculates the annual operating hours based on the assumed capacity factor, as adjusted by availability. Annual operating hours are then used to calculate the net annual generation (MWhrs) and annual fuel consumption and costs. The proposals' included 3rd-party O&M costs, which are presented on the O&M worksheet on an annual basis. The timing of major maintenance events are based on operating hours, and the O&M worksheet calculates the year in which major maintenance events occur. The O&M worksheet is provisioned to include escalation.
- **Evaluation** – The Evaluation worksheet includes capital and installation costs (year one), and summarizes all operations and maintenance related costs as calculated on the O&M worksheet. The sum of these costs are used to calculate the NPV and EUAC of each proposal. Please note that the EUAC represents a levelized cost that would result in the calculated NPV. The Evaluation worksheet also allows the user to estimate the LCOE of

each proposal. The LCOE calculation is a manual calculation that requires the user to use Microsoft Excel's "goal seek" function to solve for an energy value that results in a NPV of zero. The results calculated on the Evaluation worksheet are linked to the Inputs&Results worksheet.

Changeable inputs to the model are generally coded in blue text. Calculated values are represented in black text. Global changes to capital costs, O&M, major maintenance can be performed on the Inputs&Results worksheet under the section entitled "Sensitivities."

Evaluation Results

PREPA's evaluation team established base-case assumptions and a sensitivity case to evaluate the proposals. The following table provides a summary of base-case assumptions.

Parameter	Base-Case	Comments
Evaluation Term	20 Years	
First Year	2019	Simplified to assume full year
Capacity Factor	25%	
Availability	95%	
Fuel Supply	No. 2 Fuel Oil	
Fuel Heat Content	139,000 Btu/gal	
Fuel Costs	$94.75/bbl	Based on PREPA's August 2018 stored fuel value
Escalation	2.5%	3rd-Party O&M costs were not escalated
Discount Rate	8%	
Heat rate curve	100% load	Assumes emergency conditions favor full-load operation.

The PREPA evaluation team also performed a sensitivity case for each proposal, where the Capacity Factor was reduced to 5.7%. This capacity factor is approximately 500 operating hours per year, and is reflective of a standard air permit's operating limit for emergency generators.

PREPA staff evaluated each proposal in terms of NPV, EUAC, and LCOE. Each Proponent's heat rate, net capacity, O&M, and major maintenance costs were incorporated into the model and evaluated against the base-case and sensitivity case assumptions discussed above. The following table provides a summary of these results.

Proponent	Net Capacity	NPV	EUAC	LCOE
Pratt & Whitney	22.6MW			
• 25% Capacity Factor		($159,111,631.87)	($16,205,871.16)	$0.2800
• 5.7% Capacity Factor		($84,127,900.03)	($8,568,612.44)	$0.6494
General Electric	28.6 MW			
• 25% Capacity Factor		($190,064,052.57)	($19,358,443.57)	$0.2637
• 5.7% Capacity Factor		($104,038,111.54)	($10,596,511.46)	$0.6332
Siemens	36.6 MW			
• 25% Capacity Factor		($219,674,008.21)	($22,374,282.96)	$0.2386
• 5.7% Capacity Factor		($112,995,213.88)	($11,508,812.12)	$0.5382

Please note that the NPV and EUAC results are cost-based, and are therefore negative values. As reflected in the table above, a higher capacity factor results in lower NPV and EUAC due to increased fuel and major maintenance costs. This contrasts with a reduction in LCOE for higher capacity factors, as the costs are "spread-out" over increased annual generation.

Overall, the analysis favors the Pratt & Whitney proposal, as it has the highest NPV and EUAC. These results are largely correlated to lower capital and installation costs of the Pratt & Whitney proposal. These units are also the smallest units. On an LCOE basis, the Siemen's units have the highest net capacity and lowest heat rate, with results in the lowest LCOE.



Mobile Generation Comparison Model
Bid Proposal by Pratt & Whitney

KEY RESULTS AND ASSUMPTIONS

Strictly proprietary & confidential
4-Oct-18

Project Summary

Proponent/Bidder		Pratt & Whitney
Project Initiation		2019
Evaluation Term (<=50)	Years	20
Net Capacity	MW	22.583

Project Results

PREPA Discount Rate		8.0%
PREPA WACC		8.0%
Net Present Value	NPV	($84,127,900.03)
Equivalent Uniform Annuallized Cost	EUAC	($8,568,612.44)
LCOE $/kWhr (2018$)	See Eval Tab	$0.6494

Sensitivities

Dev + EPC-related Capital Costs	0%
Operations & Maintenance	0%
Major Maintenance Costs	0%

Project Assumptions

(Changeable inputs shown in blue font)

Operating Assumptions

Project Initiation	Year	2019
Refurbish Alternative		
Capacity Factor	%	5.7%
Availability	%	95.0%
Annual Starts		50
Heatrate	Btu/kWhr	9,756
Fuel Heat Content	Btu/gal	139,000
Fuel Costs	$/bbl	$94.75

Financial Parameters

Escalation	
First Year	2018
Operations & Maintenance	2.5%
Major Maintenance	2.5%
Fuel	2.5%
Revenue	2.5%
Weighted Avg Cost of Capital	8.0%

Capital Cost

Initiate & Develop	**Units/Notes**	**Cost**
Purchase Price	$	$17,995,708
Spare Parts	$	$0
Commissioning/Startup	$	$1,303,458
Subtotal-CapEx		**$19,299,166**

Major Maintenance

Maintenance Intervals	Cost
Gas Gen Hot Section Inspection	$3,507,500
Major Shop Inspection	$7,187,500
Major Overhaul (Class C)	$0
Maintenance Category 4	$0
Maintenance Category 5	$0

Operations & Maintenance Costs

O&M Expense	**Escalation?**	**Rebuild**
Year 1	No	$4,445,000
Year 2	No	$4,445,000
Year 3	No	$4,580,000
Year 4	No	$4,720,000
Year 5+	No	$4,720,000

Major Maintenance

Event Intervals	**Starts**	**Hours**
Gas Gen Hot Section Inspection	0	12,500
Major Shop Inspection	0	50,000
Major Overhaul (Class C)	0	0
Maintenance Category 4	0	0
Maintenance Category 5	0	0

Drop List
Yes
No



Operations & Maintenance
Mobile Generation Comparison Model
Bid Proposal by Pratt & Whitney

	Count Date		1 2029	2 2030	3 2031	4 2032	5 2033	6 2034	7 2035	8 2036	9 2037	10 2038	11 2039	12 2040	13 2041	14 2042	15 2043	16 2044	17 2045	18 2046	19 2047	20 2048
Operating Costs																						
Operating Hours		Hours	474	476	474	474	474	476	474	474	474	474	474	474	474	474	476	474	474	474	476	474
Output		MWhrs	10,712	10,742	10,712	10,712	10,712	10,742	10,712	10,712	10,712	10,742	10,712	10,713	10,712	10,742	10,712	10,712	10,712	10,742	10,712	10,712
Fuel Consumption	139,000	Btu	17,907.11	17,956.17	17,907.11	17,907.11	17,907.11	17,956.17	17,907.11	17,907.11	17,907.11	17,956.17	17,907.11	17,907.11	17,907.11	17,956.17	17,907.11	17,907.11	17,907.11	17,956.17	17,907.11	17,907.11
Total Fuel Costs	$ 94.75		$ (1,729,115.83)	$ (1,787,477.56)	$ (1,627,158.59)	$ (1,672,457.55)	$ (1,919,656.49)	$ (1,973,040.78)	$ (2,016,841.20)	$ (2,067,262.23)	$ (2,116,943.79)	$ (2,177,867.64)	$ (2,226,215.32)	$ (2,281,870.70)	$ (2,338,917.47)	$ (2,403,958.60)	$ (2,457,325.37)	$ (2,518,758.30)	$ (2,581,727.25)	$ (2,653,526.49)	$ (2,712,427.26)	$ (2,780,237.88)
Operations & Maintenance 3rd-Party Contract		Esc.																				
Year 1	$ 4,445,000.00	0	$ (4,445,000.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 2	$ 4,445,000.00	0	$ -	$ (4,445,000.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 3	$ 4,580,000.00	0	$ -	$ -	$ (4,580,000.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 4	$ 4,720,000.00	0	$ -	$ -	$ -	$ (4,720,000.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 5+	$ 4,720,000.00	0	$ -	$ -	$ -	$ -	$ -	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Total 3rd-Party O&M Contract Costs			$ (4,445,000.00)	$ (4,445,000.00)	$ (4,580,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Major Maintenance Costs																						
Gas Gen Hot Section Inspection	$ 3,507,500.00	1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Major Shop Inspection	$ 7,167,500.00	2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Major Overhaul (Class C)	$ -	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 4	$ -	4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 5	$ -	5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total CapEx and Major Maintenance Costs			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Triggers			2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
Operations			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Available Annual Hours			8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760
Cumulative Operated Hours		5%	474.25	950.01	1424.26	1898.52	2372.89	2848.72	3321.69	3797.43	4271.78	4747.44	5222.79	5696.15	6170.50	6648.25	7120.51	7594.26	8069.22	8544.97	9019.23	9492.58
Cumulative Starts		50	50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	950.00	1000.00
Escalation		2018																				
Operations & Maintenance		2.5%	1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Major Maintenance		2.5%	1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Fuel		2.5%	1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Major Maintenance																						
Timing Tests		Hours																				
Gas Gen Hot Section Inspection	1	12500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Shop Inspection	2	50000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Overhaul (Class C)	3	1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4	1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5	1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Starts																				
Gas Gen Hot Section Inspection	1	1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Shop Inspection	2	1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Overhaul (Class C)	3	1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4	1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5	1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Triggers																						
Gas Gen Hot Section Inspection	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Shop Inspection	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Overhaul (Class C)	3		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Evaluation
Mobile Generation Comparison Model
Bid Proposal by Pratt & Whitney

Capital Costs																														
Purchase Price		$ 17,995,708.69	$ (17,995,708)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Spare Parts		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Commissioning/Startup		$ 1,303,458.00	$ (1,303,458)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal-CapEx			$ (19,299,166)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Operating Costs																														
Total Fuel Costs			$ (1,729,116)	$ (1,787,478)	$ (1,827,159)	$ (1,872,838)	$ (1,919,658)	$ (1,973,041)	$ (2,026,841)	$ (2,067,262)	$ (2,118,944)	$ (2,177,868)	$ (2,226,215)	$ (2,291,871)	$ (2,358,917)	$ (2,403,959)	$ (2,457,325)	$ (2,518,758)	$ (2,581,727)	$ (2,653,520)	$ (2,712,427)	$ (2,780,238)									
Total 3rd-Party O&M Contract Costs			$ (4,445,000)	$ (4,445,000)	$ (4,580,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)									
Total CapEx and Major Maintenance Costs			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -									
Total Operating Costs			$ (6,184,116)	$ (6,232,478)	$ (6,407,159)	$ (6,592,838)	$ (6,639,658)	$ (6,693,041)	$ (6,746,841)	$ (6,787,262)	$ (6,838,944)	$ (6,897,868)	$ (6,946,215)	$ (7,011,871)	$ (7,078,917)	$ (7,123,959)	$ (7,177,325)	$ (7,238,758)	$ (7,301,727)	$ (7,373,520)	$ (7,432,427)	$ (7,500,238)									
Total Costs			$ (25,483,282)	$ (6,232,478)	$ (6,407,159)	$ (6,592,838)	$ (6,639,658)	$ (6,693,041)	$ (6,746,841)	$ (6,787,262)	$ (6,838,944)	$ (6,897,868)	$ (6,946,215)	$ (7,011,871)	$ (7,078,917)	$ (7,123,959)	$ (7,177,325)	$ (7,238,758)	$ (7,301,727)	$ (7,373,520)	$ (7,432,427)	$ (7,500,238)									
Evaluation Parameters																														
PREPA Discount Rate	8.0%																													
Evaluation Term (n=50)	20																													
Net Present Value		($34,127,590.02)																												
Equivalent Uniform Annual Cost	9.8161	($8,568,612.44)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)	$ (8,568,612)								
	chk	($34,127,590.02)																												
Levelized Cost of Energy																														
NOTE: This requires a goal seek to set NPV to Zero by varying LCOE assumptions																														
LCOE Assumption	$/kWhr	$ 0.6454	$ 0.67	$ 0.68	$ 0.70	$ 0.72	$ 0.73	$ 0.75	$ 0.77	$ 0.79	$ 0.81	$ 0.83	$ 0.85	$ 0.87	$ 0.90	$ 0.92	$ 0.94	$ 0.96	$ 0.99	$ 1.01	$ 1.04	$ 1.06								
Energy	kWhr		10,712,336	10,741,685	10,712,336	10,712,336	10,712,336	10,741,685	10,712,336	10,712,336	10,712,336	10,741,685	10,712,336	10,712,336	10,712,336	10,741,685	10,712,336	10,712,336	10,712,336	10,741,685	10,712,336	10,712,336								
Total Revenue			$ 7,130,668	$ 7,328,951	$ 7,491,649	$ 7,678,541	$ 7,870,914	$ 8,085,790	$ 8,295,379	$ 8,474,114	$ 8,680,007	$ 8,929,613	$ 9,127,847	$ 9,356,044	$ 9,589,945	$ 9,836,624	$ 10,075,406	$ 10,327,321	$ 10,585,505	$ 10,879,869	$ 11,171,356	$ 11,499,431								
Total Cost			$ (25,483,282)	$ (6,232,478)	$ (6,407,159)	$ (6,592,838)	$ (6,639,658)	$ (6,693,041)	$ (6,746,841)	$ (6,787,262)	$ (6,838,944)	$ (6,897,868)	$ (6,946,215)	$ (7,011,871)	$ (7,078,917)	$ (7,123,959)	$ (7,177,325)	$ (7,238,758)	$ (7,301,727)	$ (7,373,520)	$ (7,432,427)	$ (7,500,238)								
Difference			$ (18,352,615)	$ 1,096,473	$ 1,084,491	$ 1,085,703	$ 1,231,256	$ 1,392,750	$ 1,532,538	$ 1,686,851	$ 1,841,075	$ 2,031,747	$ 2,181,632	$ 2,344,173	$ 2,511,027	$ 2,712,665	$ 2,898,159	$ 3,088,563	$ 3,283,777	$ 3,506,348	$ 3,738,929	$ 3,999,193								
NPV		$0.00																												

Mobile Generation Comparison Model Bid Proposal by Pratt & Whitney	KEY RESULTS AND ASSUMPTIONS	Strictly proprietary & confidential 4-Oct-18

Project Summary		
Proponent/Bidder		Pratt & Whitney
Project Initiation		2019
Evaluation Term (<=50)	Years	20
Net Capacity	MW	22.583

Project Results		
PREPA Discount Rate		8.0%
PREPA WACC		8.0%
Net Present Value	NPV	($159,111,631.87)
Equivalent Uniform Annuallized Cost	EUAC	($16,205,871.16)
LCOE $/kWhr (2018$)	See Eval Tab	$0.2800

Sensitivities	
Dev + EPC-related Capital Costs	0%
Operations & Maintenance	0%
Major Maintenance Costs	0%

Project Assumptions (Changeable inputs shown in blue font)

Operating Assumptions

Project Initiation	Year	2019
Refurbish Alternative		
Capacity Factor	%	25.0%
Availability	%	95.0%
Annual Starts		50
Heatrate	Btu/kWhr	9,759
Fuel Heat Content	Btu/gal	139,000
Fuel Costs	$/bbl	$94.75

Financial Parameters

Escalation	
First Year	2018
Operations & Maintenance	2.5%
Major Maintenance	2.5%
Fuel	2.5%
Revenue	2.5%
Weighted Avg Cost of Capital	8.0%

Capital Cost

Initiate & Develop	**Units/Notes**	**Cost**
Purchase Price	$	$17,995,709
Spare Parts	$	$0
Commissioning/Startup	$	$1,303,458
Subtotal-CapEx		**$19,299,166**

Major Maintenance

Maintenance Intervals	Cost
Gas Gen Hot Section Inspection	$3,507,500
Major Shop Inspection	$7,187,500
Major Overhaul (Class C)	$0
Maintenance Category 4	$0
Maintenance Category 5	$0

Operations & Maintenance Costs

O&M Expense	**Escalation?**	**Rebuild**
Year 1	No	$4,445,000
Year 2	No	$4,445,000
Year 3	No	$4,560,000
Year 4	No	$4,720,000
Year 5+	No	$4,720,000

Major Maintenance

Event Intervals	Starts	Hours
Gas Gen Hot Section Inspection	0	12,500
Major Shop Inspection	0	50,000
Major Overhaul (Class C)	0	0
Maintenance Category 4	0	0
Maintenance Category 5	0	0

Drop List
Yes
No



Operations & Maintenance
Mobile Generation Comparison Model
Bid Proposal by Pratt & Whitney

	Count	Units	Date	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
Operating Costs																							
Operating Hours		Hours		2,081	2,086	2,081	2,081	2,081	2,086	2,081	2,081	2,082	2,086	2,081	2,081	2,081	2,086	2,081	2,081	2,081	2,081	2,086	2,081	2,081
Output	—	kWhrs		46,984	47,113	46,984	46,984	46,984	47,113	46,984	46,984	46,984	47,113	46,984	46,984	46,984	47,113	46,984	46,984	46,984	46,984	47,113	46,984	46,984
Fuel Consumption	158,000	BBLs		78,539.94	78,755.12	78,539.94	78,539.94	78,539.94	78,755.12	78,539.94	78,539.94	78,539.94	78,755.12	78,539.94	78,539.94	78,539.94	78,755.12	78,539.94	78,539.94	78,539.94	78,539.94	78,755.12	78,539.94	78,539.94
Total Fuel Costs	$ 94.75			$ (7,427,701.08)	$ (7,459,813.88)	$ (8,013,853.46)	$ (8,214,189.80)	$ (8,419,554.79)	$ (8,653,687.62)	$ (8,841,794.75)	$ (9,046,359.62)	$ (9,293,413.15)	$ (9,552,651.94)	$ (9,764,102.28)	$ (10,008,204.82)	$ (10,258,409.96)	$ (10,543,678.07)	$ (10,777,741.96)	$ (11,047,185.51)	$ (11,323,365.15)	$ (11,638,247.77)	$ (11,896,610.51)	$ (12,194,025.77)
Operations & Maintenance 3rd-Party Contract			Est.																				
Year 1		$ 4,445,000.00	0	$ (4,445,000.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 2		$ 4,441,000.00	0	$ -	$ (4,445,000.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 3		$ 4,585,000.00	0	$ -	$ -	$ (4,585,000.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 4		$ 4,720,000.00	0	$ -	$ -	$ -	$ (4,720,000.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 5+		$ 4,720,000.00	0	$ -	$ -	$ -	$ -	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Total 3rd-Party O&M Contract Costs				$ (4,445,000.00)	$ (4,445,000.00)	$ (4,585,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Major Maintenance Costs																							
Gas Gen Hot Section Inspection		$ 3,907,500.00	1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (4,169,315.28)	$ -	$ -	$ -	$ -	$ -	$ -	$ (4,835,127.49)	$ -	$ -	$ -	$ -	$ (5,607,265.53)	$ -
Major Shop Inspection		$ 7,387,500.00	2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Major Overhaul (Class C)		$ -	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 4		$ -	4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 5		$ -	5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total CapEx and Major Maintenance Costs				$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (4,169,315.28)	$ -	$ -	$ -	$ -	$ -	$ -	$ (4,835,127.49)	$ -	$ -	$ -	$ -	$ (5,607,265.53)	$ -

Triggers				2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Operations				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Available Annual Hours				8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,760	8,784	8,760	8,760
Cumulative Operating Hours			24%	2082.50	4168.50	4247.25	4327.00	4406.00	4490.00	4570.00	4650.00	4730.00	4814.00	4894.00	4974.00	5054.00	5138.00	5218.00	5298.00	5378.00	5458.00	5542.00	5622.00	5702.00
Cumulative Starts			0%	50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	950.00	1000.00
Escalation			2018																				
Operations & Maintenance			2.5%	1.023	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.483	1.521	1.560	1.599	1.639
Major Maintenance			3.1%	1.025	1.056	1.077	1.104	1.131	1.160	1.189	1.226	1.265	1.304	1.345	1.387	1.431	1.476	1.522	1.569	1.618	1.669	1.720	1.774
Fuel			2.5%	1.025	1.050	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.483	1.521	1.560	1.599	1.639
Major Maintenance																							
Timing Tests		Hours																					
Gas Gen Hot Section Inspection	1	12500		0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0
Major Shop Inspection	2	50000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Overhaul (Class C)	3	100000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4	100000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5	100000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Starts																					
Gas Gen Hot Section Inspection	1	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Shop Inspection	2	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Overhaul (Class C)	3	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Triggers																							
Gas Gen Hot Section Inspection	1			0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0
Major Shop Inspection	2			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Overhaul (Class C)	3			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Evaluation
Mobile Generation Comparison Model
Bid Proposal by Pratt & Whitney

			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
			2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Capital Costs																							
Purchase Price		$ 17,995,708.00	$ (17,995,708)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Spare Parts		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Commissioning/Startup		$ 1,303,456.00	$ (1,303,456)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal-CapEx			$ (19,299,164)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Operating Costs																							
Total Fuel Costs			$ (7,627,701)	$ (7,839,854)	$ (8,013,853)	$ (8,214,200)	$ (8,419,555)	$ (8,653,668)	$ (8,845,705)	$ (9,066,348)	$ (9,293,019)	$ (9,552,052)	$ (9,764,102)	$ (10,008,205)	$ (10,258,410)	$ (10,545,579)	$ (10,777,747)	$ (11,047,186)	$ (11,323,366)	$ (11,638,248)	$ (11,896,611)	$ (12,174,826)
Total 3rd-Party O&M Contract Costs			$ (4,445,000)	$ (4,445,000)	$ (4,580,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)
Total CapEx and Major Maintenance Costs			$ -	$ -	$ -	$ -	$ -	$ -	$ (4,169,315)	$ -	$ -	$ -	$ -	$ -	$ (4,835,127)	$ -	$ -	$ -	$ -	$ -	$ (5,837,268)	$ -
Total Operating Costs			$ (12,072,701)	$ (12,284,854)	$ (12,593,853)	$ (12,934,200)	$ (13,139,555)	$ (13,373,668)	$ (17,735,110)	$ (13,786,348)	$ (14,013,019)	$ (14,272,052)	$ (14,484,102)	$ (14,728,205)	$ (15,813,537)	$ (15,265,579)	$ (15,497,747)	$ (15,767,186)	$ (16,043,366)	$ (16,358,248)	$ (22,223,879)	$ (16,914,826)
Total Costs			$ (31,371,865)	$ (12,284,854)	$ (12,593,853)	$ (12,934,200)	$ (13,139,555)	$ (13,373,668)	$ (17,735,110)	$ (13,786,348)	$ (14,013,019)	$ (14,272,052)	$ (14,484,102)	$ (14,728,205)	$ (19,813,537)	$ (15,265,579)	$ (15,497,742)	$ (15,767,186)	$ (16,043,365)	$ (16,358,248)	$ (22,223,879)	$ (16,914,826)
Evaluation Parameters																							
PREPA Discount Rate	9.15%																						
Evaluation Term (+/-50)	20																						
Net Present Value		($159,111,621.87)																					
Equivalent Uniform Annual Cost	9.81815	($16,205,871.19)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)	$ (16,205,871)
chk		($159,111,621.87)																					
Levelized Cost of Energy																							
NOTE: This requires a goal-seek to set NPV to Zero by varying LCOE assumption																							
LCOE Assumption	$/MWH	$ 0.3000	$ 0.29	$ 0.29	$ 0.30	$ 0.31	$ 0.32	$ 0.32	$ 0.33	$ 0.34	$ 0.35	$ 0.36	$ 0.37	$ 0.38	$ 0.39	$ 0.40	$ 0.41	$ 0.42	$ 0.43	$ 0.44	$ 0.45	$ 0.46	
Energy	MWH		46,583,932	47,112,655	46,583,932	46,583,932	46,903,932	47,112,655	46,583,932	46,583,932	46,583,932	47,112,655	46,583,932	46,583,932	46,583,932	47,112,655	46,583,932	46,583,932	46,583,932	47,112,655	46,583,932	46,583,932	
Total Revenue			$ 13,486,242	$ 13,861,281	$ 14,169,084	$ 14,523,729	$ 14,886,310	$ 15,300,272	$ 15,638,919	$ 16,030,928	$ 16,431,701	$ 16,999,637	$ 17,263,556	$ 17,695,145	$ 18,137,523	$ 18,641,896	$ 19,055,735	$ 19,512,129	$ 20,020,431	$ 20,577,165	$ 21,013,966	$ 21,559,814
Total Cost			$ (31,371,865)	$ (12,284,854)	$ (12,593,853)	$ (12,934,200)	$ (13,139,555)	$ (13,373,668)	$ (17,735,110)	$ (13,786,348)	$ (14,013,019)	$ (14,272,052)	$ (14,484,102)	$ (14,728,205)	$ (19,813,537)	$ (15,265,579)	$ (15,497,742)	$ (15,767,186)	$ (16,043,365)	$ (16,358,248)	$ (22,223,879)	$ (16,914,826)
Difference			$ (17,885,623)	$ 1,576,427	$ 1,575,231	$ 1,589,529	$ 1,746,755	$ 1,926,604	$ (2,095,192)	$ 2,243,580	$ 2,418,682	$ 2,726,585	$ 2,779,453	$ 2,966,940	$ (1,676,014)	$ 3,376,317	$ 3,557,993	$ 3,744,943	$ 3,977,067	$ 4,218,917	$ (1,209,913)	$ 4,643,780	
NPV		$0.00																					

Mobile Generation Comparison Model Bid Proposal by General Electric	KEY RESULTS AND ASSUMPTIONS			Strictly proprietary & confidential 4-Oct-18

Project Summary		
Proponent/Bidder		General Electric
Project Initiation		2019
Evaluation Term (<=50)	Years	20
Net Capacity	MW	28.643

Project Results		
PREPA Discount Rate		8.0%
PREPA WACC		8.0%
Net Present Value	NPV	($104,038,111.54)
Equivalent Uniform Annuallized Cost	EUAC	($10,596,511.46)
LCOE $/kWhr (2018$)	See Eval Tab	$0.6332

Sensitivities	
Dev + EPC-related Capital Costs	0%
Operations & Maintenance	0%
Major Maintenance Costs	0%

Project Assumptions (Changeable inputs shown in blue font)

Operating Assumptions		
Project Initiation	Year	2019
Refurbish Alternative		
Capacity Factor	%	5.7%
Availability	%	95.0%
Annual Starts		50
Heatrate	Btu/kWhr	9,393
Fuel Heat Content	Btu/gal	139,000
Fuel Costs	$/bbl	$94.75

Financial Parameters	
Escalation	
First Year	2018
Operations & Maintenance	2.5%
Major Maintenance	2.5%
Fuel	2.5%
Revenue	2.5%
Weighted Avg Cost of Capital	8.0%

Capital Cost			
Initiate & Develop		**Units/Notes**	**Cost**
Purchase Price	$		$16,952,250
Spare Parts	$		$0
Commissioning/Startup	$		$3,114,450
Subtotal-CapEx			**$20,066,700**

Major Maintenance	
Maintenance Intervals	Cost
Hot Section Inspection	$2,395,000
Major Inspection	$4,600,000
Maintenance Category 3	$0
Maintenance Category 4	$0
Maintenance Category 5	$0

Operations & Maintenance Costs		
O&M Expense	**Escalation?**	**Rebuild**
Year 1	No	$9,532,775
Year 2	No	$9,532,775
Year 3	No	$8,102,240
Year 4	No	$6,530,320
Year 5+	No	$4,720,000

Major Maintenance		
Event Intervals	Starts	Hours
Hot Section Inspection	0	25,000
Major Inspection	0	50,000
Maintenance Category 3	0	0
Maintenance Category 4	0	0
Maintenance Category 5	0	0



Operations & Maintenance
Mobile Generation Comparison Model
Bid Proposal by General Electric

	Curr.			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	Date			2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Operating Costs																							
Operating Hours		Hours		474	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474
Output		Mwhrs		13,587	13,624	13,587	13,587	13,587	13,624	13,587	13,587	13,587	13,624	13,587	13,587	13,587	13,624	13,587	13,587	13,587	13,624	13,587	13,587
Fuel Consumption	139,000	Btu/s		21,860.56	21,920.45	21,860.56	21,860.56	21,860.56	21,920.45	21,860.56	21,860.56	21,860.56	21,920.45	21,860.56	21,860.56	21,860.56	21,920.45	21,860.56	21,860.56	21,860.56	21,920.45	21,860.56	21,860.56
Total Fuel Costs	$ 94.75			$ (2,121,070.35)	$ (2,582,109.16)	$ (2,230,558.79)	$ (2,386,314.56)	$ (3,143,472.42)	$ (2,458,640.22)	$ (2,462,110.72)	$ (2,321,663.48)	$ (2,346,755.07)	$ (2,658,668.12)	$ (2,737,709.59)	$ (2,765,652.28)	$ (2,855,265.59)	$ (2,934,694.22)	$ (2,999,842.83)	$ (3,074,838.90)	$ (3,151,709.87)	$ (3,239,331.31)	$ (3,311,261.28)	$ (3,394,046.81)
Operations & Maintenance 3rd-Party Contract		Ea																					
Year 1	$ 9,532,775.00	0	$	(9,532,775.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 2	$ 9,532,775.00	0	$	-	$ (9,532,775.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 3	$ 8,102,240.00	0	$	-	$ -	$ (8,102,240.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 4	$ 8,530,320.00	0	$	-	$ -	$ -	$ (8,530,320.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 5+	$ 4,720,000.00	0	$	-	$ -	$ -	$ -	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Total 3rd-Party O&M Contract Costs			$	(9,532,775.00)	$ (9,532,775.00)	$ (8,102,240.00)	$ (8,530,320.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Major Maintenance Costs																							
Hot Section Inspection	$ 2,395,000.00	1	$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Major Inspection	$ 4,600,000.00	2	$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 3	$ -	3	$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 4	$ -	4	$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 5	$ -	5	$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total CapEx and Major Maintenance Costs			$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Triggers				2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Operations				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Available Annual Hours				8,760	8,754	8,760	8,760	8,760	8,754	8,760	8,760	8,760	8,754	8,760	8,760	8,760	8,754	8,760	8,760	8,760	8,754	8,760	8,760
Cumulative Operated Hours		5%		474.26	950.02	1,424.26	1,898.52	2,372.78	2,842.72	3,316.98	3,797.43	4,271.79	4,747.44	5,221.79	5,696.15	6,170.50	6,646.25	7,120.31	7,594.66	8,068.22	8,544.27	9,018.22	9,492.58
Cumulative Starts		50		50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	950.00	1000.00
Escalation		2018																					
Operations & Maintenance		2.7%		1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.219	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Major Maintenance		2.7%		1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.219	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Fuel		2.5%		1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.219	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639

Major Maintenance																								
Timing Tests			Hours																					
Hot Section Inspection	1	25000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Inspection	2	50000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 3	3	100000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4	100000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5	100000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Starts																					
Hot Section Inspection	1	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Inspection	2	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 3	3	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Triggers																								
Hot Section Inspection	1			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Inspection	2			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 3	3			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Evaluation
Mobile Generation Comparison Model
Bid Proposal by General Electric

				2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
Capital Costs																														
Purchase Price		$	16,952,250.00	$ (16,952,250)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Spare Parts		$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Commissioning/Startup		$	3,114,450.00	$ (3,114,450)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal-CapEx				$ (20,066,700)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Operating Costs																														
Total Fuel Costs				$ (1,123,030)	$ (2,582,109)	$ (2,230,551)	$ (1,286,313)	$ (2,343,472)	$ (2,408,640)	$ (2,462,111)	$ (2,523,663)	$ (2,584,755)	$ (2,658,688)	$ (2,717,710)	$ (2,785,652)	$ (2,855,294)	$ (2,934,694)	$ (2,999,043)	$ (3,074,020)	$ (3,151,760)	$ (3,230,353)	$ (3,311,265)	$ (3,394,047)								
Total 3rd-Party O&M Contract Costs				$ (9,532,775)	$ (9,532,775)	$ (8,057,542)	$ (8,530,120)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)								
Total CapEx and Major Maintenance Costs				$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -								
Total Operating Costs				$ (11,655,845)	$ (12,114,884)	$ (10,332,791)	$ (10,816,433)	$ (7,063,472)	$ (7,128,640)	$ (7,182,111)	$ (7,243,663)	$ (7,304,755)	$ (7,378,688)	$ (7,437,710)	$ (7,505,652)	$ (7,575,294)	$ (7,654,694)	$ (7,719,043)	$ (7,794,020)	$ (7,871,760)	$ (7,950,353)	$ (8,031,265)	$ (8,114,047)								
Total Costs				$ (31,722,545)	$ (12,114,884)	$ (10,332,791)	$ (10,816,433)	$ (7,063,472)	$ (7,128,640)	$ (7,182,111)	$ (7,243,663)	$ (7,304,755)	$ (7,378,688)	$ (7,437,710)	$ (7,505,652)	$ (7,575,294)	$ (7,654,694)	$ (7,719,043)	$ (7,794,020)	$ (7,871,760)	$ (7,950,353)	$ (8,031,265)	$ (8,114,047)								
Evaluation Parameters																														
PREPA Discount Rate	8.0%																													
Evaluation Term (=LCE)	20																													
Net Present Value			($164,359,111.54)																											
Equivalent Uniform Annual Cost	9.8181		($19,396,511.44)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)	$ (10,596,511)								
chk			($164,359,111.54)																											
Levelized Cost of Energy																														
NOTE: TAO requires a goal-seek to set NPV to Zero by varying LCOE assumption																														
LCOE Assumption	$/kWh	$	0.4332	$ 0.61	$ 0.67	$ 0.63	$ 0.70	$ 0.72	$ 0.73	$ 0.75	$ 0.77	$ 0.79	$ 0.81	$ 0.83	$ 0.85	$ 0.87	$ 0.89	$ 0.92	$ 0.94	$ 0.96	$ 0.99	$ 1.01	$ 1.04								
Energy	MWh			13,586,922	13,624,146	13,586,922	13,586,922	13,586,922	13,624,146	13,586,922	13,586,922	13,586,922	13,624,146	13,586,922	13,586,977	13,586,922	13,624,146	13,586,923	13,586,922	13,586,922	13,624,146	13,586,922	13,586,922								
Total Revenue				$ 8,819,244	$ 9,063,464	$ 9,264,668	$ 9,496,285	$ 9,721,692	$ 10,004,368	$ 10,220,460	$ 10,482,121	$ 10,744,174	$ 11,042,951	$ 11,298,998	$ 11,570,301	$ 11,858,518	$ 12,188,311	$ 12,459,948	$ 12,771,447	$ 13,090,733	$ 13,454,763	$ 13,753,452	$ 14,097,288								
Total Cost				$ (31,722,545)	$ (12,714,884)	$ (10,332,791)	$ (10,816,435)	$ (7,063,472)	$ (7,128,640)	$ (7,182,111)	$ (7,243,663)	$ (7,304,755)	$ (7,378,688)	$ (7,437,710)	$ (7,505,652)	$ (7,575,294)	$ (7,654,694)	$ (7,719,043)	$ (7,794,020)	$ (7,871,760)	$ (7,950,353)	$ (8,031,265)	$ (8,114,047)								
Difference				$ (22,904,300)	$ (2,651,420)	$ (1,068,123)	$ (1,320,150)	$ 2,670,219	$ 2,875,728	$ 3,044,349	$ 3,238,458	$ 3,437,419	$ 3,664,263	$ 3,858,289	$ 4,064,648	$ 4,284,225	$ 4,534,617	$ 4,740,906	$ 4,976,928	$ 5,218,973	$ 5,503,410	$ 5,722,186	$ 5,983,241								
NPV			$0.00																											

Mobile Generation Comparison Model Bid Proposal by General Electric	KEY RESULTS AND ASSUMPTIONS			Strictly proprietary & confidential 4-Oct-18

Project Summary		
Proponent/Bidder		General Electric
Project Initiation		2019
Evaluation Term (<=50)	Years	20
Net Capacity	MW	28.643

Project Results		
PREPA Discount Rate		8.0%
PREPA WACC		8.0%
Net Present Value	NPV	($190,064,052.57)
Equivalent Uniform Annuallized Cost	EUAC	($19,358,443.57)
LCOE $/kWhr (2018$)	See Eval Tab	$0.2637

Sensitivities	
Dev + EPC-related Capital Costs	0%
Operations & Maintenance	0%
Major Maintenance Costs	0%

Project Assumptions (Changeable inputs shown in blue font)

Operating Assumptions		
Project Initiation	Year	2019
Refurbish Alternative		
Capacity Factor	%	25.0%
Availability	%	95.0%
Annual Starts		50
Heatrate	Btu/kWhr	9,393
Fuel Heat Content	Btu/gal	139,000
Fuel Costs	$/bbl	$94.75

Financial Parameters	
Escalation	
First Year	2018
Operations & Maintenance	2.5%
Major Maintenance	2.5%
Fuel	2.5%
Revenue	2.5%
Weighted Avg Cost of Capital	8.0%

Capital Cost		
Initiate & Develop	**Units/Notes**	**Cost**
Purchase Price	$	$16,952,250
Spare Parts	$	$0
Commissioning/Startup	$	$3,114,450
Subtotal-CapEx		**$20,066,700**

Major Maintenance		
Maintenance Intervals		Cost
Hot Section Inspection		$2,395,000
Major Inspection		$4,600,000
Maintenance Category 3		$0
Maintenance Category 4		$0
Maintenance Category 5		$0

Operations & Maintenance Costs		
O&M Expense	**Escalation?**	**Rebuild**
Year 1	No	$9,532,775
Year 2	No	$9,532,775
Year 3	No	$8,102,240
Year 4	No	$8,530,320
Year 5+	No	$4,720,000

Major Maintenance		
Event Intervals	Starts	Hours
Hot Section Inspection	0	25,000
Major Inspection	0	50,000
Maintenance Category 3	0	0
Maintenance Category 4	0	0
Maintenance Category 5	0	0

Operations & Maintenance
Mobile Generation Comparison Model
Bid Proposal by General Electric

	Cost / Date			1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
Operating Costs																							
Operating Hours		Hours		2,081	2,086	2,081	2,081	2,081	2,086	2,081	2,081	2,081	2,086	2,081	2,081	2,081	2,086	2,081	2,081	2,081	2,086	2,081	2,081
Output		MWHrs		59,592	59,755	59,592	59,592	59,592	59,755	59,592	59,592	59,592	59,755	59,592	59,592	59,592	59,755	59,592	59,592	59,592	59,755	59,592	59,592
Fuel Consumption	139,000	BBUs		95,879.65	96,142.34	95,879.65	95,879.65	95,879.65	96,142.34	95,879.65	95,879.65	95,879.65	96,142.34	95,879.65	95,879.65	95,879.65	96,142.34	95,879.65	95,879.65	95,879.65	96,142.34	95,879.65	95,879.65
Total Fuel Costs	$ 94.75			$ (9,311,712.08)	$ (9,578,654.21)	$ (9,783,137.50)	$ (10,027,695.44)	$ (10,278,387.82)	$ (10,564,211.48)	$ (10,798,732.21)	$ (11,068,699.49)	$ (11,345,416.97)	$ (11,660,912.62)	$ (11,919,778.71)	$ (12,217,773.18)	$ (12,523,217.51)	$ (12,871,445.88)	$ (13,157,205.39)	$ (13,486,135.53)	$ (13,823,288.91)	$ (14,207,669.94)	$ (14,523,861.92)	$ (14,886,178.24)
Operations & Maintenance 3rd-Party Contract			Ea.																				
Year 1		$ 9,532,775.00	0	$ (9,532,775.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 2		$ 9,532,775.00	0	$ -	$ (9,532,775.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 3		$ 8,102,240.00	0	$ -	$ -	$ (8,102,240.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 4		$ 8,530,320.00	0	$ -	$ -	$ -	$ (8,530,320.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 5+		$ 4,720,000.00	0	$ -	$ -	$ -	$ -	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Total 3rd-Party O&M Contract Costs				$ (9,532,775.00)	$ (9,532,775.00)	$ (8,102,240.00)	$ (8,530,320.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Major Maintenance Costs																							
Hot Section Inspection		$ 2,295,000.00	1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (3,301,535.93)	$ -	$ -	$ -	$ -
Major Inspection		$ 4,600,000.00	2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 3		$ -	3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 4		$ -	4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 5		$ -	5	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total CapEx and Major Maintenance Costs				$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (3,301,535.93)	$ -	$ -	$ -	$ -

Triggers				2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Operations				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Available Annual Hours				8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760
Cumulative Operating Hours		24%		2082.50	4168.70	6247.20	8327.70	10408.20	12494.40	14574.90	16659.10	18739.60	20822.10	22902.60	24982.10	27062.60	29149.30	31230.80	33310.30	35390.80	37477.50	39558.00	41618.50
Cumulative Starts		50		50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	950.00	1000.00
Escalation		2018																					
Operations & Maintenance		2.5%		1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Major Maintenance		2.5%		1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Fuel		2.5%		1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Major Maintenance																							
Timing Tests			Hours																				
Hot Section Inspection	1		25000	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Major Inspection	2		50000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 3	3		1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4		1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5		1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Starts																				
Hot Section Inspection	1		1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Inspection	2		1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 3	3		1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4		1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5		1000000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Triggers																							
Hot Section Inspection	1			0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Major Inspection	2			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 3	3			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Evaluation
Mobility Generation Comparison Model
Bid Proposal by General Electric

Capital Costs																														
Purchase Price		$ 16,952,250.00	$ (16,952,250)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Spare Parts		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Commissioning/Startup		$ 3,114,450.00	$ (3,114,450)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal-CapEx			$ (20,066,700)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Operating Costs																														
Total Fuel Costs			$ (9,311,712)	$ (9,570,654)	$ (9,783,117)	$ (10,027,695)	$ (10,278,388)	$ (10,544,211)	$ (10,758,731)	$ (11,068,699)	$ (11,345,417)	$ (11,640,913)	$ (11,910,779)	$ (12,217,772)	$ (12,523,218)	$ (12,871,466)	$ (13,157,199)	$ (13,486,130)	$ (13,823,283)	$ (14,207,693)	$ (14,523,893)	$ (14,886,170)									
Total 3rd Party O&M Contract Costs			$ (9,832,775)	$ (9,832,775)	$ (9,832,740)	$ (9,530,920)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)									
Total CapEx and Major Maintenance Costs			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (5,301,534)	$ -	$ -	$ -	$ -	$ -									
Total Operating Costs			$ (19,144,487)	$ (19,403,429)	$ (19,615,857)	$ (19,558,615)	$ (14,998,388)	$ (15,264,211)	$ (15,478,731)	$ (15,788,699)	$ (16,065,417)	$ (16,360,913)	$ (16,630,779)	$ (16,937,772)	$ (17,243,218)	$ (17,591,466)	$ (17,877,200)	$ (18,206,130)	$ (18,543,283)	$ (18,927,693)	$ (19,243,893)	$ (19,606,170)									
Total Costs			$ (38,911,187)	$ (19,180,429)	$ (17,885,357)	$ (18,558,615)	$ (14,998,388)	$ (15,264,211)	$ (15,518,731)	$ (15,788,699)	$ (16,065,417)	$ (16,360,913)	$ (16,630,779)	$ (16,937,772)	$ (17,243,218)	$ (17,591,466)	$ (17,877,200)	$ (18,206,130)	$ (18,543,283)	$ (18,927,693)	$ (19,243,893)	$ (19,606,170)									
Evaluation Parameters																														
PREPA Discount Rate	9.2%																													
Evaluation Term (n>10)	20																													
Net Present Value		($190,064,602.57)																												
Equivalent Uniform Annual Cost	9.2021	($19,203,442.57)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)	$ (19,358,444)								
	cnk	($190,064,602.57)																												
Levelized Cost of Energy																														
NOTE: This requires a guesstimate to set NPV to Zero by varying LCOE assumptions																														
LCOE Assumption	$/kWhr	$ 0.269	$ 0.27	$ 0.28	$ 0.28	$ 0.29	$ 0.30	$ 0.31	$ 0.31	$ 0.32	$ 0.33	$ 0.34	$ 0.35	$ 0.35	$ 0.36	$ 0.37	$ 0.38	$ 0.39	$ 0.40	$ 0.41	$ 0.42	$ 0.43								
Energy	kWhr		59,591,762	59,755,027	59,591,762	59,591,762	59,591,762	59,755,027	59,591,762	59,591,762	59,591,762	59,755,027	59,591,762	59,591,762	59,591,762	59,755,027	59,591,762	59,591,762	59,591,762	59,755,027	59,591,762	59,591,762								
Total Revenue			$ 16,109,782	$ 16,557,766	$ 16,925,359	$ 17,348,473	$ 17,792,185	$ 18,376,678	$ 18,827,408	$ 19,549,469	$ 19,829,265	$ 20,174,590	$ 20,621,882	$ 21,137,430	$ 21,665,865	$ 22,268,104	$ 22,762,700	$ 23,331,767	$ 23,915,062	$ 24,588,099	$ 25,125,761	$ 25,753,905								
Total Cost			$ (38,911,187)	$ (19,180,429)	$ (17,885,357)	$ (18,558,615)	$ (14,998,388)	$ (15,264,211)	$ (15,518,731)	$ (15,788,699)	$ (16,065,417)	$ (16,360,913)	$ (16,630,779)	$ (16,937,772)	$ (17,243,218)	$ (17,591,466)	$ (17,877,200)	$ (18,206,130)	$ (18,543,283)	$ (18,927,693)	$ (19,243,893)	$ (19,606,170)								
Difference			$ (22,801,405)	$ (2,545,663)	$ (960,018)	$ (1,209,542)	$ 2,793,797	$ 2,912,464	$ 3,263,677	$ 3,760,768	$ 3,562,788	$ 3,793,677	$ 3,992,104	$ 4,199,658	$ 4,422,647	$ 4,676,639	$ 4,885,494	$ 5,125,632	$ 5,371,779	$ 5,662,407	$ 5,882,868	$ 6,147,735								
NPV		$0.00																												

Mobile Generation Comparison Model Bid Proposal by Siemens	KEY RESULTS AND ASSUMPTIONS	Strictly proprietary & confidential 4-Oct-18

Project Summary		
Proponent/Bidder		Siemens
Project Initiation		2019
Evaluation Term (<=50)	Years	20
Net Capacity	MW	36.6

Project Results		
PREPA Discount Rate		8.0%
PREPA WACC		8.0%
Net Present Value	NPV	($112,995,213.88)
Equivalent Uniform Annuallized Cost	EUAC	($11,508,812.12)
LCOE $/kWhr (2018$)	See Eval Tab	$0.5382

Sensitivities	
Dev + EPC-related Capital Costs	0%
Operations & Maintenance	0%
Major Maintenance Costs	0%

Project Assumptions (Changeable inputs shown in blue font)

Operating Assumptions		
Project Initiation	Year	2019
Refurbish Alternative		
Capacity Factor	%	5.7%
Availability	%	95.0%
Annual Starts		50
Heatrate	Btu/kWhr	9,039
Fuel Heat Content	Btu/gal	139,000
Fuel Costs	$/bbl	$94.75

Financial Parameters	
Escalation	
First Year	2018
Operations & Maintenance	2.5%
Major Maintenance	2.5%
Fuel	2.5%
Revenue	2.5%
Weighted Avg Cost of Capital	8.0%

Capital Cost	Units/Notes	Cost
Initiate & Develop		
Purchase Price	$	$29,881,685
Spare Parts	$	$0
Commissioning/Startup	$	$1,784,981
Subtotal-CapEx		**$31,666,666**

Major Maintenance	Cost
Maintenance Intervals	
Minor Inspection (Class A)	$0
Hot Section Refurbishment (Class B)	$4,725,132
Major Overhaul (Class C)	$0
Maintenance Category 4	$0
Maintenance Category 5	$0

Operations & Maintenance Costs	Escalation?	Rebuild
O&M Expense		
Year 1	No	$7,474,137
Year 2	No	$7,474,137
Year 3	No	$6,118,789
Year 4	No	$5,418,714
Year 5+	No	$4,720,000

Major Maintenance	Starts	Hours
Event Intervals		
Minor Inspection (Class A)	0	12,500
Hot Section Refurbishment (Class B)	0	25,000
Major Overhaul (Class C)	0	50,000
Maintenance Category 4	0	0
Maintenance Category 5	0	0

Drop List
Yes
No

Operations & Maintenance
Mobile Generation Comparison Model
Bid Proposal by Siemens

	Unit	Cost / Date			1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
Operating Costs																								
Operating Hours	Hours				474	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474
Output	MWHrs				17,361	17,409	17,361	17,361	17,361	17,409	17,361	17,361	17,361	17,409	17,361	17,361	17,361	17,361	17,409	17,361	17,361	17,361	17,409	17,361
Fuel Consumption	139,000	BBLs			26,879.47	26,953.11	26,879.47	26,879.47	26,879.47	26,953.11	26,879.47	26,879.47	26,879.47	26,953.11	26,879.47	26,879.47	26,879.47	26,953.11	26,879.47	26,879.47	26,879.47	26,953.11	26,879.47	26,879.47
Total Fuel Costs	$ 94.35			$	(2,532,300.70)	$ (2,683,094.07)	$ (2,742,657.29)	$ (2,811,223.72)	$ (2,881,504.32)	$ (2,961,633.82)	$ (3,027,380.47)	$ (3,103,064.99)	$ (3,180,641.61)	$ (3,269,089.19)	$ (3,341,661.59)	$ (3,425,203.13)	$ (3,510,833.21)	$ (3,606,461.23)	$ (3,688,569.14)	$ (3,782,783.37)	$ (3,875,302.95)	$ (3,983,068.23)	$ (4,071,490.17)	$ (4,172,277.42)
Operations & Maintenance 3rd-Party Contract			Ea.																					
Year 1	$ 7,474,136.50		0	$	(7,474,136.50)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 2	$ 7,474,136.50		0	$	-	$ (7,474,136.50)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 3	$ 6,316,789.00		0	$	-	$ -	$ (6,316,789.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 4	$ 5,418,714.00		0	$	-	$ -	$ -	$ (5,418,714.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 5+	$ 4,720,000.00		0	$	-	$ -	$ -	$ -	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Total 3rd-Party O&M Contract Costs				$	(7,474,136.50)	$ (7,474,136.50)	$ (6,316,789.00)	$ (5,418,714.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Major Maintenance Costs																								
Minor Inspection (Class A)	$ -		1	$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hot Section Refurbishment (Class B)	$ 4,705,132.00		2	$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Major Overhaul (Class C)	$ -		3	$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 4	$ -		4	$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 5	$ -		5	$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total CapEx and Major Maintenance Costs				$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Triggers				2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Operations				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Available Annual Hours				8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760
Cumulative Operating Hours		5%		474.35	948.00	1424.36	1898.72	2373.07	2848.72	3323.08	3797.43	4271.79	4747.44	5221.79	5696.15	6170.50	6648.15	7120.51	7594.86	8069.22	8544.87	9019.22	9493.58
Cumulative Starts		10		50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	950.00	1000.00
Escalation		2018																					
Operations & Maintenance		2.7%		1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.521	1.560	1.599	1.639
Major Maintenance		2.5%		1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Fuel		2.4%		1.024	1.049	1.074	1.099	1.126	1.153	1.180	1.209	1.237	1.267	1.297	1.328	1.359	1.392	1.425	1.459	1.493	1.529	1.565	1.602

Major Maintenance																								
Timing Tests			Hours																					
Minor Inspection (Class A)	1	12000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hot Section Refurbishment (Class	2	25000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Overhaul (Class C)	3	50000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Starts																					
Minor Inspection (Class A)	1	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hot Section Refurbishment (Class	2	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Overhaul (Class C)	3	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Triggers																								
Minor Inspection (Class A)	1			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hot Section Refurbishment (Class	2			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Overhaul (Class C)	3			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Evaluation
Mobile Generation Comparison Model
Bid Proposal by Siemens

Capital Costs																														
Purchase Price		$ 29,881,585.00	$ (29,881,585)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Spare Parts		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Commissioning/Startup		$ 1,784,581.00	$ (1,784,581)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal-Capex			$ (31,666,166)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Operating Costs																														
Total Fuel Costs			$ (2,650,501)	$ (2,640,094)	$ (2,742,657)	$ (2,811,224)	$ (2,881,504)	$ (2,961,634)	$ (3,027,380)	$ (3,103,065)	$ (3,180,642)	$ (3,269,090)	$ (3,343,663)	$ (3,425,203)	$ (3,510,833)	$ (3,608,463)	$ (3,680,569)	$ (3,780,703)	$ (3,875,303)	$ (3,963,068)	$ (4,071,490)	$ (4,171,277)									
Total 3rd-Party OEM Contract Costs			$ (7,474,137)	$ (7,474,137)	$ (8,156,789)	$ (5,458,714)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)									
Total CapEx and Major Maintenance Costs			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -									
Total Operating Costs			$ (10,084,637)	$ (10,157,231)	$ (8,859,446)	$ (8,229,938)	$ (7,601,504)	$ (7,681,634)	$ (7,747,380)	$ (7,823,065)	$ (7,900,642)	$ (7,989,090)	$ (8,063,662)	$ (8,145,203)	$ (8,230,833)	$ (8,328,463)	$ (8,400,569)	$ (8,500,703)	$ (8,595,303)	$ (8,683,068)	$ (8,791,490)	$ (8,891,277)									
Total Costs			$ (41,751,203)	$ (10,157,231)	$ (8,859,446)	$ (8,229,938)	$ (7,601,504)	$ (7,681,634)	$ (7,747,380)	$ (7,823,065)	$ (7,900,642)	$ (7,989,090)	$ (8,063,662)	$ (8,145,203)	$ (8,230,833)	$ (8,328,463)	$ (8,400,569)	$ (8,500,703)	$ (8,595,303)	$ (8,683,068)	$ (8,791,490)	$ (8,891,277)									
Evaluation Parameters																														
PREPA Discount Rate	9.0%																													
Evaluation Term (n=10)	10																													
Net Present Value		($112,900,213.89)																												
Equivalent Uniform Annual Cost	9.0000	($11,500,012.33)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)	$ (11,500,012)								
	EVA	($112,900,213.89)																												
Levelized Cost of Energy																														
NOTE: This requires a goal-seek to set NPV to Zero by varying LCOE assumption:																														
LCOE Assumption	$/kWh	0.5587	$ 0.55	$ 0.57	$ 0.58	$ 0.59	$ 0.61	$ 0.62	$ 0.64	$ 0.65	$ 0.67	$ 0.69	$ 0.71	$ 0.72	$ 0.74	$ 0.76	$ 0.78	$ 0.80	$ 0.82	$ 0.84	$ 0.86	$ 0.88								
Energy	kWh		17,361,356	17,408,922	17,361,356	17,361,356	17,361,356	17,408,922	17,361,356	17,361,356	17,361,356	17,408,922	17,361,356	17,361,356	17,361,356	17,408,922	17,361,356	17,361,356	17,361,356	17,408,922	17,361,356	17,361,356								
Total Revenue			$ 9,577,446	$ 9,941,778	$ 10,062,306	$ 10,213,262	$ 10,571,708	$ 10,895,689	$ 11,106,101	$ 11,284,574	$ 11,669,189	$ 11,993,687	$ 12,259,941	$ 12,566,439	$ 12,860,630	$ 13,238,787	$ 13,532,681	$ 13,870,998	$ 14,217,773	$ 14,613,144	$ 14,957,547	$ 15,310,988								
Total Cost			$ (41,751,203)	$ (10,157,231)	$ (8,859,446)	$ (8,229,938)	$ (7,601,504)	$ (7,681,634)	$ (7,747,380)	$ (7,823,065)	$ (7,900,642)	$ (7,989,090)	$ (8,063,662)	$ (8,145,203)	$ (8,230,833)	$ (8,328,463)	$ (8,400,569)	$ (8,500,703)	$ (8,595,303)	$ (8,683,068)	$ (8,791,490)	$ (8,891,277)								
Difference			$ (32,173,757)	$ (215,453)	$ 1,202,859	$ 2,083,324	$ 2,970,204	$ 3,184,055	$ 3,358,721	$ 3,561,509	$ 3,768,546	$ 4,004,598	$ 4,196,279	$ 4,421,236	$ 4,629,797	$ 4,910,324	$ 5,134,111	$ 5,370,294	$ 5,622,470	$ 5,930,075	$ 6,166,057	$ 6,417,709								
NPV		(0.00)																												

Mobile Generation Comparison Model Bid Proposal by Siemens	KEY RESULTS AND ASSUMPTIONS	Strictly proprietary & confidential 4-Oct-18

Project Summary		
Proponent/Bidder		Siemens
Project Initiation		2019
Evaluation Term (<=50)	Years	20
Net Capacity	MW	36.6

Project Results		
PREPA Discount Rate		8.0%
PREPA WACC		8.0%
Net Present Value	NPV	($219,674,008.21)
Equivalent Uniform Annuallized Cost	EUAC	($22,374,282.96)
LCOE $/kWhr (2018$)	See Eval Tab	$0.2386

Sensitivities	
Dev + EPC-related Capital Costs	0%
Operations & Maintenance	0%
Major Maintenance Costs	0%

Project Assumptions (Changeable inputs shown in blue font)

Operating Assumptions		
Project Initiation	Year	2019
Refurbish Alternative		
Capacity Factor	%	25.0%
Availability	%	95.0%
Annual Starts		50
Heatrate	Btu/kWhr	9,039
Fuel Heat Content	Btu/gal	139,000
Fuel Costs	$/bbl	$94.75

Financial Parameters	
Escalation	
First Year	2018
Operations & Maintenance	2.5%
Major Maintenance	2.5%
Fuel	2.5%
Revenue	2.5%
Weighted Avg Cost of Capital	8.0%

Capital Cost		
Initiate & Develop	**Units/Notes**	**Cost**
Purchase Price	$	$29,881,685
Spare Parts	$	$0
Commissioning/Startup	$	$1,784,981
Subtotal-CapEx		**$31,666,666**

Major Maintenance		
Maintenance Intervals		Cost
Minor Inspection (Class A)		$0
Hot Section Refurbishment (Class B)		$4,725,132
Major Overhaul (Class C)		$0
Maintenance Category 4		$0
Maintenance Category 5		$0

Operations & Maintenance Costs		
O&M Expense	**Escalation?**	**Rebuild**
Year 1	No	$7,474,137
Year 2	No	$7,474,137
Year 3	No	$6,116,789
Year 4	No	$5,418,714
Year 5+	No	$4,720,000

Major Maintenance		
Event Intervals	Starts	Hours
Minor Inspection (Class A)	0	12,500
Hot Section Refurbishment (Class B)	0	25,000
Major Overhaul (Class C)	0	50,000
Maintenance Category 4	0	0
Maintenance Category 5	0	0

Drop List
Yes
No



Operations & Maintenance
Mobile Generation Comparison Model
Bid Proposal by Siemens

	Unit	Data		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
				2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
Operating Costs																							
Operating Hours	Hours			2,081	2,086	2,081	2,081	2,081	2,086	2,081	2,081	2,081	2,086	2,081	2,081	2,081	2,086	2,081	2,081	2,081	2,086	2,081	2,081
Output	MWhrs			76,146	76,335	76,146	76,146	76,146	76,335	76,146	76,146	76,146	76,335	76,146	76,146	76,146	76,335	76,146	76,146	76,146	76,335	76,146	76,146
Fuel Consumption	139,000	BBLs		117,892.42	118,215.41	117,892.42	117,892.42	117,892.42	118,215.41	117,892.42	117,892.42	117,892.42	118,215.41	117,892.42	117,892.42	117,892.42	118,215.41	117,892.42	117,892.42	117,892.42	118,215.41	117,892.42	117,892.42
Total Fuel Costs	$	94.75		$ (11,449,564.45)	$ (11,797,956.45)	$ (11,029,198.65)	$ (11,329,928.62)	$ (11,638,176.83)	$ (11,989,622.89)	$ (11,277,964.54)	$ (11,609,934.15)	$ (11,950,182.50)	$ (14,336,112.24)	$ (14,656,410.49)	$ (15,021,820.73)	$ (15,398,391.27)	$ (15,826,595.11)	$ (16,177,654.83)	$ (16,582,283.20)	$ (16,996,842.78)	$ (17,469,597.49)	$ (17,857,423.01)	$ (18,303,348.54)
Operations & Maintenance 3rd-Party Contract			Esc																				
Year 1	$	7,474,136.50	0	$ (7,474,136.50)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 2	$	7,474,136.50	0	$ -	$ (7,474,136.50)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 3	$	6,116,789.00	0	$ -	$ -	$ (6,116,789.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 4	$	5,418,714.00	0	$ -	$ -	$ -	$ (5,418,714.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Year 5+	$	4,720,000.00	0	$ -	$ -	$ -	$ -	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Total 3rd-Party O&M Contract Costs				$ (7,474,136.50)	$ (7,474,136.50)	$ (6,116,789.00)	$ (5,418,714.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)	$ (4,720,000.00)
Major Maintenance Costs																							
Minor Inspection (Class A)	$	-	1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hot Section Refurbishment (Class B)	$	4,725,132.00	2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (6,321,646.62)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Major Overhaul (Class C)	$	-	1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 4	$	-	4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Maintenance Category 5	$	-	1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total CapEx and Major Maintenance Costs				$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (6,321,646.62)	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Triggers				2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
Operations				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Available Annual Hours				8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760	8,760	8,784	8,760	8,760
Cumulative Operating Hours		24%		26460.00	43286.70	52427.20	61227.20	69987.20	82494.90	91254.90	100014.90	108774.90	121282.10	130042.10	138802.10	147562.10	160069.30	168829.30	177589.30	186349.30	198857.50	207617.50	216377.50
Cumulative Starts		50		50.00	100.00	150.00	200.00	250.00	300.00	350.00	400.00	450.00	500.00	550.00	600.00	650.00	700.00	750.00	800.00	850.00	900.00	950.00	1000.00
Escalation		2018																					
Operations & Maintenance		2.5%		1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Major Maintenance		2.5%		1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Fuel		2.5%		1.025	1.051	1.077	1.104	1.131	1.160	1.189	1.218	1.249	1.280	1.312	1.345	1.379	1.413	1.448	1.485	1.522	1.560	1.599	1.639
Major Maintenance																							
Timing Tests			Hours																				
Minor Inspection (Class A)	1	12500		0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0
Hot Section Refurbishment (Class	2	25000		0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Major Overhaul (Class C)	3	50000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Starts																				
Minor Inspection (Class A)	1	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hot Section Refurbishment (Class	2	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Overhaul (Class C)	3	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5	1000000000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Timers																							
Minor Inspection (Class A)	1			0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0
Hot Section Refurbishment (Class	2			0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Major Overhaul (Class C)	3			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 4	4			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Category 5	5			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Evaluation
Mobile Generation Comparison Model
Bid Proposal by Siemens

Capital Costs																														
Purchase Price		$ 29,881,685.00	$ (29,881,685)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Spare Parts		$	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Commissioning/Startup		$ 1,784,985.00	$ (1,784,985)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal CapEx			$ (31,666,669)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Operating Costs																														
Total Fuel Costs			$ (11,449,564)	$ (11,767,956)	$ (12,026,199)	$ (12,329,929)	$ (12,638,177)	$ (12,969,622)	$ (13,277,985)	$ (13,609,934)	$ (13,950,183)	$ (14,336,112)	$ (14,656,410)	$ (15,021,821)	$ (15,396,366)	$ (15,826,366)	$ (16,177,535)	$ (16,582,263)	$ (16,996,343)	$ (17,469,107)	$ (17,857,413)	$ (18,303,848)								
Total 3rd-Party O&M Contract Costs			$ (7,474,137)	$ (7,474,137)	$ (6,116,729)	$ (1,418,714)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)	$ (4,720,000)								
Total Capital and Major Maintenance Costs			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (6,513,647)	$ -	$ -	$ -	$ -	$ -								
Total Operating Costs			$ (18,923,700)	$ (19,242,093)	$ (18,145,928)	$ (13,748,643)	$ (17,358,177)	$ (17,709,622)	$ (17,997,985)	$ (18,329,934)	$ (18,670,183)	$ (19,058,112)	$ (19,376,410)	$ (19,741,821)	$ (26,632,038)	$ (20,546,366)	$ (28,897,935)	$ (21,302,263)	$ (21,716,343)	$ (22,189,107)	$ (22,577,413)	$ (23,023,848)								
Total Costs			$ (50,590,367)	$ (19,242,093)	$ (18,145,928)	$ (17,748,643)	$ (17,358,177)	$ (17,709,622)	$ (17,997,985)	$ (18,329,934)	$ (18,670,183)	$ (19,058,112)	$ (19,376,410)	$ (19,741,821)	$ (26,632,038)	$ (20,546,366)	$ (28,897,935)	$ (21,302,263)	$ (21,716,343)	$ (22,189,107)	$ (22,577,413)	$ (23,023,848)								
Evaluation Parameters																														
WACC/Discount Rate	8.0%																													
Evaluation Term [n=30]	20																													
Net Present Value		($219,674,005.21)																												
Equivalent Uniform Annual Cost	9.82	($22,374,282.94)	$ (22,374,282)	$ (22,374,282)	$ (22,374,282)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)	$ (22,374,283)								
	ahk	($219,674,005.21)																												
Levelized Cost of Energy																														
NOTE: This requires a goal-seek to set NPV to Zero by varying LCOE assumptions																														
LCOE Assumption	$/kWh	0.2394	$ 0.24	$ 0.25	$ 0.26	$ 0.26	$ 0.27	$ 0.28	$ 0.28	$ 0.29	$ 0.30	$ 0.31	$ 0.31	$ 0.32	$ 0.33	$ 0.34	$ 0.35	$ 0.35	$ 0.36	$ 0.37	$ 0.38	$ 0.39								
Energy	kWh		76,146,300	76,354,920	76,146,300	76,146,300	76,146,300	76,354,920	76,146,300	76,146,300	76,146,300	76,354,920	76,146,300	76,146,300	76,146,300	76,354,920	76,146,300	76,146,300	76,146,300	76,354,920	76,146,300	76,146,300								
Total Revenue			$ 18,609,514	$ 18,537,200	$ 19,502,127	$ 20,051,180	$ 20,552,460	$ 21,123,997	$ 21,592,928	$ 22,132,751	$ 22,686,070	$ 23,316,829	$ 23,834,552	$ 24,430,416	$ 25,041,176	$ 25,727,317	$ 26,320,886	$ 26,966,008	$ 27,640,773	$ 28,409,414	$ 29,049,097	$ 29,766,299								
Total Cost			$ (50,590,367)	$ (19,242,093)	$ (18,145,988)	$ (17,748,643)	$ (17,358,177)	$ (17,709,622)	$ (17,997,985)	$ (18,329,934)	$ (18,670,183)	$ (19,058,112)	$ (19,376,410)	$ (19,741,821)	$ (26,632,038)	$ (20,546,366)	$ (28,897,935)	$ (21,302,263)	$ (21,716,343)	$ (22,189,107)	$ (22,577,413)	$ (23,023,848)								
Difference			$ (31,980,853)	$ (304,803)	$ 1,416,139	$ 2,302,538	$ 3,194,283	$ 3,414,345	$ 3,594,943	$ 3,802,817	$ 4,015,887	$ 4,258,717	$ 4,458,142	$ 4,687,595	$ (1,590,862)	$ 5,180,934	$ 3,410,951	$ 5,664,325	$ 5,923,431	$ 6,219,306	$ 6,472,684	$ 6,742,451								
NPV		($0.00)																												

RFP 82695 MOBILE GENERATION UNITS
PRICE COMPARISON

Costo de energía (20 puntos)	ARG (Pratt & Whitney)	RG Engineering (GE)	Siemens
Net Present Value (Base case 25% C.F.)	$ (159,111,631.87)	$ (190,064,052.57)	$ (219,674,008.21)
Net Present Value 500 hrs (5.7% C.F.)	$ (84,127,900.03)	$ (104,038,111.54)	$ (112,995,213.88)
Equivalent Uniform Annualized Cost (Base case 25% C.F.)	$ (16,205,871.16)	$ (19,358,443.57)	$ (22,374,282.96)
Equivalent Uniform Annualized Cost 500 hrs (5.7% C.F.)	$ (8,568,612.44)	$ 10,596,511.46	$ (11,508,812.12)
Levelized Cost of energy (Base case 25% C.F.) $kWhr	$ 0.2800	$ 0.2637	$ 0.2386
Levelized Cost of energy 500 hrs (5.7% C.F.) $kWhr	$ 0.6494	$ 0.6332	$ 0.5382
Puntuación	15.868	16.470	20.000

Costo por Unidad e Instalación (30 puntos)		
ARG	$ 19,299,166.00	30
RG	$ 20,066,700.00	28.81
Siemens	$ 31,666,666.00	10.78

O&M por Unidad (10 puntos)		
ARG	$ 20,218,012.69	10
RG	$ 35,698,110.00	2.343
Siemens	$ 26,483,776.00	6.901

	ARG	RG	Siemens
Costo Instalación por Unidad	$ 1,303,458.00	$ 3,114,450.00	$ 1,784,981.00
Costo por Unidad	$ 17,995,708.00	$ 16,952,250.00	$ 29,881,685.00
Total	$ 19,299,166.00	$ 20,066,700.00	$ 31,666,666.00

	ARG	Siemens	RG
Mantenimiento primeros 2 años	$ 8,890,000.00	$ 14,948,273.00	$ 19,065,550.00
Piezas Reemplazo por Unidad	$ 2,028,012.69		
Mantenimiento 3er año	$ 4,580,000.00	$ 6,116,789.00	$ 8,102,240.00
Mantenimiento 4to año	$ 4,720,000.00	$ 5,418,714.00	$ 8,530,320.00
Total	$ 20,218,012.69	$ 26,483,776.00	$ 35,698,110.00

Conversión a Valor del Renglón Costo Unidad e Instalación

$$Puntuación\ de\ Proponente = \left[1 - \frac{(Proponente - Proponente\_Mas\_Bajo)}{Proponente\_Mas\_Bajo}\right] * Valor\ de\ Renglón$$

$$Puntuación\ de\ Proponente_{ARG} = \left[1 - \frac{(19,299,166 - 19,299,166)}{19,299,166}\right] * 30 = 30$$

$$Puntuación\ de\ Proponente_{RG} = \left[1 - \frac{(20,066,700 - 19,299,166)}{19,299,166}\right] * 30 = 28.807$$

$$Puntuación\ de\ Proponente_{SIEMENS} = \left[1 - \frac{(31,666,666 - 19,299,166)}{19,299,166}\right] * 30 = 10.775$$

Conversión a Valor del Renglón Costo O&M

$$Puntuación\ de\ Proponente_{ARG} = \left[1 - \frac{(20,218,012.69 - 20,218,012.69)}{20,218,012.69}\right] * 10 = 10$$

$$Puntuación\ de\ Proponente_{RG} = \left[1 - \frac{(35,698,110 - 20,218,012.69)}{20,218,012.69}\right] * 10 = 2.343$$

$$Puntuación\ de\ Proponente_{SIEMENS} = \left[1 - \frac{(26,483,776 - 20,218,012.69)}{20,218,012.69}\right] * 10 = 6.901$$



Conversión a Valor del Renglón Costo de Energía

$$Puntuación\ de\ Proponente_{ARG} = \left[1 - \frac{(0.6494 - 0.5382)}{0.5382}\right] * 20 = 15.868$$

$$Puntuación\ de\ Proponente_{RG} = \left[1 - \frac{(0.6332 - 0.5382)}{0.5382}\right] * 20 = 16.470$$

$$Puntuación\ de\ Proponente_{SIEMENS} = \left[1 - \frac{(0.5382 - 0.5382)}{0.5382}\right] * 20 = 20.000$$

RFP 82695 MOBILE GENERATION UNITS

SCORING TABLE

PROPONENTS	ARG PRECISION, CORP.	RG ENGINEERING, INC.	SIEMENS
Price Proposal (60 points)			
Units Pricing:			
Shall submit a price per unit (including all its BOP equipment and accessories) (20 points)			
Shall provide an installation price per unit, with all necessary equipment, materials, labor, testing, and commissioning (10 points)	30	28.81	10.78
Shall provide price for Operation and Maintenance as required in this document (10 points)	10	2.343	6.9
Levelized Cost of Energy (LCOE) $/kW-hr (20 points)	15.86	16.47	20
Price Proposal Score:	55.86	47.62	37.68
Price Proposal Score 1 to 5 Scale:	5	4.00	4.00
Price Proposal Score Converted:	**60**	**48**	**48**
Experience and Capacity (15 points)			
Offeror's Experience:			
Shall submit an abbreviated history of firm	3	4	5
Shall provide evidence of applicable experience and performance in at least two related scope projects within the past five years, and references.	4	4	4
Shall provide qualifications and resumes of experienced key personnel (project manager, engineers, supervisors, etc.) of the proponent with at least ten (10) years of experience in similar projects.	5	5	5
Shall provide qualifications and resumes of experienced key personnel (project manager, engineers, supervisors, etc.) of the installation subcontractor (if any) with at least five (5) years of experience in similar projects.	5	5	5
Schedule of Project Delivery:			
Shall provide a proposed project schedule based on continuous work with key and critical tasks.	3	4	4
Experience and Capacity Score:	**12**	**13.2**	**13.8**
Approach and Methodology (15 points)			
Work Plan:			
Shall submit a description of the proposed working plan, including working methods, logistics, list of resources (manpower and equipment), and subcontractors, if any.	4	4	4
Approach and Methodology Score:	**12**	**12**	**12**
Compliance with all Applicable Federal, and Puerto Rico Regulations (10 points)			
Proponents who demonstrate compliance with all applicable federal and Puerto Rico regulations. Adherence to strong ethical and integrity practices and unequivocal commitment to solid administrative practices is essential for PREPA. Understanding of federal and local requirements is essential and will be highly considered.	4	5	3
Compliance with all Applicable Federal, and Puerto Rico Regulations:	**8**	**10**	**6**
Total	**92**	**83.2**	**79.8**

The criteria shall be graded using a score of 1 to 5:

1 = **Poor or Inadequate** – does not meet RFP expectations

2 = **Adequate** – criteria are met, below the standards set by the RFP

3 = **Average** – meets the minimum standards set by the RFP

4 = **Good** – meets and exceeds the minimum standards set by the RFP

5 = **Excellent** – meets and substantial exceeds the minimum standards set by the RFP and presents the best proposal for the criteria.

Contract

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract: 00083675
Release :
Executed: 05/21/2019
Printed : 05/21/2019
Page : 1

Mail Invoice To:

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

Vendor:

ARG PRECISION CORP
PMB 911
PO BOX 2500
TOA BAJA PR 00951

Please Direct Inquiries to:
DELIS T. ZAMBRANA-COLON
D-ZAMBRANA-DSAD@PREPA.COM
Title: PROCUREMENT SUDIV HD
Phone: 787-521-3321 Ext:
Fax : 787-521-3234

Work Location:

Title: THREE MOBILE GENERATION UNITS

** DUPLICATE COPY **

Total Value : $58,093,016.00 USD
Pricing Method: FIXED

** NOT TO EXCEED **

Contract Type : TECHNICAL SERVICES
Project :

Start Date: 05/20/2019
End Date :

Vendor Authorized Signature
Armando J. Rodriguez
Printed Name/Title
5/21/19 Date Signed
787-261-8644 Phone

Authorized Signature
Nefteli Gonzalez Jefa División de Suministros
Printed Name/Title
5/21/19 Date Signed
787-521-3268 Phone

Scope of Work

Contract 2019-P00112
Executed on 05/20/2019
(RFP 82695 authorized by Board Resolution 4640)

Official contract document is included as Exhibit 1. All applicable terms, conditions and specifications are per Contract 2019-P00112. (Asset Suite contract 83675 for administrative/payment purposes.)

The following is a summary of the Scope of Work as it appears in the official contract document:

The Contractor shall provide three (3) new, zero-hour FT-8 MobilePac® gas turbine units and perform its delivery, installation, testing, and commissioning. Each mobile unit shall have a guaranteed generating capacity of 22.583 MW, as per Appendix D, and shall include the necessary Balance of Plant (BOP) equipment and black start system. The units shall burn at least both, distillate #2 fuel (diesel) and natural gas (NG). The units shall be equipped with modern environmental control equipment to meet all current permitting requirements. Each gas turbine package shall have fast start capability.
The Contractor shall furnish all the supply, delivery, installation, testing, and commissioning of the three units or other necessary services for the Yabucoa Power Station and Palo Seco Power Plant in strict accordance with the provisions of this Contract, including the Proposal Forms, Contractor's Bidding Proposal, and reference drawings, all of which are hereby made a part hereof 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.

Contract Amendments

Amendment: 001
Title : AMENDMENT 1 - CORRECTION "START DATE"
Amended Start : 05/20/2019
Amendment Value:
Pricing Method :

Execution Date : 05/21/2019
Amended End Date:
** NOT TO EXCEED **

Amendment Scope

Amendment 1 to correct start date per contract 2019-P00112
Executed/start date is May 20, 2019.

* * * End of Contract * * *

2019-P00112

PUERTO RICO ELECTRIC POWER AUTHORITY
GENERATION DIRECTORATE

MOBILE GENERATION UNITS

TERMS AND CONDITIONS

AS FIRST PARTY: AS FIRST PARTY: The Puerto Rico Electric Power Authority, hereinafter referred to as "PREPA", a public corporation and government instrumentality of the Commonwealth of Puerto Rico, created by Act of May 2, 1941, No. 83, as amended, represented in this act by its Chief Executive Officer/Executive Director, José F. Ortiz Vázquez, of legal age, married, professional engineer, and resident of San Juan, Puerto Rico.

AS SECOND PARTY: ARG Precision Corp. hereinafter referred to as "the Contractor", a partnership organized and existing under the laws of Puerto Rico, authorized to do business in Puerto Rico, represented in this act by its President, Armando Rodríguez Gutiérrez, engineer, married, and resident of San Juan, by virtue of Corporate Resolution dated as April 29, 2019.

WITNESSETH

A. PREPA, by virtue of its enabling act, Act No. 83 of May 2, 1941, as amended (Act 83), has the authority to engage those professional, technical and consulting services necessary and convenient to the activities, programs, and operations of PREPA.

B. As established in Section 205 (1) of Act 83, all purchases and contracts for supplies or services, except personal services, made by PREPA, including its capital construction contracts, shall be made by calling for bids with sufficient time before the date the bids are opened so that PREPA can guarantee proper knowledge and appearance of competitive bidders.

C. Pursuant Section 205 (2) (f) of Act No. 83 a competitive bidding shall not be necessary when in the judgment of the Governing Board, a competitive request for proposal (RFP) process for the acquisition of goods, equipment, materials or services must be carried out to encourage greater competition, reduce the risk of collusion and promote the best possible terms and conditions in benefit of greater savings and reduction of costs and operational expenses of PREPA.

A32

IN CONSIDERATION of the mutual covenants hereinafter stated, the parties agree themselves, their personal representatives, successors, and assignees, as follows:

ARTICLE 1. Scope of Contract

The Contractor shall provide three (3) new, zero-hour FT-8 MobilePac® gas turbine units and perform its delivery, installation, testing, and commissioning. Each mobile unit shall have a guaranteed generating capacity of 22.583 MW, as per Appendix D, and shall include the necessary Balance of Plant (BOP) equipment and black start system. The units shall burn at least both, distillate #2 fuel (diesel) and natural gas (NG). The units

shall be equipped with modern environmental control equipment to meet all current permitting requirements. Each gas turbine package shall have fast start capability.

The Contractor shall furnish all the supply, delivery, installation, testing, and commissioning of the three units or other necessary services for the Yabucoa Power Station and Palo Seco Power Plant in strict accordance with the provisions of this Contract, including the Proposal Forms, Contractor's Bidding Proposal, and reference drawings, all of which are hereby made a part hereof 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 **Act of God** – an Act of God is construed herein to mean an earthquake, hurricane or other cataclysmic phenomenon of nature not ordinarily occurring. Rains, windstorms, floods or other natural phenomenon of normal intensity for the particular locality, as determined by the preceding five (5) year monthly average from records of the nearest National Oceanic and Atmospheric Administration recording station, shall not be construed as an Act of God.

2.2 **Applicable Law** – shall mean any federal, state or local act, statute, law, code, rule, regulation or order applicable to Contractor's performance of the work.

2.3 **Calendar Day** – shall mean each and every 24-hour day shown on the calendar, beginning and ending at midnight.

2.4 **CES Plan Inspector** - Monitoring engineer hired to perform monthly inspections and assure compliance with the Approved Erosion and Sedimentation Control Plan for the Project with regulatory agencies.

2.5 **Contracting Officer** - shall mean the Executive Director of PREPA, acting directly or through his properly authorized representatives as notified in writing to the Contractor.

2.6 **Completion Date** – date in which all tasks and project scope had been completed.

2.7 **Contract** - shall mean, collectively, all the covenants, terms, and stipulations in these articles of agreement, and in all supplementary documents hereto attached which constitute essential parts of the Contract and are hereby made part thereof, to wit:

Contract
Proposal
Performance and Payment Bonds
Letter of Award

2.8 **Contractor** - designates the company that will perform all work as defined in ARTICLE 1. Scope of Contract. Also, will be responsible for the total compliance

of any required condition or recommendations established under all approved permits from local and federal regulatory agencies.

2.9 **Construction Manager** - shall mean the professional assigned by the Contractor to provide the construction management services on the project. This professional shall be a professional engineer registered in Puerto Rico and an active member of the Puerto Rico College of Engineers and Land Surveyors.

2.10 **Change Order** - A written agreement between the parties that sets out changes (in price, time, or scope of work) to the Contract.

2.11 **Critical Path Method (CPM)** – A scheduling technique used to plan and control a project which combines all relevant information into a single plan defining the sequence and duration of operations and depict the interrelationship of the work elements to complete the project. The critical path is defined as the longest sequence of activities in a network which establishes the minimum length of the time for accomplishment the last event of the project.

2.12 **Delay** - Event that extends (affect) the completion date of the project, by affecting tasks on the critical path. The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involve with this request.

2.13 **Delivery** – Event when the Contractor provides three (3) new, zero hour gas turbine units including the necessary Balance of Plant (BOP) equipment and black

start system.

2.14 **Disruption** - The effect of events upon a non-critical path that, while using additional recourses and extending the duration of that particular activity, or path of activities, does not extend the end date of the project.

2.15 **Engineer** - shall mean PREPA's Director of Generation, acting directly or through his properly authorized representatives.

2.16 **Environmental Compliance Officer** - PREPA's personnel in charge of project inspections and environmental regulations compliance.

2.17 **Final Acceptance** – shall mean the written approval by PREPA that the entire work has been completed and the final cleaning up of the site has been performed and all Punch List items have been rectified.

2.18 **Force Account Work** - Extra work in which the Contractor delegates the administration to PREPA and that is paid for on the basis of actual costs for labor, materials, equipment, bonds, insurance, and taxes, plus an established allowance, as provided in this Contract.

2.19 **Letter of Award (LOA)** – Letter signed by the Supply Chain Division to notify the bidder that the bid is being awarded to him and to require documents prior to contract signing, such as but not limited to; Corporate Resolution, evidence of payment and certificate of the Puerto Rico State Insurance Fund, municipal license taxes, Construction excise taxes, certificate of insurances and endorsements,

documents of the Owner Controlled Insurance Program, payment and performance bonds.

2.20 **Letter of Release –** Letter signed by the Contractor's contracting officer and notarized stating that the Contractor has no debt with, but no limited to, subcontractors, consultants, material and services supplier, Federal and State Agencies, Municipality, manufacturer or Insurance Agency.

2.21 **Notice to Proceed** – a written order sent to the Contractor by the Contracting Officer, or his designated representative, notifying the Contractor of the date upon which the Contractor is given authority to begin the work.

2.22 **Owner** – designates the Puerto Rico Electric Power Authority (PREPA).

2.23 **Punch List** - shall mean the list of non-conforming or incomplete work items that are identified by PREPA as being required for the Final Acceptance of the installation, testing, and commissioning of the three units or other necessary services for the Yabucoa Power Station and Palo Seco Power Plant in strict accordance with the provisions of this Contract, including the Proposal Forms, Contractor's Bidding Proposal, and reference drawings.

2.24 **Resident Engineer** - shall mean the manager of the field office responsible for, but not limited to, the administrative issues, quality control, and technical aspects of the project. This person shall be a professional engineer register in Puerto Rico and an active member of the Puerto Rico College of Engineers and Land

Surveyors. The Resident Engineer shall be present at all times on site in order to the Contractor be able to perform any task of the project.

2.25 **Safety Officer** – shall be the person designated by the Contractor whose only duty shall be the prevention of accidents and implement, both, the Safety and Health Program and the Site Specific Work Plan. The Safety Officer shall be present at all times on site in order to the Contractor be able to perform any task of the project.

2.26 **Subcontractor** – shall mean any subcontractor, supplier, or vendor of Contractor engaged for the purposes of progressing the work under a subcontract with the Contractor and in which the Contractor has no equity interest or profit-sharing affiliation. Any such entity in which the Contractor owns equity or has a profit-sharing affiliation shall be considered to be the Contractor. Contractor shall comply with requirements set forth on Article 29 – Subcontractors.

p3 N

2.27 **Substantial Completion** - the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. To reach the substantial completion, per site, Contractor shall install, test, and commission the units and they shall be ready to be dispatched by PREPA. The date of substantial completion stops the time for completion and the penalties associated, as established on Article 16. Penalty for Delay.

2.28 **Unit Final Acceptance** – shall mean the written approval by PREPA that a specific

unit work has been completed and the final cleaning up of its site has been performed and all Punch List items have been rectified. One third of the Final Payment can be made after a Unit Final Acceptance. For the Palo Seco site, if there are incomplete works of an installation that is shared between the two units, at least one of the units shall not be finally accepted.

2.29 **Working Day** – shall mean each day Monday thru Friday with a minimum of sixteen (16) hour shifts, and up to twenty four (24) hours if required.

ARTICLE 3. Consideration

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 the Services, the firm price of $58,093,016.00, which includes all taxes and patents, 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 10. Changes and/or Extra Work, below.

The Contractor shall submit its invoices for work already completed according to the payment schedule approved by the Engineer, together with the technical supporting documents of required tests.

All invoices shall be subject to the Engineer's approval before being paid and shall include the actualized progress schedule, S-curve graph and all other documents required in Article 4.3. No invoices shall be accepted for evaluation without the required documents.

Invoicing shall be done as stated in the Payment Schedule. Payments shall be done in ten (10) working days, except the first payment, which shall be done with contract signing, and the second payment, which shall be done in five (5) working days.

All payments made by PREPA for equipment and/or materials delivered and accepted and/or services rendered and work performed under this Contract will be charged to a PREPA account 01-1071-34601-555-101-100000106766.

Unless otherwise provided in the specifications, partial payment will be made as the work progresses as stated in the Payment Schedule, on estimates made and approved by the Engineer or the Contracting Officer in accordance with PREPA's internal regulations. In preparing estimates the material delivered on the site may be taken into consideration; provided that, the Contractor submits evidence as signed receipts or other documentary evidence to prove that the actual costs of the materials or equipment (materials or equipment for now on is referred as materials) for which he is to receive advance payment has been paid in full. If said materials have not been paid for in full, the invoice shall be accompanied by a release from Bond Company and the materials dealer expressing their agreement with the payment for such materials to the Contractor by PREPA, in which it expressly state that no claim shall be done against PREPA for non-payment. Materials shall be 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. Storage

and protection cost, and the cost of replacing lost or damage materials shall be borne by the Contractor.

If at any time after the Contractor has received advance payment for materials on site, the Engineer obtains evidence indicating that said materials, or any part or parts thereof, are defective, or that said materials, or part thereof, do not conform to the specifications, the Engineer will proceed to deduct from any of the succeeding partial payments due to the Contractor for the work actually performed, a sum sufficient to cover the cost of the materials, or parts thereof, found to be defective.

All payments made by PREPA for equipment and/or materials delivered and accepted and/or services rendered and work performed under this Contract will be charged to a construction estimate. In making such payments, PREPA shall be bind to the Payment Schedule included herein.

No payment of invoices or portions thereof shall at any time constitute approval or acceptance of the work under this Contract, nor be considered to be a waiver by PREPA of any of the terms of this Contract. However, title to all materials and equipment to the extent that payments have been received, whether or not the same have been incorporated in the work, shall vest in PREPA and, in any case, shall not be part of Contractor' property or estate in the event the Contractor is judged a bankrupt or makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of the Contractor's inventory.

After Final Acceptance of the work PREPA will pay to Contractor all retained percentages less the corresponding deductions. The Contractor shall submit with the final certification a Letter of Release ("Carta de Relevo"), which shall be notarized and in which the Contractor shall state that there is not debt with any sub-contractor, manufacturer, employee, government agency, municipality and service or materials provider. Upon completion and Final 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.

The Contractor shall immediately notify PREPA when the billing under the present Contract amounts 75% of the maximum amount under the Contract. In addition, the Contractor shall present an itemized list of the remaining billable works under the Contract.

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.

No interest Certification:

We certify under penalty of nullity that no public servant of PREPA will deriveor obtain any benefit or profit of any kind from the contractual relationship which is the basis of this invoice. If such benefit or profit exists, the required waiver has been obtained prior to entering into the Agreement. The only consideration to be received in exchange for the delivery of goods or for the Services provided is the agreed-upon price that has been negotiated with an authorized representative of PREPA. The total amount shown on this invoice is true and correct. The Services have been rendered, and no payment has been received.

_____

Contractor's Signature

ARTICLE 4. Commencement and Completion of Work

4.1 General

The Contractor shall complete all tasks and project scope within sixty (60) calendar days from the date of the Notice to Proceed. However, units shall be installed in the following order:

- First unit shall be installed, tested, and commissioned in the Yabucoa Power Station in forty five (45) calendar days, starting ten (10) days after the issue of the Notice to Proceed.
- Second and third units shall be installed, tested, and commissioned in the Palo Seco Power Plant in sixty (60) calendar days, starting ten (10) days after the issue of the Notice to Proceed.

Since time is an essential part of this Contract, non-compliance of the timeline

established above will result in penalties to the contractor, subject to the provisions stated in Article 10, Changes and/or Extra Work, Article 15, Force Majeure and Article 19, Termination. The Contractor shall receive a written order, stating the date on which the Contractor shall commence to execute the contracted work. Thus, Notice to Proceed date marks the beginning of commencement of work. Mobilization shall be completed within ten (10) days after the date stated in the Notice to Proceed. Both Parties agree that time is the essence of the Contract.

Before the Notice to Proceed for the Palo Seco Phase is issued, The Contractor has the right to inspect the site with PREPA's authorized personnel, in order to confirm that the site is clear of equipment and auxiliary equipment and ready for the Contractor to begin its work.

The demand of the obligations of either party under this Contract will be subject to the filing of the Contract at the Office of the Comptroller of the Commonwealth of Puerto Rico, in compliance with Act of October 30, 1975, No. 18, as amended. The Contractor shall, not later than ten (10) working days, after receipt of the Letter of Award (LOA) sent by the Supply Chain Division, furnish all documents required therein.

4.2 Schedule of Proposed Progress

The Contractor, within ten (10) days after receipt of the Notice to Proceed shall

file with the Engineer a 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. This schedule shall also include the milestones for the submittals and material ordering, the critical path of the project, and the man-hours per item 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 allotted time. This information shall become a part of this Contract after the Engineer has approved it in writing. The schedule shall be actualized monthly by Contractor and submitted to PREPA for approval.

4.3 S-curve Graph

The Contractor within ten (10) days after receipt of the Notice to Proceed Contract shall file with the Engineer the S-curve Graph. The S-curve shall be plotted with the percent of work completed in the Y-axis and the cost in the X-axis. This graph shall be based on the proposed schedule as define on Section 4.2 above.

4.4 Payment Schedule

The payment schedule will list the instances setting out when payments will be made by PREPA to the Contractor under the terms of this contract. All payments are subject to the submitting by the Contractor to PREPA of all documents required under this contract, including, but not limited to, all documents required under Article 20 and 51. Payments shall be made as follows:

20% of total	Contract signing
30% of total	Delivery of the three (3) units to Puerto Rico port.
39% of total	Delivery of units to its final sites (13% per unit)
6% of total	Delivery of the Balance of Plant (BOP) equipment to sites (2% per BOP)
3% of total	Substantial Completion (1% per unit)
2% of total	Final Acceptance of Work (0.667% per unit)

The substantial completion per unit shall be as defined in Article 2. Definitions. The 2% for Final Acceptance can be paid per unit, as per definition of Unit Final Acceptance in Article 2. Partial payments of a Unit Final Acceptance can be made at PREPA's sole discretion. Payments shall be made by electronic transfer to Contractor's commercial account number (route number

The Contractor shall be responsible to pay PREPA all costs related to the electronic transfer.

ARTICLE 5. Suspension of Work

The Contracting Officer or the Engineer may, at any time, suspend the whole or any portion of the work under this Contract, for the period of time that the Contracting Officer or the Engineer determines appropriate to PREPA, but this right to suspend the work shall not be construed as denying the Contractor actual reasonable, and necessary expenses due to delays, caused by such suspension, it being understood that expenses will not be allowed for such suspension when ordered by the Contracting Officer or the Engineer on account of a Force Majeure event, as defined in ARTICLE 15. Force Majeure, herein. The cause of such suspension shall be put in writing by the Contracting Officer, the Engineer or the designate representative within two (2) working days after the suspension or as soon as practicable.

ARTICLE 6. Other Work at the Site

PREPA reserves the right to perform other work by force account and/or enter into other contracts in connection with this project. The Contractor shall afford PREPA and other contractor reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall properly connect and coordinate his work with theirs. If any part of the Contractor's work depends for proper execution or results upon the work

of PREPA or of any other Contractor, the Contractor shall inspect and promptly report to PREPA any defects in such work or any conflicts between such work and that of the Contractor, PREPA to decide, if necessary, the course to be followed by each party. Wherever work being done by PREPA's own forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by PREPA to secure the completion of the various portions of the work in general harmony. Whenever, in the opinion of PREPA, the orderly progress of the entire project requires the use by PREPA's own forces or by other Contractors, of construction equipment installed and operated by the Contractor for his own use, PREPA will arrange with the Contractor for such use, at times, and in locations which will not interfere with the work being done under this Contract.

A32

ARTICLE 7. Submittals

The Engineer shall be allowed at least three (3) working days to evaluate and review submittals and mark them as disapproved, approved as corrected, or approved. All not approved submittals shall be corrected as required and resubmitted for PREPA's evaluation. The Contractor may present the submittals by email. Before commencement of any work or task required in this Contract, the Contractor shall submit for PREPA's approval, required in Article 48. Safety Provisions, the Occupational Safety and Health Program.

ARTICLE 8. Specifications and Drawings

PREPA reserves the right to review and approve all drawings, specifications, methods, and data which the Contractor generates, from its responsibilities, obligations or liabilities under this Contract. The Contractor shall obtain such reviews or approval in writing or by email from PREPA. 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 work so affected until it has received written order from the Engineer.

ARTICLE 9. Strict Accordance with Technical Requirements

All construction work called for in the Specifications and/or shown on the drawings to be performed by the Contractor shall be performed in strict accordance with the technical requirements of the Specifications.

ARTICLE 10. Changes and/or Extra Work

PREPA may, at any time, make changes or order extra work within the Scope of Work contracted, subject to previous written approval of PREPA's Contracting Officer. Changes

made by PREPA may include, but not limited to, changes:

1. In the specifications including drawings and design.

2. In the method or manner of performance of the work.

3. In PREPA's furnished facilities, equipment, materials, services, or site; and/or,

Within ten (10) working days after receipt of PREPA's written order of a change in the work (or such shorter or longer period of time as may be reasonably required and agreed by PREPA and the Contractor), Contractor shall promptly notify PREPA of the cost, schedule and other impact(s) Contractor anticipate as a result of the change. If PREPA agrees with the Contractor's statement as to the impact of the change, the parties shall proceed promptly to enter into a written change order in connection with such change to equitably adjust Contractor's cost (increase or decrease), schedule (lengthen or shorten), or other obligations under Contract in connection with such change. If PREPA disagrees with the Contractor's statement as to the final impact of the change, PREPA shall promptly advise Contractor in writing of the basis for the disagreement and PREPA and Contractor shall negotiate in good faith to resolve any issues in order to, when applicable, enter into a written change order to equitably adjust Contractor's cost (increase or decrease), schedule (lengthen or shorten), or other obligations under the Contract in connection with such change. Acceptance of the change order and an adjustment in the Contract price and/or Contract time shall not be unreasonable withheld. Once a written

consent has been executed by PREPA's Contracting Officer, Contractor shall proceed with the change. Except as herein provided, and with the time frames stated, no order, statement, or conduct of PREPA shall be treated as a change under this section or entitle the Contractor to an equitable adjustment hereunder.

If agreement on the prices for the extra work cannot be reached between PREPA and the Contractor, PREPA may order in writing the Contractor to perform the required work on a force account basis and the Contractor shall then execute the order. Payment for such Force Account Work shall be as specified in Article 2.18 - Force Account. PREPA may also elect to have such work performed by its own forces or by separate contract.

In order to facilitate review of quotations for extras or credits, all proposals submitted by Contractor in connection with a change in the work by PREPA, except those so minor that their propriety can be seen by inspections, shall be accomplished by a complete itemization of the costs including labor, materials, equipment, and subcontracts. When subcontractors perform major cost items, they shall also be itemized.

ARTICLE 11. Inspection

11.1 Periodic Inspection

All material and workmanship (if not otherwise designated by the specifications) shall be subject to inspection, examination, and test by PREPA's inspectors, 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. The Contractor shall promptly remove rejected material from the premises. The Contractor shall furnish promptly 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.

11.2 Final Inspection

Whenever all the materials have been furnished and all work has been performed, including final cleaning up as contemplated in ARTICLE 45, Cleaning Up, 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. Final inspection shall occur within a ten (10) working days period after the Engineer has received notice from the Contractor of the satisfactory completion of the installation of the equipment. After receipt of notice PREPA will notify Contractor of the exact date and time of the final inspection and Contractor shall accommodate PREPA's specific time. If all installation 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. 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 the 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 a project is substantially completed is at the discretion of PREPA, which is to be bind to the definition of substantial completion in Article 2 of this Contract.

ARTICLE 12. Superintendence by the Contractor

Before commencement of the work, the Contractor shall designate a competent Construction Manager, satisfactory to the Engineer, with the expertise and resources necessary to provide construction management services. The Contractor shall also have a competent Resident Engineer, satisfactory to the Engineer, on the work site, at all times, during progress of the work, with authority to act for him. The Resident Engineer shall only be assigned to this project. The Construction Manager and Resident Engineer shall represent the Contractor on his absence and all directions given to him by the Engineer

shall be as binding as if given to the Contractor. The Contractor shall, at all times, enforce strict discipline and good order among his employees and shall not employ on the work any unsuitable or unskilled person in the work assigned to him. In addition, the Contractor shall be fully responsible for the negligent or wrongful acts or omissions of subcontractors or of persons both directly or indirectly employed by the Contractor, and shall be liable to PREPA and/or any affected third parties for such acts or omissions.

ARTICLE 13. Sanitary Facilities

The Contractor shall furnish and maintain satisfactory, sanitary facilities for the use of the workmen engaged in the construction, as required by law or regulations.

ARTICLE 14. Access to Work

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.

ARTICLE 15. Force Majeure

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 cause without the fault or negligence, and beyond the reasonable control of, the party claiming the occurrence of a Force Majeure event. 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, 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, and that such party, within ten (10) days after the occurrence of the alleged Force Majeure, or as soon as practicable, 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.

ARTICLE 16. Penalty for Delays

If the Contractor fails to complete the installation work or any separable part thereof, within the time of completion of the work established in the ARTICLE 4, Commencement and Completion of Work, the Contractor shall pay to PREPA a penalty of ten thousand dollars ($10,000) for each calendar day of delay in completing the work or separable part thereof, up to a maximum of fifteen percent (15%) of the Contract price, and the Contractor and his sureties shall be joint and several liable for said amount. In the event that Contractor, due to his delay, had pay the total amount of the penalty as above mentioned, and has failed to complete the work or any part separable thereof, it could be considered a breach of contract, and PREPA may terminate the Contract, execute the performance bond and pursue any other remedies under this Contract, law or equity.

The penalty shall apply when the Contractor fails to substantially complete the Yabucoa works in at least forty five (45) days or fails to substantially complete the works in Palo Seco in at least sixty (60) days, after the ten (10) days mobilization period. If Contractor substantially completes the Yabucoa works after the forty five (45) days and on or before the sixty (60) days, the daily penalty of ten thousand dollars ($10,000) shall apply. If, after the sixty (60) days, Contractor has not substantially finished the works of any or both sites, the ten thousand dollars ($10,000) penalty shall apply. In case of 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 ARTICLE 33. Disputes, hereof; provided that, no claim shall be made by the 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. Any damages caused by delays or hindrances exclusively by PREPA shall give the right to Contractor to claim actual reasonable and necessary expenses due to said delays.

If PREPA does not terminate the right of the Contractor to proceed, the Contractor shall continue the work, in which event shall continue to pay to PREPA the penalty in the amount set forth above for each calendar day of delay until the work is completed, and

the Contractor and his sureties shall be liable for the amount thereof; provided that, the right of the Contractor to proceed shall not be terminated or the Contractor charged with a penalty because of any delays in the completion of the work due to Force Majeure events or situations, or failures on the part of PREPA to carry out its obligations.

PREPA shall have the right to the payment or to the withholding of Contractor's payments in case of Contractor's delay in completion of the work. The Contractor agrees that the penalty shall not be subject to reduction, moderation or modification, since this penalty is a pecuniary punishment for the delay, and not a liquidation of damages.

ARTICLE 17. Liabilities

17.1 Civil Responsibility

AJR

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.

17.2 Protection Against the Occurrence of Damages

The Contractor agrees to make, use, provide, and take all proper, reasonably necessary and sufficient precautions, safeguards, and protection against the occurrence or happenings of injuries, death and/or damages to any person or property during the progress of the work.

17.3 Save and Hold Harmless

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 person for personal injuries, including death or for property damage, caused by the Contractor or any of its subcontractors, by act or omission, in the performance or nonperformance of its obligations under the Contract.

17.4 Save Harmless for Operation of PREPA's Equipment

The operation of PREPA's equipment by PREPA at its plant site is within the exclusive control of PREPA and PREPA shall indemnify and save harmless the Contractor from loss, expense or liability imposed upon the Contractor for any injury to a person, including death resulting therefrom or damage to any property resulting from the operation of such equipment by PREPA.

If the Contractor is allowed to operate PREPA's equipment at the plant site, the Contractor shall indemnify and save harmless PREPA from loss, expense or liability imposed upon PREPA for any injury to a person, including death or damage to any property resulting from the operation of such equipment by the Contractor.

ARTICLE 18. Independent Contractor

The Contractor shall be considered as an independent contractor, for all material purposes under this Contract, and all persons engaged or contracted by the Contractor for the performance of its obligations herein, shall be considered as its employees or

agents or those of its subcontractors, and not 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 19. Termination

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 ten (10) days prior notice, when in PREPA's judgment such action responds to PREPA's best interest. If notice is given, this Contract shall terminate upon the expiration of ten (10) days and PREPA shall be obligated to pay all fees and expenses incurred up to the day of effective termination, in accordance with the terms of this Contract. The rights, duties and responsibilities of the Parties shall continue in full force and effect during the ten (10) day notice period. Contractor shall have no further right to compensation except for what has been accrued for services rendered under this Contract until said date of effective termination. Provided that, in the event the Contractor fails to comply with any of its obligations under the Contract, PREPA shall give five (5) days since notice for the Contractor to propose and commence the remedy of the default. After the five (5) days given to the Contractor has passed and the Contractor has not commenced the remedy the default, PREPA may declare an immediate Contract termination, cancellation or rescission, without prior notice to the Contractor. PREPA shall have the right to terminate this Contract immediately in the event of negligence, dereliction

of duty, noncompliance, or material breach by the Contractor, as determined in the sole discretion of PREPA, or for any other reason described elsewhere in this Contract as a basis for termination. In the event the Contract is terminated by PREPA for cause, PREPA shall be obligated to pay all fees and expenses incurred up to the day of effective termination, in accordance with the terms of this Contract. Contractor shall have no further right to compensation except for what has been accrued for services rendered under this Contract until said date of effective termination. If the Contract is so terminated, Contractor shall be compensated for Services performed and duly evidenced through the date of termination as calculated pursuant to Contractors Proposal. The exercise of its right to terminate, cancel or rescind the Contract shall not be understood as a waiver by PREPA to any other remedy it may have under this Contract or under the law for delays or breach incurred by the Contractor in the performance of its obligations under the Contract.

Following termination, the Contractor shall submit a final termination settlement proposal to PREPA in the form and with the certification prescribed by PREPA. The Contractor shall submit the final termination settlement proposal promptly, but no later than one year from the effective date of termination, unless extended in writing by PREPA upon written request of the Contractor within this one-year period. The Contractor and PREPA may agree upon the whole or any part of the amount to be paid or remaining to be paid because of the termination. However, the agreed amount may not exceed the total

Contract price as reduced by (1) the amount of payments previously made and (2) the Contract price of work not terminated.

ARTICLE 20. Insurance and Bonds:

The 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. Commonwealth of Puerto Rico Workmen's Compensation Insurance:

The Contractor shall provide Workmen's Compensation Insurance as required by the Workmen's Compensation Act 45 - 1935, as amended, of the Commonwealth of Puerto Rico. The Contractor shall also be responsible for compliance with said Workmen's Compensation Act by all its subcontractors, agents and invitees, if any.

The Contractor shall furnish a certificate from the Puerto Rico's State Insurance Fund showing that all personnel employed in the work are covered by the Workmen's Compensation Insurance, in accordance with this Contract.

B. Employer's Liability Insurance:

The Contractor shall provide Employer's Liability Insurance with minimum bodily injury limits of $1,000,000 for each employee and $1,000,000 for each accident covering against the liability imposed by Law upon the Contractor as a result of bodily injury, by accident or disease, including death arising out of and in the course of employment, and outside of and distinct from any claim under the Workmen's Compensation Act of the

Commonwealth of Puerto Rico.

C. Commercial General Liability Insurance:

The Contractor shall provide a Commercial General Liability Insurance with limits of $1,000,000 per occurrence and $1,000,000 aggregate.

D. Commercial Automobile Liability Insurance:

The Contractor shall provide a Commercial Automobile Liability Insurance with limits of $1,000,000 combined single limit covering all owned or schedule autos, non-owned and hired automobiles.

E. Professional Liability Insurance:

The Contractor shall provide a Professional Liability Insurance with limits of $1,000,000 per claim and $1,000,000 aggregate.

F. Builder's Risk Insurance:

The Contractor shall provide and maintain in full force and effect, at Contractor's sole expense, a Builder's Risk insurance (broad form) up to the substantial completion of the project. The Builder's Risk Insurance shall cover the full replacement cost of all work and all equipment used in the course of installation, testing and commissioning at the Job Site, and all equipment and materials delivered and stored at the Job Site which are to be used in the work or incorporated into the Facility. The Contractor shall provide the Builder's Risk insurance before the units are delivered at the Job Site. Puerto Rico Electric Power

Authority (PREPA) shall be named Additional Insured under this policy.

Requirements Under the Policies:

The Commercial General Liability and Commercial Automobile Liability Insurance required under this Contract shall be endorsed to include:

1. As Additional Insured:

   Puerto Rico Electric Power Authority (PREPA)
   Risk Management Office
   PO Box 364267
   San Juan, PR 00936-4267

2. A 30 days cancellation or nonrenewable notice to be sent to the above address.
3. An endorsement including this Contract under contractual liability coverage and identifying it by number, date and parties to the Contract.

A3R

4. Waiver of Subrogation in favor of Puerto Rico Electric Power Authority (PREPA)
5. Breach of Warranties or Conditions:

   "The Breach of any of the Warranties or Conditions in this policy by the Insured shall not prejudice PREPA's rights under this policy."

Bonds:

As a Contract security, the Contractor shall furnish at the time of the execution of the Contract:

a. 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 contractor will well and faithfully perform the contract

work.

b. A Payment Bond in the amount of one hundred percent (100%) of the Contract price, with good and sufficient surety satisfactory to PREPA to guarantee the prompt payment of all labor, supervision, equipment and materials required in the performance of the work.

c. All bonds shall be issued in the official form of PREPA.

Furnishing of Policies:

All required policies of insurance shall be in a form acceptable to PREPA and shall be issued only by insurance companies authorized to do business in Puerto Rico.

The Contractor shall furnish a certificate of insurance in original signed by an authorized representative of the insurer in Puerto Rico, describing the coverage afforded.

ARTICLE 21. Permits and Licenses

The Contractor shall obtain and maintain all the licenses, permits, and authorizations required to perform all services and tasks under this Contract, and shall send all notices, pay all fees and related costs, and will comply and will have its subcontractors and agents comply with all laws, ordinances, rules, and regulations applicable to the work, in accordance with the drawings an specifications. Should the Contractor find any discrepancy between the drawings and specifications and the permits, laws, ordinances,

rules, and regulations referred to herein, the Contractor shall proceed immediately to notify PREPA of the discrepancy and shall not continue with the work until PREPA issues and notifies an order informing the Contractor what changes are necessary and when to proceed with the work as changed.

ARTICLE 22. Contingent Fees

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, brokerage or contingent fees. This warranty shall not apply to commissions 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 23. Other Contracts

PREPA may award other contracts for additional work, and the Contractor shall fully cooperate with such other contractors, in accordance with ARTICLE 6. Other Work at the Site, of this Contract, 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. Any damages caused by delays or hindrances exclusively by PREPA or Other Contractors shall

give the right to Contractor to claim actual reasonable, and necessary expenses due to said delays.

ARTICLE 24. Officials not to Benefit

No officer, employee neither or agent of PREPA, nor 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.

In addition to the restrictions and limitations established under the provisions of "The Puerto Rico Government Ethics Act" Act No. 1-2012, as amended, retired or former officers or employees of PREPA, whose work was in any way related to the award or management of Contracts, shall in no way benefit from any Contract with PREPA for a period of two (2) years after leaving employment with or ceasing services to PREPA.

ARTICLE 25. Claims for Labor and Materials

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 expense incidental thereto.

ARTICLE 26. Unfair Labor Practice

In the event that the Contractor or any of his subcontractors or agents do not comply with an order issued by the Puerto Rico Labor Relations Board and/or the National Labor Relations Board upon their finding that the Contractor or any of his subcontractors or agents have committed an unfair labor practice, no further payments shall be made by PREPA to the Contractor after the date of the said order. In addition, the Contract may be terminated by PREPA, in which case PREPA may take possession of the materials, tools, and appliances on the job site and finish the work by whatever method it may deem expedient. Any declaration by the Puerto Rico Labor Relations Board and/or by the National Labor Relation Board that the contractors or agents have not complied with an order issued by the Board relating to any unfair labor practice, shall be binding, final, and conclusive unless such order is reversed or set aside by a Court of competent jurisdiction.-

ARTICLE 27. Assignment

This Contract or any interest therein or any monies due or to become due there under shall not be assigned, mortgaged or otherwise disposed of without the previous consent in writing of the Contracting Officer.

ARTICLE 28. Subcontractors

The Contractor shall not assign nor subcontract its rights and obligations under this Contract, except in the event PREPA gives written authorization for such actions. Provided that no subcontract shall be considered for PREPA's approval, except when the following

requirements are met: (1) the Contractor delivers PREPA a copy of the 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 subcontract. The subcontract shall be redacted to protect trade and/or commercial secrets.

ARTICLE 29. Novation

PREPA and the Contractor expressly agree that no amendment or change order which could be made to this Contract, during its term, shall be understood as a contractual novation, unless both parties agree to the contrary, specifically and in writing. The 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 the Contract.

ARTICLE 30. Patents and Copyrights

The Contractor, at its own expense, shall defend any suit or action brought against PREPA based on a claim that any equipment or part thereof, copyright or uncopyrighted 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 the Contractor shall pay all damages and costs awarded therein against PREPA. 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 procure for PREPA the right to continue using the same. Also, can replace it with non-fringing equipment, composition, secret process, invention, article or appliance, modify it so it becomes non-infringing or remove it and refund the purchase price.

ARTICLE 31. Waivers

No waiver of any breach of this Contract shall be held to be a waiver of any other subsequent breach by any of the parties. All remedies afforded by PREPA and Contractor in this Contract shall be taken and construed as cumulative, that is, in addition to every other remedy provided herein or by law.

ARTICLE 32. Disputes

Except as otherwise specifically provided in this Contract, all disputes concerning questions of fact arising under this Contract shall be decided by the Engineer, subject to written appeal by the Contractor within thirty (30) days to the Executive Director. As soon as practicable thereafter, the Executive Director shall inform each party hereto of his decision regarding the dispute, which administrative decision shall be final and conclusive upon the parties hereto, unless such decision is challenged in court 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 33. Correction of Work After Final Payment

Neither the final certificate for payment nor any provision in the Contract documents shall relieve the Contractor of responsibility for faulty materials or workmanship and, unless otherwise specified, he shall remedy any defects due thereto and pay for any damage to other work resulting therefore, which shall appear within a period of one (1) year after final acceptance. PREPA shall give notice of observed defects with reasonable promptness. All questions arising under this Article shall be decided by the Engineer, subject to appeal by the Contractor, as provided in ARTICLE 32. Disputes, of this Contract.

ARTICLE 34. Laws to be Observed

The Contractor shall observe and comply with any and all Federal, State 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. The Contractor shall save and hold harmless and to indemnify PREPA and its representative's officers, agents, and servants against any claim or liability arising from or based on the violation of any such law, by-law, ordinance, regulation, order or decree, whether by himself or his employees.

ARTICLE 35. Change in Law

During the term of this Contract, 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 or services to be acquired by PREPA, shall be of Contractor's responsibility and PREPA shall not be obliged to make additional payments nor to pay additional sums to the price or canon originally agreed for those products or services.

ARTICLE 36. Choice of Law and Venue

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 state courts of 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.

ARTICLE 37. Separability

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.

ARTICLE 38. Warranty

The Contractor warrants that all materials, parts, equipment used, and work performed under this Contract comply in all respect with its terms and conditions; that they are free from any and all latent and patent defects in design, materials, and workmanship; that they are suitable and adequate for the purposes for which they were designed and for such other purposes, if any, as are specified in the Contract, and that the services provided under this Contract will conform with the highest standards of care and practice appropriate to their nature. The warranty period will begin the date on which each Mobile Unit is commissioned and will continue for a period of one (1) year, respectively. The Contractor will, upon written notice by PREPA, fully remedy, free of expense to PREPA, such defects as may develop on said services, materials, parts or equipment, provided that they have been properly stored, installed, maintained, and operated within the specified parameters. The Performance Bond shall cover and serve as guarantee for this warranty.

For those materials, parts, equipment, which prove defective or deficient during the warranty period, the Contractor shall, at his own expense, repair or replace, transport-in, from Contractor's facilities to PREPA's site, and transport-out, from PREPA's site to Contractor's facilities, such materials, parts, and/or equipment. The Performance Bond shall cover and serve as guarantee for the Contractor's failure, in whole or in part, to properly perform his obligations under this Contract.

For parts and equipment to be procured by Contractor from other suppliers, and which will be furnished by Contractor to PREPA under this Contract, a written warranty shall be obtained by the Contractor from each supplier and legally tended to PREPA prior to the commencement of work. Upon title transfer to PREPA, all equipment warranties and guarantees shall be vested upon PREPA directly from the Original Equipment Manufacturer (OEM). Also, Contractor shall acknowledge and accept that for any service and/or parts that may be required for the mobile generating equipment packages after final acceptance, PREPA, as the owner, reserves its rights and shall be free to procure, negotiate, and enter into agreements directly with the awarded equipment's OEM or with any other service providers, as long as the Contractor is no longer the authorized representative of the OEM by mutual written agreement between the Contractor and the OEM.

ARTICLE 39. Correlation of Documents

The contract documents are complementary and what is required by one shall be as

biding as if required by all. The Contractor shall keep in the work site a copy of the Contract documents relating to the work and any supplementary documents, specifications and drawings relating thereto and shall give PREPA access thereto during all normal working hours.

In case of discrepancy or in the event of conflict among the different Contract documents such as: Contract, Drawings, 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 Bidding Proposal.

ARTICLE 40. Notice

Any required 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:	Eng. José F. Ortiz Vázquez Chief Executive Officer
To Contractor:	ARG Precision Corp.
Attention:	Eng. Armando Rodríguez President

ARTICLE 41. Income Tax Withholding

PREPA will deduct and withhold at source to the Contractor the equivalent of ten percent (10%) from payment for services rendered under this Contract, in compliance with the Internal Revenue Code for a New Puerto Rico, Act No. 1-2011, as amended, section 1062.03. 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 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 No. 1-2011, section 1062.08.

If a Release Letter has been issued 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. All invoices shall be segregated by concepts (services, materials, equipment, etc.), to identify the amounts subject to withholding and avoid undue deductions.

ARTICLE 42. Discrimination

The Contractor certifies that he is an employer with equal opportunity employment, and does not discriminate by race reason, color, religion, political ideas, sex, nationality, age

or mental or physical condition.

ARTICLE 43. Other Taxes

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 the Contractor are and shall be included as part of his prices.

ARTICLE 44. Cleaning Up

The Contractor shall, from time to time, as directed by the Engineer, remove from PREPA's property and from all public and private property all temporary structures no longer required, rubbish, and waste materials resulting from his operations.

Upon completion of the work, the Contractor shall remove from the vicinity of the work all remaining rubbish, unused materials, and other like material, belonging to him or used under his direction during the installation of the equipment, and in the event of his failure to do so the same may be removed by PREPA at the Contract's expense, and his surety or sureties shall be liable therefore.

ARTICLE 45. Use of Completed Portions

PREPA shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the fact that the time for completion of the entire work may not have expired, but such taking possession and use shall not be deemed an acceptance of the work so taken or used or any part thereof. PREPA may require the Contractor to expedite the completion of any part of the work for provisional use by PREPA

and the Contractor shall comply with such request. If such order of completion or prior use increases the cost of the work or delays the work, the Contractor shall be entitled to such extra compensation and extension of time, if needed, as agreed by the Parties. PREPA will use this alternative only after units have been tested, commissioned, and system safety/protection has been performed.

ARTICLE 46. Quality Assurance

The Contractor shall submit for evaluation and approval by PREPA a quality control program and establish a quality assurance program, also evaluated and approved by PREPA, to satisfy all applicable regulation and requirements specified in the procurement documents and satisfactory to PREPA. The program shall contain all those measures 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. PREPA reserves the right to conduct audits and inspections to the facilities, activities, and/or documents when estimated and without previous notification necessary in order to assure that the quality control program is adequate and is being properly implemented. The Contractor shall allow PREPA access to its facilities and documents, so that PREPA, through audits and inspections can verify the quality of the labor, equipment, products, services, and any other related items provided by the Contractor.

In every case in which the materials or services to be furnished to PREPA are

subcontracted partially or totally by the Contractor, the Contractor shall request the subcontractor to accept and comply with all the requirements of this Quality Assurance Article.

ARTICLE 47. Safety Provisions

1. The Contractor shall comply with all applicable laws, ordinances, rules, regulations and OSHA standards for the safety of personnel, equipment, property and to protect them from damage, injury or loss. He shall erect and maintain, as required by existing conditions and progress of the work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities. Compliance with all safety provisions by subcontractors shall be the responsibility of the Contractor.
2. The Contractor shall submit a Site Specific Work Plan including: the scope of work, description of the activities to be done, special safety and health considerations to be addressed before commencement of the project, safety procedures to be applied and used during the project including but not limited to excavations, work zone protection, scaffolding, crane operations and emergency procedures for fire and chemical spill among others.
3. Before commencement of work, the Contractor shall take part in a coordination meeting with PREPA's Safety Officer and Project Manager. During this meeting the

areas to be worked on will be toured, the site-specific work plan will be reviewed and the protocols for Safety inspections and work permit system shall be discussed.

4. The Contractor shall designate an employee as their safety officer for the project. The duties of the safety officer could be in addition to his/her normal duties. The safety officer shall be in charge of the prevention of accidents and the implementation of the Site-specific Plan in coordination with PREPA´s Safety Officer, Project Manager and Resident Engineer. The contractor safety officer shall have a basic training of 30 hours in Occupational Safety and Health Standards for Construction Industry from an approved OSHA Training Center. Evidence of the training shall be submitted if requested by PREPA.
5. Welding operations shall comply with the requirements of OSHA, ANSI and NFPA.
6. All chemical products to be used shall be classified as Approved or Conditionally Approved by PREPA's Hazard Communication Section.
7. The Contractor shall be responsible for maintaining good housekeeping and sanitary conditions in the work, rest, lunch and toilet areas. If the project involves the handling of non-asbestos insulation or other dust generating materials, like gypsum board, steps shall be taken to prevent the release of dust to adjacent areas.
8. Contractor shall have an incident investigation procedure and shall notify to PREPA in writing any incident or accident on PREPA's facility.
9. Contractor shall have available and up to date all licenses, trainings, medical

surveillance and related certificates for specialized personnel required by OSHA, EQB and DOT according to the scope of work to be performed.

10. Each Contractor/Subcontractor shall adhere to a 100% drug /alcohol free work zone. At minimum, pre-project and post-accident testing is required. A positive post-accident test or positive pre-project test will result in worker dismissal from the project. Testing will be performed following closely the NIDA standards.
11. Services including activities inside buildings occupied by working personnel, that could create a hazard to their safety or health, will be offered after PREPA'S working hours. The exception will be if the contractor could take all the necessary precautions to protect PREPA's employees and the public from any possible hazard caused by the work. The Contractor will take all steps necessary to assure the area will be free of nuisance odors or vapors before PREPA's personnel is to reoccupy. All these will be done in coordination with the local supervisor of PREPA.
12. The Contractor shall assure that all wastes generated by Contractor as a part of the Work are removed and properly disposed of, in accordance with all applicable laws and regulations, at the end of every work shift and after the completion of the project.
13. Contractor will obtain and maintain, during the duration of the project, the proper permits from all federal, state and local regulatory authorities with respect to discharge, disposal, use, storage, handling and transportation of hazardous chemicals and substances. For projects including the handling of asbestos, lead, or spilled

hazardous substances, the notification to EPA or the EQB will be done by the Contractor, but in coordination with the Safety Officer and the Environmental Advisor.

14. Contractor will defend, indemnify and hold harmless, Puerto Rico Electric Power Authority, its employees, agents or assignees for any and all direct liabilities and expenses arising out of Contractor noncompliance with these clauses, if applicable to Contractor and Contractor's Work, irrespective of any other terms of this agreement.
15. Puerto Rico Electric Power Authority may unilaterally terminate this contract upon Contractor's failure to reasonably comply with the applicable safety provisions on this Contract upon thirty (30) days of a written notice to Contractor.

ARTICLE 48. Environmental Liabilities

PREPA will be responsible for providing any and all necessary information so that the Contractor can obtain the corresponding construction and operation permits as required in this Contract. The contractor shall be responsible to obtain the construction and operation permits from the regulatory agencies in compliance with the Clean Air Act.

The contractor shall be responsible to comply with the oil fuel transfer regulations established by the United Stated Coast Guard and the 40 CFR Part 112.7 regarding Spill Prevention, Control and Countermeasure established by the United States Environmental Protection Agency.

The contractor shall be responsible to comply with the wastes handling and disposal as established by the Resource Conservation and Recovery Act (RCRA).

The contractor shall comply with best management practices established in PREPA's Pollution Prevention Plans to avoid the contamination of wastewater discharges regulated by the Clean Water Act.

The Contractor agrees to indemnify PREPA from all expenses and costs of any nature arising out of any claim due to an environmental violation, caused by his agents, employees, subcontractors or any personal assigned during the performance or non-performance of its obligations under this Contract.

The Contractor shall have available, and near to the working area, the necessary equipment to control and recover any spills that may occur during the performance of the work required by the Contract. This equipment should include all the necessary materials for waste disposal.

All equipment to be used in the work area should be free of oil, transmission fluid or hydraulic fluid leakages. If the equipment develops a leakage during the work process, it should be repaired or replaced immediately. While the leaking equipment is removed or repaired, it is the contractor's responsibility to use and replace the absorbent materials and drip pans.

The Contractor shall inform and coordinate with the Environmental Compliance Officer of PREPA's Environmental Protection and Quality Assurance Division (EPQAD) of any work to be done to avoid any environmental violation. In case of any incident, the contractor shall, immediately, notify PREPA's on site Supervisor, who will notify the EPQAD.

Before starting the work, the Contractor shall submit the work plan to PREPA's EPQAD for evaluation.

All chemical analysis shall be performed by a PREPA's approved laboratory that is included in PREPA's Material Management Division Supplier Registry as a company that is qualified and evaluated to perform this type of work.

PREPA's personnel will audit the sampling and the disposal of waste material.

The disposal of non-hazardous and hazardous waste material shall be done in a Puerto Rico Environmental Quality Board (PREQB) approved landfill.

The Contractor shall comply with 49 CFR 72 Sub. Part H (DOT requirements).

All remedial actions and environmental work will be performed by a company previously approved by PREPA.

All work shall follow the Control Erosion and Sedimentation Plan (CES Plan). The temporary measures needed to control erosion and water pollution shall include, but not be limited to, berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains, and other erosion control devices or methods. These temporary measures shall be installed at the locations where there is a need to control erosion and water pollution during the construction of the project, and as directed by the engineer, and as shown on the drawings. The CES Plan presented in the drawings serves as a minimum for the requirements of erosion control during construction. The contractor has the ultimate responsibility for providing adequate erosion control and water quality throughout

the duration of the project. Therefore, if the provided plan is not working sufficiently to protect the project areas, then the contractor shall provide additional measures as required to obtain the required protection.

Chemical products cannot reach any internal or external sewer at the construction site in order to prevent contamination and comply with all federal and local regulations related with the Clean Water Act.

The Contractor must obtain and submit to PREPA's EPQAD any other type of permit required for their operation but no limited, such as: fuel or wastewater storage tanks, storage of remain material of excavations or any landfill required for the project, use and storage of chemicals. Furthermore, will take immediate response or mitigate any environmental concern and deficiencies found by PREPA personnel or regulatory agencies. The contractor will be responsible to notify immediately to PREPA for any findings or environmental violations due to inspections by regulatory agencies.

The Contractor must provide and maintain environmental protection measures during the commencement, construction and completion of the project, as defined under this contract. Environmental protection measures must be provided by the contractor to correct conditions that may emerge or develop during the construction, as well as, the recondition of all environmental measures or controls employed at the project which does not fulfill their purpose.

The construction process should be performed in such a manner that any adverse

environmental impacts, where applicable, are reduced to a minimum and acceptable level in the fulfillment to PREPA's Environmental Compliance Officers.

It is intended that the natural resources within the project boundaries and outside the limits of the permanent work performed, be preserved in their existing condition or be restored to an equivalent or improved condition, upon completion of the work. The Contractor shall confine his construction activities to areas defined by the work schedule, plans and specifications.

The Contractor along with the engineer will establish, at least on a monthly basis, an orientation program for the residents and business people to clarify details and working schedule of the project, also to attend their needs or complaints.

All equipment to be used in the work area should be in perfect condition and have a good maintenance program. A monthly record of maintenance should be filed by the contractors and submitted to PREPA's EPQAD. If required, the contractor must perform and submit a monitoring study of gas emission or noise reduction on determined areas to comply with regulations. Also, will be responsible to maintain their operation center and project area clean and organized.

The use of liners to cover up carrying trucks is compulsory.

The Contractor shall dispose of all waste generated in the project. The waste shall be picked up and placed in containers which area must be emptied on a regular schedule. The construction areas shall be clean and must appear natural upon completion. The use

of PREPA's waste disposal equipment by the Contractor is not permitted.

All areas must be clean and organized to prevent accidents or violations to regulations. Safety barriers must be installed at the edges of the project to avoid access from non-authorized individuals at the project site.

ARTICLE 49. Transfer of Funds

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 assignee (full name of the person or company), address and any other contact information.

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. 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.

ARTICLE 50. Mandatory Clauses Pursuant Act 3-2017 and Circular Letter 141-17 Dated January 30, 2017

(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 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 Agreement. 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 all public instrumentalities and public corporations.

(2) The Office of the Chief of Staff shall have the power to terminate this Agreement at any time.

ARTICLE 51. Compliance with the Commonwealth of Puerto Rico Contracting Requirements

The Contractor will comply will all applicable State Law, Regulations or Executive Orders that regulate the contracting process and requirements of the Commonwealth of Puerto Rico.

A. Executive Order Num. OE-1991-24 of June 18, 1991 to require certification of

compliance with the Internal Revenue Services of the Commonwealth of Puerto Rico: Pursuant to Executive Order Number OE-1991-24 of June 18, 1991, the Contractor will certify and guarantee that it has filed all the necessary and required income tax returns to the Government of Puerto Rico for the last five (5) years. The Contractor further will certify that it has complied and is current with the payment of any and all income taxes that are, or were due, to the Government of Puerto Rico. The Contractor shall provide, to the satisfaction of PREPA, and whenever requested by PREPA during the term of this Contract, the necessary documentation to support its compliance with this clause. The Contractor will be given a specific amount of time to produce said documents. During the term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico. Executive Order 1991OE24.

B. Executive Order Num. OE-1992-52 of August 28, 1992 to require certification of compliance with the Department of Labor of the Commonwealth of Puerto Rico. Pursuant to Executive Order Number 1992-52, dated August 28, 1992 amending OE-1991-24, the Contractor will certify and warrant that it has made all payments required for unemployment benefits, workmen's compensation and social security for chauffeurs, whichever is applicable, or that in lieu thereof, has subscribed a payment plan in connection with any such unpaid items and is in full compliance with the terms thereof. The Contractor accepts and acknowledges its responsibility for requiring and

obtaining a similar warranty and certification from each and every Contractor and Sub Contractor whose service the Contractor has secured in connection with the services to be rendered under this Contract and shall forward evidence to PREPA as to its compliance with this requirement. Executive Order 1992OE52.

C. 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 1991OE24; C.F.R. Part 404 et. Seq.

AJR

D. Government of Puerto Rico Municipal Tax Collection Center: The Contractor will certify and guarantee that it does not have any current debt with regards to property taxes that may be registered with the Government of Puerto Rico's Municipal Tax Collection Center (known in Spanish as Centro de Recaudación de Ingresos Municipales ("CRIM"). The Contractor further will certify to be current with the payment of any and all property taxes that are or were due to the Government of Puerto Rico. The Contractor shall provide, to the satisfaction of PREPA and whenever requested by PREPA during the term of this Contract, Certification issued by the Municipal Revenues Collection Center (MRCC), assuring that Contractor does not owe any tax accruing to such governmental agency. To request such Certification, Contractor will use the form issued by the MRCC (called "CRIM- Certificados, Radicación, Estado de

Cuenta y Todos los Conceptos" in the website). The Contractor will deliver upon request any documentation requested by PREPA. During the Term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico with regards to its property taxes. 3 L.P.R.A. § 8611 et seq.; 21 L.P.R.A.

§ 5001 et seq. The Contractor shall provide a Personal Property Tax Filing Certification, issued by the MRCC which indicates that Contractor has filed its Personal Property Tax Return for the last five (5) contributory terms and all concepts Debt Certification issued by the MRCC assuring that Contractor does not owe any taxes to such government agency with respect to real and personal property or Negative Debt certification issued by the MRCC with respect to real and property taxes and a sworn statement executed by Contractor indicating that (i) its revenues are derived from the rendering of professional services, (ii) during the last five (5) years (or the time in which it has been providing professional services) it has had no taxable business or personal property on the 1st of January of each year, (iii) that for such reasons it has not been required to file personal property tax returns, as required under Article 6.03 of Act 83-1991, as amended and (iv) that for such reason it does not have an electronic tax file in the MRCC's electronic system.

E. The Contractor shall furnish a Certification issued by the Treasury Department of Puerto Rico which indicates that 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.

F. The Contractor shall provide a Puerto Rico Sales and Use Tax Filing Certificate, issued by the Treasury Department of Puerto Rico assuring that Contractor has filed his Puerto Rico Sales and Use Tax for the last sixty (60) contributory periods.

G. Puerto Rico Child Support Administration (ASUME): The Contractor shall present, to the satisfaction of PREPA, the necessary documentation certifying that the Contractor nor any of its owners, affiliates of subsidiaries, if applicable, have any debt, outstanding debt, or legal procedures to collect child support payments that may be registered with the Puerto Rico Child Support Administration (known in Spanish as the Administración Para El Sustento de Menores (ASUME)). The Contractor will be given a specific amount of time to deliver said documents. 3 L.P.R.A. § 8611 et seq.

H. Compliance with Act No. 1 of Governmental Ethics: The Contractor will certify compliance with Act No. 1 of January 3, 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 et seq.

I. Law Num. 127, May 31, 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.

J. Prohibition with respect to execution by public officers: (3 L.P.R.A. 8615)

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 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.

K. Prohibition with respect to contracting with officers or employees: (3 L.P.R.A. 8615)

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.

L. Prohibition with respect to contracts with officers and employees of other Government entities: (3 L.P.R.A. 8615)

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.

M. Prohibition with respect to evaluation and approval by public officers: (3 L.P.R.A. 8615)

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 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.

ASR

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

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.

O. 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.

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 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.

1.31 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.

P. Certification of Government Agreements: The Contractor hereby certifies that, at the time of execution of this Agreement, it does not have any other agreement with any agency, public corporation, municipality, or instrumentality of the Government of Puerto Rico.

Q. Rules of Professional Ethics: The Contractor acknowledges and accepts that it is knowledgeable of the rules of ethics of his/her profession and assumes responsibility for his/her own actions.

R. The Contractor shall provide a copy of Contractor's Merchant's Registration Certificate issued by the Treasury Department of Puerto Rico.

S. The Contractor shall provide a 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.

T. The Contractor shall provide a Good Standing Certificate issued by the Puerto Rico Department of State.

U. The Contractor hereby certifies that if there is any Judicial or Administrative Order demanding payment or any economic support under Act. No. 168-2000, as amended, the same is current and in all aspects in compliance.

V. If applicable, PREPA shall withhold the special contribution of one point five percent (1.5%) of the gross amounts paid under this Agreement for the installation part of the contract.

W. The Contractor agrees that articles extracted, produced, assembled, packaged or distributed in Puerto Rico by enterprises with operations in Puerto Rico, or distributed by agents established in Puerto Rico shall be used when the service is rendered, provided that they are available.

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

Y. Rules of Professional Ethics: The Contractor acknowledges and accepts that it is knowledgeable of the rules of ethics of his/her profession and assumes responsibility for his/her own actions.

Z. 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. 52. Compliance with Applicable Federal Law, Regulations And Executive Orders.

A. Compliance with the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 3701-3708) as supplemented by Department of Labor regulations (29 CFR part 5).

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or

to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of $26 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The Government of Puerto Rico shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or

lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section.

B. Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352 (as amended). Contractor certifies that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient (the Puerto Rico Emergency Management Agency).

C. Breach of Contract Terms. Any violation or breach of terms of this Contract on the part of the Contractor or a subcontractor may result in the suspension or termination of this Contract or such other action, including the recovery of damages, as may be necessary to enforce the rights of PREPA. The duties and obligations imposed by this Contract and the rights and remedies available hereunder shall be in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

D. Clean Air Act and the Federal Water Pollution Control Act. The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the

Clean Air Act, as amended, 42 U.S.C. § 7401 et seq., and the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. The Contractor agrees to report each violation to PREPA and understands and agrees that PREPA will, in turn, report each violation as required to assure notification to the Government of Puerto Rico, Federal Emergency Management Agency, U.S. Department of Housing and Urban Development and the appropriate Environmental Protection Agency Regional Office. The Contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance.

E. Sufficiency of Funds. The Contractor recognizes and agrees that funding for this Contract is contingent upon the availability of Federal assistance awarded by federal agencies to the Government of Puerto Rico. If during the term of this Contract, Federal or local funding is reduced, deobligated, or withdrawn, PREPA may reduce the scope of or terminate the Contract. PREPA shall provide the Contractor with written notice of the lack of funding within a reasonable time and PREPA reserves all rights to reduce the scope of or terminate the Contract as a result of lack of funding.

F. FEMA Disaster Assistance Survivor/Registrant Data.

(a) If the Contractor has access to Disaster Assistance Survivor/Registrant data or any other personally identifiable information, the Contractor shall comply with the provisions of the Terms and Conditions for Sharing FEMA Disaster Assistance Survivor/Registrant Data with State Governments set forth in the

FEMA-Government of Puerto Rico Contract for FEMA-4339- DR-PR.

(b) The Contractor shall indemnify, defend, and hold harmless PREPA and the Government of Puerto Rico for any and all costs associated with the defense of that litigation, including costs and attorneys' fees, settlements, or adverse judgments arising from the Contractor's failure to comply with the requirements under this contract.

G. Costs. All costs incurred by the Contractor in performance of this Contract must be in accord with the cost principles of 2 C.F.R. pt. 200, Subpart PREPA shall not be required to make payments to the Contractor for costs which are found to be contrary to the cost principles 2 C.F.R. pt. 200, Subpart E.

H. Financial Management System. The Contractor's financial management system shall provide for the following:

(1) accurate, current and complete disclosure of the financial results of this Contract and any other contract, grant, program or other activity administered by the Contractor;

(2) records adequately identifying the source and application of all Contractor funds and all funds administered by the Contractor which shall contain information pertaining to all contract and grant awards and authorizations, obligations, unobligated balances, assets, liabilities, outlays and income,

and shall be segregated by contract or on a contract-by-contract basis;

(3) effective internal control structure over all funds, property and other assets, sufficient to allow the Contractor to adequately safeguard all such assets and shall ensure that they are used solely for authorized purposes;

(4) comparison of actual outlays with budgeted amounts for this Contract and for any other contract, grant, program or other activity administered by the Contractor;

(5) accounting records supported by source documentation;

(6) procedures to minimize elapsed time between any advance payment issued and the disbursement of such advance funds by the Contractor; and

(7) procedures consistent with the provisions of any applicable policies of the Federal Government and the Government of Puerto Rico and procedures for determining the reasonableness, allowability and allocability of costs under this Contract.

I. Penalties, Fines, and Disallowed Costs. In the event that any U.S. Federal agency or the Government of Puerto Rico disallows or demands repayment for costs incurred in the performance of this Contract, or if any penalty is imposed due to an act or omission by the Contractor, the Contractor shall be solely responsible for such penalty, disallowed costs, or repayment demand, and shall reimburse PREPA in full within ten (10) days of receiving notice from PREPA of such penalty, disallowance, or

repayment demand. Any monies paid by the Contractor pursuant to this provision shall not relieve the Contractor of liability to PREPA for damages sustained by PREPA by virtue of any other provision of this Contract.

J. Debarment, Suspension, and Ineligibility.

(1) The Contractor represents and warrants that the Contractor, it principals, and affiliates have not been debarred, suspended, or placed in ineligibility status under the provisions of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000 (government debarment and suspension regulations). The Contractor represents and warrants that it will not enter into any contracts or subcontracts with any individual or entity which has been debarred, suspended or deemed ineligible under those provisions. During the term of this Contract, the Contractor will periodically review SAM.gov and local notices to verify the continued accuracy of this representation. The Contractor shall require all subcontractors at every tier to comply with this requirement.

(2) This certification is a material representation of fact relied upon by PREPA. If it is later determined that the Contractor did not comply with 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000, in addition to remedies available to the Government of Puerto Rico and PREPA, the Federal Government may pursue available remedies, including but not limited to suspension

and/or debarment.

K. Reporting Requirements. The Contractor shall complete and submit all reports, in such form and according to such schedule, as may be required by PREPA.

L. Review of laws. The Contractor certifies that it will access online and read each law that is cited in the aforementioned clauses and that, in the event it cannot access the online version, it will notify PREPA in order to obtain printed copies of the laws. Not requiring a printed copy of the laws to PREPA will be evidence that the Contractor was able to find it online and read it as required.

M. Notice of Federal Emergency Management Agency (FEMA) Reporting Requirements and Regulations:

(1) PREPA is using Federal grant funding awarded or administered by FEMA to the Government of Puerto Rico and/or PREPA to pay, in full, for the costs incurred under this Contract. As a condition of FEMA funding under major disaster declaration FEMA-4339-DR-PR, FEMA requires the Government of Puerto Rico and PREPA to provide various financial and performance reporting. The Contractor agrees to provide all information, documentation, and reports necessary to satisfy these reporting requirements. Failure by the Contractor to provide information necessary to satisfy these reporting requirements may result in loss of Federal funding for this Contract, and such failure shall be a material breach of this Contract.

(2) Applicable Regulations and Policy. Applicable regulations, FEMA policy, and other sources setting forth these reporting requirements include, but are not limited to:

(i) 2 C.F.R. § 327 (Financial Reporting);

(ii) 2 C.F.R. § 200.328 (Monitoring and Reporting Program Performance);

(iii) Performance and financial reporting requirements set forth in 2 C.F.R. Part 206.

N. Access to Records.

The Contractor agrees to provide PREPA, the Government of Puerto Rico, the FEMA and HUD Administrator, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this Contract for the purposes of making audits, examinations, excerpts, and transcriptions.

The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

The Contractor agrees to provide the FEMA and HUD Administrator or his authorized representatives access to work sites pertaining to the work being completed under the Contract.

O. Retention requirements for records.

The Contractor agrees to maintain all books, records, accounts and reports and all

other records produced or collected in connection with this Contract for a period of not less than three (3) years after the date of final payment and closed-out of all pending matters related to this Contract. If any litigation, claim, or audit is reasonably anticipated to arise or is started before the expiration of the 3-year period, the records must be retained until all litigation, claims, or audit findings involving the records have been resolved and final action taken.

Financial records, supporting documents, statistical records, and all other non-Federal entity records pertinent to a Federal award must be retained for a period of three years from the date of submission of the final expenditure report or, for Federal awards that are renewed quarterly or annually, from the date of the submission of the quarterly or annual financial re- port, respectively, as reported to the Federal awarding agency or pass- through entity in the case of a sub- recipient. Federal awarding agencies and pass-through entities must not impose any other record retention requirements upon non-Federal entities. The only exceptions are the following:

1) If any litigation, claim, or audit is started before the expiration of the 3-year period, the records must be retained until all litigation, claims, or audit findings involving the records have been resolved and final action taken.

2) When PREPA is notified in writing by the Federal awarding agency, cognizant agency for audit, oversight agency for audit, cognizant agency for indirect costs, or pass-through entity to extend the retention period.

3) Records for real property and equipment acquired with Federal funds must be retained for 3 years after final disposition.

4) When records are transferred to or maintained by the Federal awarding agency or pass-through entity, the 3- year retention requirement is not applicable to the non-Federal entity.

5) Records for program income transactions after the period of performance. In some cases recipients must report program income after the period of performance. Where there is such a requirement, the retention period for the records pertaining to the earning of the program income starts from the end of the non-Federal entity's fiscal year in which the program income is earned.

A3.2

6) Indirect cost rate proposals and cost allocations plans. This paragraph applies to the following types of documents and their supporting records: indirect cost rate computations or proposals, cost allocation plans, and any similar accounting computations of the rate at which a particular group of costs is chargeable (such as computer usage chargeback rates or composite fringe benefit rates).

7) *If submitted for negotiation.* If the proposal, plan, or other computation is required to be submitted to the Federal government (or to the pass- through entity) to form the basis for negotiation of the rate, then the 3-year retention

period for its supporting records starts from the date of such submission.

8) *If not submitted for negotiation.* If the proposal, plan, or other computation is not required to be submitted to the Federal government (or to the pass-through entity) for negotiation purposes, then the 3-year retention period for the proposal, plan, or computation and its supporting records starts from the end of the fiscal year (or other accounting period) covered by the proposal, plan, or other computation.

P. Program Fraud and False or Fraudulent Statements or Related Acts. The Contractor acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to the Contractor's actions pertaining to this Contract.

Q. Procurement of Recovered Materials. In the performance of this Contract, the Contractor shall make maximum use of products containing recovered materials that are Environmental Protection Agency ("EPA")- designated items unless the product cannot be acquired—(i) competitively within a timeframe providing for compliance with the Contract performance schedule; (ii) meeting Contract performance requirements; or (iii) at a reasonable price. Information about this requirement, along with the list of EPA-designated items, is available at EPA's Comprehensive Procurement Guidelines web site,

Solid Waste Disposal Act. The Contractor must comply with section 6002 of the

Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency(EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired by the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and re- source recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

A32

R. Energy Efficiency. The Contractor agrees to comply with the requirements of 42 U.S.C. § 6201, which contain policies relating to energy efficiency that are defined in the Government of Puerto Rico's energy conservation plan issued in compliance with said statute.

S. Equal Opportunity.

During the performance of this Contract, the Contractor agrees as follows:

a) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure

that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer, recruitment, or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

c) The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other

employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.

d) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining Contract or other contract or understanding (if any) a notice advising the labor union or workers' representative of the Contractor's commitments under section 202 of the US Executive Order 11246 of September 24, 1965, as amended, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

e) The Contractor will comply with all provisions of Executive Order 11246, and of the rules, regulations, and relevant orders of the Secretary of Labor.

f) The Contractor will furnish all information and reports required by Executive Order 11246, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by PREPA, the Government of Puerto Rico, and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

g) In the event of the Contractor's non-compliance with the nondiscrimination

clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

h) The Contractor will include the provisions of paragraphs (a) through (h) in every subcontract or purchase order, unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction con- tract" in 41 CFR Part 60–1.3 must

include the equal opportunity clause provided under 41 CFR 60–1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964– 1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.

T. Age Discrimination Act of 1975. The Contractor shall comply with the provisions of the Age Discrimination Act of 1975. No person in the United States shall, on the basis of age, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under, any program or activity receiving federal financial assistance.

U. Americans with Disabilities Act. The Contractor shall comply with the appropriate areas of the Americans with Disabilities Act of 1990, as enacted and from time to time amended, and any other applicable federal regulation. A signed, written certificate stating compliance with the Americans with Disabilities Act may be requested at any time during the term of this Contract.

V. Title VI of the Civil Rights Act of 1964. The Contractor shall comply with the provisions of Title VI of the Civil Rights Act of 1964. No person shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving

federal financial assistance.

W. Section 504 of the Rehabilitation Act of 1973, as Amended. The Contractor agrees that no otherwise qualified individual with disabilities shall, solely by reason of his disability, be denied the benefits, or be subjected to discrimination including discrimination in employment, any program or activity that receives the benefits from the federal financial assistance.

X. Drug-Free Workplace. The Contractor shall maintain a drug-free work environment in accordance with the Drug-Free Workplace Act of 1988 (41 U.S.C. § 8101 et seq.) and implementing regulations at 2 C.F.R Part 3001.

Y. Compliance with Laws, Regulation and Executive Orders. The Contractor acknowledges that FEMA and HUD financial assistance will be used to fund this Contract. The Contractor shall comply will all applicable Federal and Government of Puerto Rico law, regulations, executive orders, policies, procedures, and directives, including but not limited to all Federal Cost Principles set forth in 2 C.F.R. Part 200, and all applicable FEMA and HUD regulations in 44 C.F.R. Chapter I. 2 C.F.R. Part 200.

Z. Provisions Required by Law Deemed Inserted. Each and every provision required by law regulation, executive order, policy, procedure, directive, Federal grant award or agreement, or cooperative agreement with any Federal agency to be inserted in

this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein. If, through mistake or otherwise, any provision is not inserted, or is not correctly inserted, then upon the application of either party the Contract shall be amended to make such insertion or correction.

AA. Agreement to Execute Other Required Documents. Contractor and all subcontractors, by entering into the Contract, understand and agree that funding for the Services is provided under Federal programs with specific contracting requirements. To the extent any such requirement is not otherwise set forth herein, Contractor agrees to execute such amendments or further agreements as may be necessary to ensure that PREPA received Federal funding for this Contract.

BB. U.S. Department of Homeland Security Seal, Logo, and Flags. The Contractor shall not use the U.S. Department of Homeland Security seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA pre- approval.

CC. No Obligation by the Federal Government. PREPA and the Contractor acknowledge and agree that the Federal Government is not a party to this Contract and is not subject to any obligations or liabilities to PREPA, Contractor, or any other party pertaining to any matter resulting from the contract.

DD. Compliance with the Davis-Bacon Act.

1. The Contractor shall comply with the Davis-Bacon Act, 40 U.S.C. §§ 3141–3148,

and the requirements of 29 C.F.R. § 5.5 as may be applicable, which are incorporated by reference into this Contract.

2. The Contractor or subcontractor shall insert in any subcontracts the foregoing clause and such other clauses as FEMA and HUD may by appropriate instructions require. The Contractor shall require all subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of these contract clauses.

3. A breach of the contract clauses above may be grounds for termination of the Contract, and for debarment as a Contractor and subcontractor as provided in 29 C.F.R. § 5.12.

EE. Compliance with the Copeland Anti-Kickback Act (applicable to all contracts subject to the Davis-Bacon Act).

1. The Contractor shall comply with 18 U.S.C. § 874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. pt. 3, as may be applicable, all of which are incorporated by reference into this Contract.

2. The Contractor and subcontractor shall insert in any subcontracts the foregoing clause and such other clauses as FEMA and HUD may by appropriate instructions require. The Contractor shall require all subcontractors to include

these clauses in any lower tier subcontracts. The Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of these contract clauses.

3. A breach of the contract clauses above may be grounds for termination of the contract and for debarment as a Contractor and subcontractor, as provided in 29 C.F.R. § 5.12.

FF. Section 3 of the Housing and Urban Development Act of 1968

All section 3 covered contracts shall include the following clause (referred to as the section 3 clause):

1. The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

2. The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or

other impediment that would prevent them from complying with the part 135 regulations.

3. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

4. The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.

5. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.

6. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

7. With respect to work performed in connection with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and sub contracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b) agree to comply with section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

GG. Buy American—Construction Materials Under Trade Agreements (Oct 2016)

(a) Definitions. As used in this clause—

Caribbean Basin country construction material means a construction material that—

(1) Is wholly the growth, product, or manufacture of a Caribbean Basin country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a Caribbean Basin country into a new and different construction material distinct from the materials from which it was transformed.

Commercially available off-the-shelf (COTS) item—

(1) Means any item of supply (including construction material) that is—

(i) A commercial item (as defined in paragraph (1) of the definition at FAR 2.101);

(ii) Sold in substantial quantities in the commercial marketplace; and

(iii) Offered to the Government, under a contract or subcontract at any tier, without modification, in the same form in which it is sold in the commercial marketplace; and

(2) Does not include bulk cargo, as defined in 46 U.S.C. 40102(4), such as agricultural products and petroleum products.

Component means an article, material, or supply incorporated directly into a construction material.

Construction material means an article, material, or supply brought to the construction site by the Contractor or subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.

Cost of components means—

(1) For components purchased by the Contractor, the acquisition cost, including transportation costs to the place of incorporation into the construction material (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or

(2) For components manufactured by the Contractor, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (1) of this definition, plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the

manufacture of the construction material.

Designated country means any of the following countries:

(1) A World Trade Organization Government Procurement Agreement (WTO GPA) country (Armenia, Aruba, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea (Republic of), Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Montenegro, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan, Ukraine, or United Kingdom);

(2) A Free Trade Agreement (FTA) country (Australia, Bahrain, Canada, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Korea (Republic of), Mexico, Morocco, Nicaragua, Oman, Panama, Peru, or Singapore);

(3) A least developed country (Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Laos, Lesotho, Liberia,

Madagascar, Malawi, Mali, Mauritania, Mozambique, Nepal, Niger, Rwanda, Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan,Tanzania, Timor-Leste, Togo, Tuvalu, Uganda, Vanuatu, Yemen, or Zambia); or

(4) A Caribbean Basin country (Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bonaire, British Virgin Islands, Curacao, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saba, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Sint Eustatius, Sint Maarten, or Trinidad and Tobago).

Designated country construction material means a construction material that is a WTO GPA country construction material, an FTA country construction material, a least developed country construction material, or a Caribbean Basin country construction material.

Domestic construction material means—

(1) An unmanufactured construction material mined or produced in the United States;

(2) A construction material manufactured in the United States, if—

(i) The cost of its components mined, produced, or manufactured in the United

States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind for which nonavailability determinations have been made are treated as domestic; or

(ii) The construction material is a COTS item.

Foreign construction material means a construction material other than a domestic construction material.

Free Trade Agreement country construction material means a construction material that—

(1) Is wholly the growth, product, or manufacture of a Free Trade Agreement (FTA) country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a FTA country into a new and different construction material distinct from the materials from which it was transformed.

Least developed country construction material means a construction material that—

(1) Is wholly the growth, product, or manufacture of a least developed country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a least developed country into a new and different construction material distinct from the materials from which it was transformed.

United States means the 50 States, the District of Columbia, and outlying areas.

WTO GPA country construction material means a construction material that—

(1) Is wholly the growth, product, or manufacture of a WTO GPA country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a WTO GPA country into a new and different construction material distinct from the materials from which it was transformed.

(b) Construction materials.

(1) This clause implements 41 U.S.C. chapter 83, Buy American, by providing a preference for domestic construction material. In accordance with 41 U.S.C. 1907, the component test of the Buy American statute is waived for construction material that is a COTS item. (See FAR 12.505(a)(2)). In addition, the Contracting Officer has determined that the WTO GPA and Free Trade Agreements (FTAs) apply to this

acquisition. Therefore, the Buy American restrictions are waived for designated country construction materials.

(2) The Contractor shall use only domestic or designated country construction material in performing this contract, except as provided in paragraphs (b)(3) and (b)(4) of this clause.

(3) The requirement in paragraph (b)(2) of this clause does not apply to information technology that is a commercial item or to the construction materials or components listed by the Government as follows:

[Contracting Officer is to list applicable excepted materials or indicate "none"]

(4) The Contracting Officer may add other foreign construction material to the list in paragraph (b)(3) of this clause if the Government determines that—

(i) The cost of domestic construction material would be unreasonable. The cost of a particular domestic construction material subject to the restrictions of the Buy American statute is unreasonable when the cost of such material exceeds the cost of foreign material by more than 6 percent;

(ii) The application of the restriction of the Buy American statute to a particular construction material would be impracticable or inconsistent with the public

interest; or

(iii) The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality.

(c) Request for determination of inapplicability of the Buy American statute.

(1) (i) Any Contractor request to use foreign construction material in accordance with paragraph (b)(4) of this clause shall include adequate information for Government evaluation of the request, including—

(A) A description of the foreign and domestic construction materials;

(B) Unit of measure;

(C) Quantity;

(D) Price;

(E) Time of delivery or availability;

(F) Location of the construction project;

(G) Name and address of the proposed supplier; and

(H) A detailed justification of the reason for use of foreign construction materials cited in accordance with paragraph (b)(3) of this clause.

(ii) A request based on unreasonable cost shall include a reasonable survey of the market and a completed price comparison table in the format in paragraph (d) of this clause.

(iii) The price of construction material shall include all delivery costs to the construction site and any applicable duty (whether or not a duty-free certificate may be issued).

A3.2

(iv) Any Contractor request for a determination submitted after contract award shall explain why the Contractor could not reasonably foresee the need for such determination and could not have requested the determination before contract award. If the Contractor does not submit a satisfactory explanation, the Contracting Officer need not make a determination.

(2) If the Government determines after contract award that an exception to the Buy American statute applies and the Contracting Officer and the Contractor negotiate adequate consideration, the Contracting Officer will modify the contract to allow use of the foreign construction material. However, when the basis for the exception is the unreasonable price of a domestic construction material, adequate consideration is

not less than the differential established in paragraph (b)(4)(i) of this clause.

(3) Unless the Government determines that an exception to the Buy American statute applies, use of foreign construction material is noncompliant with the Buy American statute.

(d) Data. To permit evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the Contractor shall include the following information and any applicable supporting data based on the survey of suppliers:

Foreign and Domestic Construction Materials Price Comparison

Construction material description	Unit of measure	Quantity	Price (dollars)1
Item 1:			
Foreign construction material			
Domestic construction material			
Item 2:			
Foreign construction material			
Domestic construction material			

Include all delivery costs to the construction site and any applicable duty (whether or not a duty-free entry certificate is issued).

List name, address, telephone number, and contact for suppliers surveyed. xAttach copy of response; if oral, attach summary.

Include other applicable supporting information.

Notes:

- List in paragraph (b)(3) of the clause all foreign construction material excepted from the requirements of the Buy American statute, other than designated country construction material.

- If the head of the agency determines that a higher percentage is appropriate, substitute the higher evaluation percentage in paragraph (b)(4)(i).

Restrictions on Certain Foreign Purchase

(a) Except as authorized by the Office of Foreign Assets Control (OFAC) in the Department of the Treasury, the Contractor shall not acquire, for use in the performance of this contract, any supplies or services if any proclamation, Executive order, or statute administered by OFAC, or if OFAC's implementing regulations at 31 CFR chapter V,

would prohibit such a transaction by a person subject to the jurisdiction of the United States.

(b) Except as authorized by OFAC, most transactions involving Cuba, Iran, and Sudan are prohibited, as are most imports from Burma or North Korea, into the United States or its outlying areas. Lists of entities and individuals subject to economic sanctions are included in OFAC's List of Specially Designated Nationals and Blocked Persons at http://www.treas.gov/offices/enforcement/ofac/sdn. More information about these restrictions, as well as updates, is available in the OFAC's regulations at 31 CFR chapter V and/or on OFAC's Web site at http://www.treas.gov/offices/enforcement/ofac.

152

(c) The Contractor shall insert this clause, including this paragraph (c), in all subcontracts.

Inconsistency Between English Version and Translation of Contract

In the event of inconsistency between any terms of this contract and any translation into another language, the English language meaning shall control.

ARTICLE 53. Complete Agreement

This document, together with all attachments referred to herein, constitutes the entire agreement between the parties as to this subject matter and supersedes all communications, negotiations, and agreements of the Parties, whether written or oral,

other than these, made prior to the signing of this Contract. In case of conflict the terms and conditions of this Contract, as signed by the parties, shall prevail.

IN WITNESS WHEREOF, the Parties hereto have executed this Contract this 20 day of May of the year 2019, in San Juan, Puerto Rico.

PUERTO RICO ELECTRIC POWER AUTHORITY OF PUERTO RICO

BY: _____
José F. Ortiz Vázquez
Chief Executive Officer
SSN:

ARG PRECISION CORP.

BY: _____
Armando Rodríguez Gutiérrez
President
SSN:

APPENDIX A

Federal Labor Standards Provisions U.S. Department of Housing and Urban Development

132

Federal Labor Standards Provisions

U.S. Department of Housing and Urban Development
Office of Labor Relations

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section l(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part

of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. **Withholding.** HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) **Payrolls and basic records.** Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section l(b)(2)(B) of the Davis-bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section l(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i) except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5 (a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) **Apprentices.** Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant ',to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by

the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) **Equal employment opportunity.** The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. **Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract

6. **Subcontracts.** The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 in this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. **Contract termination; debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. **Compliance with Davis-Bacon and Related Act Requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract

9. **Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) **Certification of Eligibility.** By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1 01 0, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration..... makes, utters or publishes any statement knowing the same to be false..... shall be fined not more than $5,000 or imprisoned not more than two years, or both."

11. **Complaints, Proceedings, or Testimony by Employees.** No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. **Contract Work Hours and Safety Standards Act.** The provisions of this paragraph B are applicable where the amount of the prime contract exceeds $100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) **Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) **Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in sub paragraph (1) of this paragraph.

(3) **Withholding for unpaid wages and liquidated damages.** HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

AJM

C. **Health and Safety.** The provisions of this paragraph C are applicable where the amount of the prime contract exceeds $100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96). 40 USC 3701 et seq.

(3) The contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

APPENDIX B

Copy of the current prevailing wage determination by the Department of Labor

Appendix B

General Decision Number: PR180001 01/05/2018 PR1

Superseded General Decision Number: PR20170001

State: Puerto Rico

Construction Type: Building

Counties: Puerto Rico Statewide.

BUILDING CONSTRUCTION (does not include single family homes and apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* SUPR1993-001 10/29/1993

	Rates	Fringes
BRICKLAYER	$ 7.25	.42
CARPENTER	$ 7.25	.34
CEMENT MASON/CONCRETE FINISHER	$ 7.25	.31
ELECTRICIAN (Including HVAC control wiring)	$ 7.25	
IRONWORKER	$ 7.25	
Laborer, Unskilled	$ 7.25	
PAINTER	$ 7.25	
PIPEFITTER	$ 7.25	

PLUMBER (Including HVAC work)....$	7.25		.31
Power equipment operators:			
Cranes.....$	7.25		
Diggers.....$	7.25		
Loaders.....$	7.25		.26
Traxcavator.....$	7.25		
Sheet metal worker (Including HVAC duct work).....$	7.25		.31
TRUCK DRIVER.....$	7.25		.30

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey.

Example:

PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

==========

END OF GENERAL DECISION

General Decision Number: PR180002 01/05/2018 PR2

Superseded General Decision Number: PR20170002

State: Puerto Rico

Construction Types: Heavy and Highway

Counties: Puerto Rico Statewide.

HEAVY AND HIGHWAY CONSTRUCTION PROJECTS.

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015.
If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* SUPR1995-001 05/26/1995

	Rates	Fringes
CARPENTER	$ 7.25	.50
CEMENT MASON/CONCRETE FINISHER	$ 7.25	.47
ELECTRICIAN	$ 7.25	.80
IRONWORKER	$ 7.25	
Laborers:		
Laborers (unskilled)	$ 7.25	.43
Pipelayers	$ 7.25	
Line Construction:		
Linemen	$ 7.25	.84
Telephone linemen: Ground & Pole	$ 7.25	
PIPEFITTER	$ 7.25	
PLUMBER	$ 7.25	
Power equipment operators:		
Asphalt Luters	$ 7.25	3.11
Backhoe	$ 8.25	.59
Bulldozer	$ 7.25	.99
Crane	$ 7.25	1.43
Diggers	$ 7.25	

Grader	$	7.25	1.06
Greaser/Oilers	$	7.25	
Loaders	$	7.25	.92
Mechanics	$	7.25	.76
Paver	$	7.25	3.15
Roller	$	7.25	3.14
SCRAPERS:			
18 CY and over	$	8.10	.59
less than 18 CY	$	7.80	.59
less than 185 HP	$	8.00	.59
Screedman	$	8.80	3.13
TRACTORS:			
185 HP and over	$	8.10	.59
SCRAPERS			
TRUCK DRIVER	$	7.25	

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

SSA

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey.

Example:

PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination

* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

==========

END OF GENERAL DECISION

General Decision Number: PR180002 01/05/2018 PR2

Superseded General Decision Number: PR20170002

State: Puerto Rico

Construction Types: Heavy and Highway

Counties: Puerto Rico Statewide.

HEAVY AND HIGHWAY CONSTRUCTION PROJECTS.

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015.
If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* SUPR1995-001 05/26/1995

	Rates	Fringes
CARPENTER	$ 7.25	.50
CEMENT MASON/CONCRETE FINISHER	$ 7.25	.47
ELECTRICIAN	$ 7.25	.80
IRONWORKER	$ 7.25	
Laborers:		
Laborers (unskilled)	$ 7.25	.43
Pipelayers	$ 7.25	
Line Construction:		
Linemen	$ 7.25	.84
Telephone linemen: Ground & Pole	$ 7.25	
PIPEFITTER	$ 7.25	
PLUMBER	$ 7.25	
Power equipment operators:		
Asphalt Luters	$ 7.25	3.11
Backhoe	$ 8.25	.59
Bulldozer	$ 7.25	.99

Crane	$	7.25	1.43
Diggers	$	7.25	
Grader	$	7.25	1.06
Greaser/Oilers	$	7.25	
Loaders	$	7.25	.92
Mechanics	$	7.25	.76
Paver	$	7.25	3.15
Roller	$	7.25	3.14
SCRAPERS:			
18 CY and over	$	8.10	.59
less than 18 CY	$	7.80	.59
less than 185 HP	$	8.00	.59
Screedman	$	8.80	3.13
TRACTORS:			
185 HP and over	$	8.10	.59
SCRAPERS			
TRUCK DRIVER	$	7.25	

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

A3M

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey.

Example:

PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

==========

END OF GENERAL DECISION

General Decision Number: PR180003 01/05/2018 PR3

Superseded General Decision Number: PR20170003

State: Puerto Rico

Construction Type: Residential

Counties: Puerto Rico Statewide.

RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015.
If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* SUPR1993-002 10/29/1993

	Rates	Fringes
CARPENTER	$ 7.25	.65
CEMENT MASON/CONCRETE FINISHER	$ 7.25	
ELECTRICIAN	$ 7.25	.64
IRONWORKER	$ 7.25	.63
Laborer, Unskilled	$ 7.25	.36
PAINTER	$ 7.25	
PLUMBER	$ 7.25	.56
Power equipment operators:		
Cranes	$ 7.25	1.14
Diggers	$ 7.25	
TRUCK DRIVER	$ 7.25	

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

13N

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey.

Example:

PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that

classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

13R

==========

END OF GENERAL DECISION

APPENDIX C

ARG_PWPS Proposal Clarifications

532

APPENDIX C

The following are clarifications to articles of the ARG Precision Corp. and PW Power Systems proposal:

A. Refer to Page 35 of 213

Under the pricing table says "costs do not include Municipal or State Excise Taxes". The Municipal Taxes cost for the installation works have been added to the total cost of the Contract.

B. Refer to Page 39 of 213

On Page 39, some items are classified as "Under Owner's Responsibilities". The following shall be contractor's responsibilities:

- Construction permits and licensing.
- Equipment mounting and mounting hardware.
- Temporary construction staging and secure inventory area.
- Site prep, leveling, and compaction to meet at least 191521 Pa (4,000 lbs. per square foot) compressive strength.
- Site engineering.
- Site organization during construction.
- Emissions and acoustic testing.
- Worker's compensation, employer's liabilities, and any other local insurance required.
- All supervision and craft labor for complete off-loading.
- Required test prior to start-up.
- Construction equipment, tools, and aids.
- Phasing and synchronizing the generator to purchaser's system.
- Excavation for foundations, pipes, roads, cabling, and grounding grid.
- Site leveling.
- Backfill.
- Finish grading.
- Builder's all risk insurance.

C. Refer to Pages 138 to 140.

The following tests will be performed by Contractor:

- Initial Checks
- Performance Acceptance Test
- Noise Testing
- Customer-Specific Tests

D. Refer to Page 153 of 213

The clarifications in red are added to the table of permits. Contractor shall be responsible for the permitting processes, as described on this table and/or as required by state and federal regulatory agencies.

Permits-Endorsement	Department/Agency	Apply (Y or N)
Env. Impact Analysis (EA or DIA) Replace by Rule 141	OGPe Replace by EQB	N Replace by Y
Air Quality Impsct Analysis/New Source Emission	EQB	N
Study of Human Risk Assessment	EQB & EPA	N
Risk Assessment Study of Ecological System	EQB & EPA	N
Study of Flora & Fauna	DRNA	N
Noise Study	EQB	N
Preliminary Endorsements	PREPA, PRASA, DRNA, Others	Yes
Preventing Significant Deterioration of Air Quality	EQB, EPA	A NON-PSD Process available
Emission Source Construction Permit	EQB	N
Permit for Storm Water Discharge During Construction-NPDES	EPA	N
Consolidated General Permit	DRNASingle Business Portal	Y
Fire Department Endorsement	FDPR	Y
Department of Health Endorsement	DHPR Replace by Single Business Portal (SBP)	N
Construction Permit	OGPe	Y
Operating Permit Title V Air Emission Source	EQB & EPA	A Title V Site
Use Permit	OGPe	Y Title V Site Permit Modification

SJR

Replace by Electrical Generators Permit

APPENDIX D

Performance Guarantees

537

APPENDIX D

PERFORMANCE GUARANTEES

The Contractor guarantees PREPA that, when the commissioning and acceptance tests are completed and the substantial completion stage is reached, each unit complies with the guaranteed values set out below. If any of the units fail to achieve the parameters established below during the performance tests, the contractor will have sixty (60) calendar days from the substantial completion date to take the necessary measures, perform the tests again, and comply with the guaranteed values.

Non-compliance with any of the undermentioned guaranteed values after such sixty (60) calendar days from the substantial completion date, will result in the payment of liquidated damages by the Contractor based on the penalty shown below. The penalty for the non-compliance guarantee value will be applied separately to each unit. The accumulated non-compliance penalty shall not exceed 5% of the contract price and constitute Contractor's sole obligation for failure to satisfy the Guaranteed Values.

The guarantees below are for liquid fuel, without water injection, which is the only fuel for which testing will be required due to its availability. If, instead, water injection will be used, the guarantees will be as set forth on the original equipment manufacturer's performance and emissions table, which is an exhibit to its subcontract.

Testing is subject to the original equipment manufacturer's specifications (e.g., to correct for actual ambient conditions) as set forth in its subcontract.

Guaranteed Item	Guaranteed Value per Unit (@85 deg. F & 70% RH)	Penalty for Non-compliance	Description
Net Unit Output	22.583 MW	$1,500/kW	As measured by the last performance test (referenced to the low side of the main step-up transformers)
Heat Rate	9,759 BTU/kWh	$1,500 per BTU/kWh	Excess related to the net output measured at the low side of the main step-up transformer, as measured by the last Performance Test (based upon the lower heating value)
Environmental Compliance	As per Emission Rates on Performance and Emissions Table	$3,000/day	Contractor shall comply with the guaranteed values on its proposal for emissions during the performance tests.

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

FIRST AMENDMENT
Contract 2019-P00112A

MOBILE GENERATION UNITS

APPEAR

AS FIRST PARTY: The Puerto Rico Electric Power Authority (PREPA), a public corporation and government instrumentality of the Commonwealth of Puerto Rico, created by Act of May 2, 1941, No. 83, as amended, represented in this act by its Chief Executive Officer/Executive Director, José F. Ortiz Vázquez, of legal age, married and resident of San Juan, Puerto Rico.----------

AS SECOND PARTY: ARG Precision Corp. hereinafter referred to as "the Contractor", a partnership organized and existing under the laws of Puerto Rico, authorized to do business in Puerto Rico, represented in this act by its President, Armando Rodríguez Gutiérrez, engineer, married, and resident of San Juan, Puerto Rico, by virtue of Corporate Resolution dated as of April 29, 2019.----------

AJR

WITNESSETH

In consideration of the mutual covenants hereinafter stated, the parties agree themselves, their personal representatives, and successors as follows:----------

STATE

WHEREAS: On May 20, 2019, the Parties executed the Contract 2019-P00112, at a cost of fifty eight million ninety three thousand sixteen dollars ($58,093,016), to provide three (3) new, zero-hour FT-8 MobilePac® gas turbine units and perform its delivery, installation, testing, and commissioning. ----------

WHEREAS: The Contractor had a term of sixty (60) calendar days to complete the project scope from the date of the Notice to Proceed. The Notice to Proceed was issued on May 23, 2019. ----------

WHEREAS: On June 21, 2019, the Court of Appeals issued an order staying the execution of the contract until the administrative reconsideration process was completed. On June 25, 2019, after being notified of the determination, PREPA notified the Contractor of the temporary suspension of the project. The work was continued on July 10, 2019 after the administrative judge issued a final resolution.----------

WHEREAS: The Contract, in its Article 10, Changes and/or Extra Work, establishes that "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".-----

WHEREAS: PREPA determined that the operation of the units will require water injection to decrease air emissions. The supply of deminaralized water to the units is a change that requires a revision of the installation drawings, which requires additional time.----------

WHEREAS: Due to the requested changes which require a negotiation process requiring additional time for the completion of the project, the term of the contract should be extended accordingly.----------

WHEREAS: The Contract's registration process in the Office of the Comptroller of Puerto Rico establishes that the Contract is valid through August 1, 2019. ----------

THEREFORE, in consideration of the mutual convenants hereinafter stated, the Parties hereby agrees to amend the Contract as follows:----------

TERMS AND CONDITIONS

FIRST: The term of this Contract shall be extended sixty (60) calendar days for a total of a hundred thirthy three (133) calendar days from the effective date. Therefore, the Contract will be in effect until September 30, 2019. ----------

SECOND: The Parties agree that all other terms and conditions established in the Contract, shall remain unaltered and fully enforceable. ----------

In WITNESS WHEREOF, the parties hereto have agreed to execute this First Amendment in San Juan, Puerto Rico, on this 31 day of July, 2019. -----

Puerto Rico Electric Power Authority	ARG Precision Corp.
José F. Ortiz Vázquez	Armando Rodríguez Gutiérrez
Chief Executive Officer	President
SSN:	SSN:

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

SECOND AMENDMENT
Contract 2019-P00112B

MOBILE GENERATION UNITS

APPEAR

AS FIRST PARTY: The Puerto Rico Electric Power Authority (PREPA), a public corporation and government instrumentality of the Commonwealth of Puerto Rico, created by Act of May 2, 1941, No. 83, as amended (Act 83), represented in this act by its Chief Executive Officer/Executive Director, José F. Ortiz Vázquez, of legal age, married and resident of San Juan, Puerto Rico.----------

AS SECOND PARTY: ARG Precision Corp. hereinafter referred to as "the Contractor", a partnership organized and existing under the laws of Puerto Rico, authorized to do business in Puerto Rico, represented in this act by its President, Armando Rodríguez Gutiérrez, engineer, married, and resident of San Juan, Puerto Rico, by virtue of Corporate Resolution dated as of April 29, 2019.----------

Both PREPA and Contractor are herein individuals referred to as a "Party" and collectively referred to as the "Parties".----------

WITNESSETH

PREPA, by virtue of Act 83, has the authority to engage those professional, technical and consulting services necessary and convenient to the activities, programs, and operations of PREPA.----------

In consideration of the mutual covenants hereinafter stated, the Parties agree themselves, their personal representatives, and successors as follows:----------

STATE

WHEREAS: On May 20, 2019 (Effective Date), the Parties executed the Contract 2019-P00112 (Contract), at a cost of fifty eight million ninety three thousand sixteen dollars ($58,093,016), to provide three (3) new, zero-hour FT-8 MobilePac® gas turbine units and perform its delivery, installation, testing, and commissioning (Project). ----------

WHEREAS: The Contractor had a term of sixty (60) calendar days to complete the Project scope from the date of the Notice to Proceed. The Notice to Proceed was issued on May 23, 2019. ----------

WHEREAS: One of the units should be installed in the Yabucoa Power Station in forty five (45) calendar days, starting ten (10) days after the issue of the Notice to Proceed. Also, the other two (2) units should be installed in the Palo Seco Power Plant in sixty (60) days, starting ten (10) calendar days after the issue of the Notice to Proceed.----------

WHEREAS: On July 31, 2019, the Parties extended the term of the Contract by sixty (60) days and the Contract is in effect until September 30, 2019.----------

WHEREAS: The First Amendment was agreed to allow a negotiation for the extension of completion of time in light of, the delay caused by the order staying the execution of the Contract, issued by the Court of Appeals on June 21, 2019, and the requirement by PREPA for the use of water injection to decrease air emissions.----------

WHEREAS: PREPA also determined, in the best interest of its generation operation, to install the three (3) gas turbines at the Palo Seco Site. The engineering of the Project should be designed accordingly to comply with the Contract purpose and requirements.-

WHEREAS: The Contract, in its Article 10, Changes and/or Extra Work, establishes that "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".-----

WHEREAS: Due to delays in the Project, the work has not been completed and the negotiations are still in progress requiring additional time, thus, the term of the Contract shall be extended accordingly.----------

WHEREAS: The Contract's registration process in the Office of the Comptroller of Puerto Rico establishes that the Contract, as amended, is valid through September 30, 2019. ----------

A3R

THEREFORE, in consideration of the mutual convenants hereinafter stated, the Parties hereby agrees to amend the Contract as follows:----------

TERMS AND CONDITIONS

FIRST: The term of this Contract shall be extended for sixty (60) calendar days for a total of one hundred ninety three (193) calendar days from the Effective Date. Therefore, the Contract will be in effect until November 29, 2019. ----------

SECOND: The Contractor will comply with all applicable State Law, Regulations and Executive Orders that regulate the contracting process and establish the requirements for governmental contracting in the Commonwealth of Puerto Rico, including but not limited to those mentioned in this Article. Also, the Contractor shall provide, before the execution of the Second Amendment the following documents and certifications:----------

A. Executive Order Number OE-1991-24 of June 18, 1991 to require certification of compliance with the Internal Revenue Services of the Commonwealth of Puerto Rico:

Pursuant to Executive Order Number OE-1991-24 of June 18, 1991, the Contractor will certify and guarantee that it has filed all the necessary and required income tax returns to the Government of Puerto Rico for the last five (5) years. The Contractor further will certify that it has complied and is current with the payment of any and all income taxes that are, or were due, to the Government of Puerto Rico. The Contractor shall provide, to the satisfaction of PREPA, and whenever requested by PREPA during the term of this Contract, the necessary documentation to support its compliance with this clause. The Contractor will be given a specific amount of time to produce said documents. During the term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico.----------

B. Executive Order Number OE-1992-52 of August 28, 1992 to require certification of compliance with the Department of Labor of the Commonwealth of Puerto Rico. Pursuant to Executive Order Number 1992-52, dated August 28, 1992 amending OE-1991-24, the Contractor will certify and warrant that it has made all payments required for unemployment benefits, workmen's compensation and social security for chauffeurs, whichever is applicable, or that in lieu thereof, has subscribed a payment plan in connection with any such unpaid items and is in full compliance with the terms thereof. The Contractor accepts and acknowledges its responsibility for requiring and obtaining a similar warranty and certification from each and every Contractor and Subcontractor whose service the Contractor has secured in connection with the

services to be rendered under this Contract and shall forward evidence to PREPA as to its compliance with this requirement.----------

C. Government of Puerto Rico Municipal Tax Collection Center: The Contractor will certify and guarantee that it does not have any current debt with regards to property taxes that may be registered with the Government of Puerto Rico's Municipal Tax Collection Center (known in Spanish as Centro de Recaudación de Ingresos Municipales ("CRIM"). The Contractor further will certify to be current with the payment of any and all property taxes that are or were due to the Government of Puerto Rico. The Contractor shall provide, to the satisfaction of PREPA and whenever requested by PREPA during the term of this Contract, Certification issued by the Municipal Revenues Collection Center (MRCC), assuring that Contractor does not owe any tax accruing to such governmental agency. To request such Certification, Contractor will use the form issued by the MRCC (called "CRIM-Certificados, Radicación, Estado de Cuenta y Todos los Conceptos" in the website). The Contractor will deliver upon request any documentation requested by PREPA. During the Term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico with regards to its property taxes.----------

The Contractor shall provide a Personal Property Tax Filing Certification, issued by the MRCC which indicates that Contractor has filed its Personal Property Tax Return for the last five (5) contributory terms or Negative Debt certification issued by the MRCC with respect to real and property taxes and a sworn statement executed by

Contractor indicating that (i) its revenues are derived from the rendering of professional services, (ii) during the last five (5) years (or the time in which it has been providing professional services) it has had no taxable business or personal property on the 1st of January of each year, (iii) that for such reasons it has not been required to file personal property tax returns, as required under Article 6.03 of Act 83-1991, as amended, and (iv) that for such reason it does not have an electronic tax file in the MRCC's electronic system.----------

D. The Contractor shall furnish a Certification issued by the Treasury Department of Puerto Rico which indicates that 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.----------

E. The Contractor shall provide a Puerto Rico Sales and Use Tax Filing Certificate, issued by the Treasury Department of Puerto Rico assuring that Contractor has filed his Puerto Rico Sales and Use Tax for the last sixty (60) contributory periods.----------

F. The Contractor shall provide a copy of Contractor's Certificate of Merchant's Registration issued by the Treasury Department of Puerto Rico.----------

G. Puerto Rico Child Support Administration (ASUME): The Contractor shall present, to the satisfaction of PREPA, the necessary documentation certifying that the Contractor nor any of its owners, affiliates of subsidiaries, if applicable, have any debt, outstanding debt, or legal procedures to collect child support payments that may be registered with the Puerto Rico Child Support Administration (known in Spanish as the

Administración Para El Sustento de Menores (ASUME). The Contractor will be given a specific amount of time to deliver said documents. 3 L.P.R.A. § 8611 et seq.;--------

H. The Contractor shall provide a Good Standing Certificate issued by the Department of State of Puerto Rico.----------

I. The Contractor shall provide a Certification of Incorporation, or Certificate of Authorization to do business in Puerto Rico issued by the Department of State of Puerto Rico.----------

J. If applicable, PREPA shall withhold the special contribution of one point five percent (1.5%) of the gross amounts paid under this Contract for the installation services of the Project..----------

K. 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.----------

L. Income Tax Retention Law: PREPA shall deduct and withhold ten percent (10%) of any and all payments to residents of the Commonwealth of Puerto Rico as required by the Internal Revenue Code of Puerto Rico. In case of US citizens and Non-US citizens, which are nonresidents of the Commonwealth of Puerto Rico the Contractor will retain twenty percent (20%) and twenty-nine percent (29%) respectively. PREPA will remit such withholdings to the Government of Puerto Rico's Treasury Department (known in Spanish as Departamento de Hacienda de Puerto Rico). The Contractor will request PREPA not to make such withholdings if, to the satisfaction of PREPA,

the Contractor timely provides a release from such obligation by the Government of Puerto Rico's Treasury Department. 3 L.P.R.A. § 8611 et seq., 2011 L.P.R. 232; 232-2011.----------

M. Compliance with Act 1-2012 of Governmental Ethics: The Contractor will certify compliance with Act 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 et seq.;----------

N. Act 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 168-2000, as amended, the same is current and in all aspects in compliance. Act 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. Act 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 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 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.----------

AJTP 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 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.----------

A3R U. Dispensation: Any and all necessary dispensations have been obtained from any government entity and that said dispensations shall become part of the contracting record.----------

V. Rules of Professional Ethics: The Contractor acknowledges and accepts that it is knowledgeable of the rules of ethics of his/her profession and assumes responsibility for his/her own actions.----------

If any of the previously required Certifications shows a debt, and Contractor has requested a review or adjustment of this debt, Contractor will certify that it has made such request at the time of the Contract execution. If the requested review or adjustment is denied and such determination is final, Contractor will provide, immediately, to PREPA a proof of payment of this debt; otherwise, Contractor accepts that the owed amount be offset by PREPA and retained at the origin, deducted from the corresponding payments.-

THIRD: Contractor agrees to comply with the provisions of Act 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 conflicts of interest, or of public policy, between the executive agency and the particular interests it represents.----------

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 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 Contract 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.----------

Consequences of Non-Compliance: The Contractor expressly agrees that the conditions outlined throughout this Article 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.----------

FOURTH: 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), PREPA may sell, assign, convey, transfer, pledge, mortgage, sublease, delegate, hypothecate, or otherwise dispose (each, a "Transfer") any of its rights, title, or interest in this Contract 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.----------

FIFTH: The Parties agree that all other terms and conditions established in the Contract, shall remain unaltered and fully enforceable. ----------

In WITNESS WHEREOF, the Parties hereto have agreed to execute this Second Amendment in San Juan, Puerto Rico, on this 30 day of September, 2019.----------

Puerto Rico Electric Power Authority	ARG Precision Corp.
José F. Ortiz Vázquez	Armando Rodríguez Gutiérrez
Chief Executive Officer	President
SSN:	SSN:

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

THIRD AMENDMENT
Contract 2019-P00112C

MOBILE GENERATION UNITS

APPEAR

AS FIRST PARTY: The Puerto Rico Electric Power Authority (PREPA), a public corporation and government instrumentality of the Commonwealth of Puerto Rico, created by Act of May 2, 1941, No. 83, as amended, represented in this act by its Chief Executive Officer/Executive Director, José F. Ortiz Vázquez, of legal age, married and resident of San Juan, Puerto Rico.----------

AS SECOND PARTY: ARG Precision Corp. hereinafter referred to as "the Contractor", a partnership organized and existing under the laws of Puerto Rico, authorized to do business in Puerto Rico, represented in this act by engineer , Julio José Nater Sánchez, Project Manager, married, and resident of Trujillo Alto, Puerto Rico, by virtue of Corporate Resolution dated as of November 21, 2019.----------

Both PREPA and Contractor are herein individuals referred to as a "Party" and collectively referred to as the "Parties".----------

WITNESSETH

In consideration of the mutual covenants hereinafter stated, the Parties agree themselves, their personal representatives, and successors as follows:----------

STATE

WHEREAS: On May 20, 2019, the Parties executed the Contract 2019-P00112, at a cost of fifty eight million ninety three thousand sixteen dollars ($58,093,016), to provide three (3) new, zero-hour FT-8 MobilePac® gas turbine units and perform its delivery, installation, testing, and commissioning. ----------

WHEREAS: The Contractor had a term of sixty (60) calendar days to complete the project scope from the date of the Notice to Proceed. The Notice to Proceed was issued on May 23, 2019. ----------

WHEREAS: One of the units should be installed in the Yabucoa Power Station in forty five (45) calendar days, starting ten (10) days after the issue of the Notice to Proceed. Also, the other two (2) units should be installed in the Palo Seco Power Plant in sixty (60) days, starting ten (10) calendar days after the issue of the Notice to Proceed.----------

WHEREAS: On July 31, 2019 the Parties agreed on a First Amendment that extended the term of the Contract until September 30, 2019 and allow a negotiation for the extension of completion time in light of, the delay caused by the order staying the execution of the contract issued by the Court of Appeals on June 21, 2019, the requirement by PREPA for the use of water injection to decrease air emissions and the revisions of the installation for the supply of demineralized water to the units.----------

WHEREAS: On September 30, 2019, the Parties agreed on a Second Amendment, that extended the term of the Contract until November 29, 2019 related with PREPA's determination in the best interest of its generation operation, to install the three (3) gas turbines at the Palo Seco Site. The engineering of the project should be designed accordingly to comply with the Contract purpose and requirements.----------

WHEREAS: The Contract, in its Article 10, Changes and/or Extra Work, establishes that "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".-----

WHEREAS: The Contract's registration process in the Office of the Comptroller of Puerto Rico establishes that the Contract, as amended, is valid through November 29, 2019. ----------

WHEREAS: Due to delays in the project, the work has not been completed and the negotiations are still in progress requiring additional time, thus, the term of the Contract shall be extended accordingly. ----------

THEREFORE, in consideration of the mutual convenants hereinafter stated, the Parties hereby agrees to amend the Contract as follows:----------

TERMS AND CONDITIONS

FIRST: The term of this Contract shall be extended one hundred twenty (120) calendar days for a total of three hundred thirteen (313) calendar days from the effective date. Therefore, the Contract will be in effect until March 28, 2020. ----------

SECOND: The Contractor will comply with all applicable State Law, Regulations and Executive Orders that regulate the contracting process and establish the requirements for governmental contracting in the Commonwealth of Puerto Rico, including but not limited to those mentioned in this Article. Also, the Contractor shall provide, before the execution of the Contract the following documents and certifications:----------

A. Executive Order Number OE-1991-24 of June 18, 1991 to require certification of compliance with the Internal Revenue Services of the Commonwealth of Puerto Rico: Pursuant to Executive Order Number OE-1991-24 of June 18, 1991, the Contractor will certify and guarantee that it has filed all the necessary and required income tax returns to the Government of Puerto Rico for the last five (5) years. The Contractor further will certify that it has complied and is current with the payment of any and all income taxes that are, or were due, to the Government of Puerto Rico. The Contractor shall provide, to the satisfaction of PREPA, and whenever requested by PREPA during the term of this Contract, the necessary documentation to support its compliance with this clause. The Contractor will be given a specific amount of time to produce said documents. During the

term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico.----------

B. Executive Order Number OE-1992-52 of August 28, 1992 to require certification of compliance with the Department of Labor of the Commonwealth of Puerto Rico. Pursuant to Executive Order Number 1992-52, dated August 28, 1992 amending OE-1991-24, the Contractor will certify and warrant that it has made all payments required for unemployment benefits, workmen's compensation and social security for chauffeurs, whichever is applicable, or that in lieu thereof, has subscribed a payment plan in connection with any such unpaid items and is in full compliance with the terms thereof. The Contractor accepts and acknowledges its responsibility for requiring and obtaining a similar warranty and certification from each and every Contractor and Subcontractor whose service the Contractor has secured in connection with the services to be rendered under this Contract and shall forward evidence to PREPA as to its compliance with this requirement.----------

C. Government of Puerto Rico Municipal Tax Collection Center: The Contractor will certify and guarantee that it does not have any current debt with regards to property taxes that may be registered with the Government of Puerto Rico's Municipal Tax Collection Center (known in Spanish as Centro de Recaudación de Ingresos Municipales ("CRIM"). The Contractor further will certify to be current with the payment of any and all property taxes that are or were due to the Government of Puerto Rico. The Contractor shall provide, to the satisfaction of PREPA and whenever requested by PREPA during the term of this Contract, Certification issued by the Municipal Revenues Collection Center (MRCC), assuring that Contractor does not owe any tax accruing to such governmental agency. To request such Certification, Contractor will use the form issued by the MRCC

(called "CRIM-Certificados, Radicación, Estado de Cuenta y Todos los Conceptos" in the website). The Contractor will deliver upon request any documentation requested by PREPA. During the Term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico with regards to its property taxes.----------

The Contractor shall provide a Personal Property Tax Filing Certification, issued by the MRCC which indicates that Contractor has filed its Personal Property Tax Return for the last five (5) contributory terms or Negative Debt certification issued by the MRCC with respect to real and property taxes and a sworn statement executed by Contractor indicating that (i) its revenues are derived from the rendering of professional services, (ii) during the last five (5) years (or the time in which it has been providing professional services) it has had no taxable business or personal property on the 1st of January of each year, (iii) that for such reasons it has not been required to file personal property tax returns, as required under Article 6.03 of Act 83-1991, as amended, and (iv) that for such reason it does not have an electronic tax file in the MRCC's electronic system.----------

D. The Contractor shall furnish a Certification issued by the Treasury Department of Puerto Rico which indicates that 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.----------

E. The Contractor shall provide a Puerto Rico Sales and Use Tax Filing Certificate, issued by the Treasury Department of Puerto Rico assuring that Contractor has filed his Puerto Rico Sales and Use Tax for the last sixty (60) contributory periods.----------

F. The Contractor shall provide a copy of Contractor's Certificate of Merchant's Registration issued by the Treasury Department of Puerto Rico.----------

G. Puerto Rico Child Support Administration (ASUME): The Contractor shall present, to the satisfaction of PREPA, the necessary documentation certifying that the Contractor nor any of its owners, affiliates of subsidiaries, if applicable, have any debt, outstanding debt, or legal procedures to collect child support payments that may be registered with the Puerto Rico Child Support Administration (known in Spanish as the Administración Para El Sustento de Menores (ASUME). The Contractor will be given a specific amount of time to deliver said documents. 3 L.P.R.A. § 8611 et seq.;----------

H. The Contractor shall provide a Good Standing Certificate issued by the Department of State of Puerto Rico.----------

I. The Contractor shall provide a Certification of Incorporation, or Certificate of Authorization to do business in Puerto Rico issued by the Department of State of Puerto Rico.----------

J. Special Contribution for Professional and Consulting Services: As required by Act 48-2013, as amended, PREPA will withhold a special contribution of one point five percent (1.5%) of the gross amounts paid under this Contract.----------

K. 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.----------

L. Income Tax Retention Law: PREPA shall deduct and withhold ten percent (10%) of any and all payments to residents of the Commonwealth of Puerto Rico as required by the Internal Revenue Code of Puerto Rico. In case of US citizens and Non-US citizens, which are nonresidents of the Commonwealth of Puerto Rico the Contractor will retain twenty percent (20%) and twenty-nine percent (29%) respectively. PREPA will remit such

withholdings to the Government of Puerto Rico's Treasury Department (known in Spanish as Departamento de Hacienda de Puerto Rico). The Contractor will request PREPA not to make such withholdings if, to the satisfaction of PREPA, the Contractor timely provides a release from such obligation by the Government of Puerto Rico's Treasury Department. 3 L.P.R.A. § 8611 et seq., 2011 L.P.R. 232; 232-2011.----------

M. Compliance with Act 1-2012 of Governmental Ethics: The Contractor will certify compliance with Act 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 et seq.;----------

N. Act 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 168-2000, as amended, the same is current and in all aspects in compliance. Act 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. Act 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 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 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 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. Dispensation: Any and all necessary dispensations have been obtained from any government entity and that said dispensations shall become part of the contracting record.----------

V. Rules of Professional Ethics: The Contractor acknowledges and accepts that it is knowledgeable of the rules of ethics of his/her profession and assumes responsibility for his/her own actions.----------

If any of the previously required Certifications shows a debt, and Contractor has requested a review or adjustment of this debt, Contractor will certify that it has made such request at the time of the Contract execution. If the requested review or adjustment is denied and such determination is final, Contractor will provide, immediately, to PREPA a proof of payment of this debt; otherwise, Contractor accepts that the owed amount be offset by PREPA and retained at the origin, deducted from the corresponding payments.-

THIRD: Contractor agrees to comply with the provisions of Act 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 conflicts of interest, or of public policy, between the executive agency and the particular interests it represents.----------

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 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 Contract 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.----------

Consequences of Non-Compliance: The Contractor expressly agrees that the conditions outlined throughout this Article 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.----------

FOURTH: 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), PREPA may sell, assign, convey, transfer, pledge, mortgage, sublease, delegate, hypothecate, or otherwise dispose (each, a "Transfer") any of its rights, title, or interest in this Contract 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.----------

FIFTH: The Parties agree that all other terms and conditions established in the Contract, shall remain unaltered and fully enforceable. ----------

In WITNESS WHEREOF, the Parties hereto have agreed to execute this Third Amendment in San Juan, Puerto Rico, on this 27 day of November, 2019. -----

Puerto Rico Electric Power Authority

José F. Ortiz Vázquez
Chief Executive Officer
SSN:

ARG Precision Corp.

Julio José Nater Sánchez
Project Manager
SSN:

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

FOURTH AMENDMENT
Contract 2019-P00112D

MOBILE GENERATION UNITS

APPEAR

AS FIRST PARTY: The Puerto Rico Electric Power Authority (PREPA), a public corporation and government instrumentality of the Commonwealth of Puerto Rico, created by Act of May 2, 1941, No. 83, as amended, represented in this act by its Chief Executive Officer/Executive Director, José F. Ortiz Vázquez, of legal age, married and resident of San Juan, Puerto Rico.----------

AS SECOND PARTY: ARG Precision Corp. hereinafter referred to as "the Contractor", a partnership organized and existing under the laws of Puerto Rico, authorized to do business in Puerto Rico, represented in this act by its President, Armando Rodríguez Gutiérrez, engineer, married, and resident of San Juan, Puerto Rico, by virtue of "Certificación de Resolución Corporativa" dated as of March 25, 2020.----------

Both PREPA and Contractor are herein individually referred to as a "Party" and collectively referred to as the "Parties".----------

WITNESSETH

In consideration of the mutual covenants hereinafter stated, the Parties agree themselves, their personal representatives, and successors as follows:----------

STATE

WHEREAS: On May 20, 2019, the Parties executed Contract 2019-P00112, at a cost of fifty eight million ninety three thousand sixteen dollars ($58,093,016), to provide three (3)

new, zero-hour FT-8 MobilePac® gas turbine units and perform their delivery, installation, testing, and commissioning. ----------

WHEREAS: The Contractor had a term of sixty (60) calendar days to complete the project scope from the date of the Notice to Proceed. The Notice to Proceed was issued on May 23, 2019. ----------

WHEREAS: On July 31, 2019 the Parties agreed on a First Amendment that extended the term of the Contract until September 30, 2019. ----------

WHEREAS: On September 30, 2019, the Parties agreed on a Second Amendment, that extended the term of the Contract until November 29, 2019. ----------

AJR

WHEREAS: On November 27, 2019, PREPA issued a Substantial Completion Certificate but, the Contractor had not completed the work necessary for Final Acceptance. The Parties agreed on a Third Amendment, that extended the term of the Contract until March 28, 2020.----------

WHEREAS: On January 7, 2020, there was an earthquake in the South of the island of an intensity of 6.8 on the Richter scale which caused permanent damages to the South Coast Power Plant and the loss of 900 MW of power generation. The three mobile units had to be used continuously and permanently to mitigate the emergency situation of lack of power generation. There are some activities of the work included in the punch list that cannot be carried out with the units in services.----------

WHEREAS: On March 15, 2020, due to spread of the COVID-19, the Governor of Puerto Rico, honorable Wanda Vázquez Garced, issued Executive Order OE-2020-023, ordering the shutdown of businesses and a curfew on the Island, until March 30, 2020,

further extended until April 12, 2020. The work to be done on the punch list is not considered as exempt or critical work under the order, therefore, the contractor's workers must remain in their homes. ----------

WHEREAS: The Contractor had not completed the punch list items required for Final Acceptance, thus, the term of the Contract shall be extended accordingly. ----------

THEREFORE, in consideration of the mutual convenants hereinafter stated, the Parties hereby agree to amend the Contract as follows:----------

TERMS AND CONDITIONS

FIRST: The term of the Contract shall be extended sixty (60) calendar days for a total of three hundred seventy three (373) calendar days from the effective date. Therefore, the Contract will be in effect until May 27, 2020. ----------

AJC

SECOND: The Contractor will comply with all applicable State Law, Regulations and Executive Orders that regulate the contracting process and establish the requirements for governmental contracting in the Commonwealth of Puerto Rico, including but not limited to those mentioned in this Article. Also, the Contractor shall provide, before the execution of the Contract the following documents and certifications:----------

A. Executive Order Number OE-1991-24 of June 18, 1991 to require certification of compliance with the Internal Revenue Services of the Commonwealth of Puerto Rico: Pursuant to Executive Order Number OE-1991-24 of June 18, 1991, the Contractor will certify and guarantee that it has filed all the necessary and required income tax returns to the Government of Puerto Rico for the last five (5) years. The Contractor further will certify that it has complied and is current with the payment of any and all income taxes

that are, or were due, to the Government of Puerto Rico. The Contractor shall provide, to the satisfaction of PREPA, and whenever requested by PREPA during the term of this Contract, the necessary documentation to support its compliance with this clause. The Contractor will be given a specific amount of time to produce said documents. During the term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico.----------

B. Executive Order Number OE-1992-52 of August 28, 1992 to require certification of compliance with the Department of Labor of the Commonwealth of Puerto Rico. Pursuant to Executive Order Number 1992-52, dated August 28, 1992 amending OE-1991-24, the Contractor will certify and warrant that it has made all payments required for unemployment benefits, workmen's compensation and social security for chauffeurs, whichever is applicable, or that in lieu thereof, has subscribed a payment plan in connection with any such unpaid items and is in full compliance with the terms thereof. The Contractor accepts and acknowledges its responsibility for requiring and obtaining a similar warranty and certification from each and every Contractor and Subcontractor whose service the Contractor has secured in connection with the services to be rendered under this Contract and shall forward evidence to PREPA as to its compliance with this requirement.----------

C. Government of Puerto Rico Municipal Tax Collection Center: The Contractor will certify and guarantee that it does not have any current debt with regards to property taxes that may be registered with the Government of Puerto Rico's Municipal Tax Collection Center (known in Spanish as Centro de Recaudación de Ingresos Municipales ("CRIM").

The Contractor further will certify to be current with the payment of any and all property taxes that are or were due to the Government of Puerto Rico. The Contractor shall provide, to the satisfaction of PREPA and whenever requested by PREPA during the term of this Contract, Certification issued by the Municipal Revenues Collection Center (MRCC), assuring that Contractor does not owe any tax accruing to such governmental agency. To request such Certification, Contractor will use the form issued by the MRCC (called "CRIM-Certificados, Radicación, Estado de Cuenta y Todos los Conceptos" in the website). The Contractor will deliver upon request any documentation requested by PREPA. During the Term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico with regards to its property taxes.----------

A32

The Contractor shall provide a Personal Property Tax Filing Certification, issued by the MRCC which indicates that Contractor has filed its Personal Property Tax Return for the last five (5) contributory terms or Negative Debt certification issued by the MRCC with respect to real and property taxes and a sworn statement executed by Contractor indicating that (i) its revenues are derived from the rendering of professional services, (ii) during the last five (5) years (or the time in which it has been providing professional services) it has had no taxable business or personal property on the 1st of January of each year, (iii) that for such reasons it has not been required to file personal property tax returns, as required under Article 6.03 of Act 83-1991, as amended, and (iv) that for such reason it does not have an electronic tax file in the MRCC's electronic system.----------

D. The Contractor shall furnish a Certification issued by the Treasury Department of Puerto Rico which indicates that 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.----------

E. The Contractor shall provide a Puerto Rico Sales and Use Tax Filing Certificate, issued by the Treasury Department of Puerto Rico assuring that Contractor has filed his Puerto Rico Sales and Use Tax for the last sixty (60) contributory periods.----------

F. The Contractor shall provide a copy of Contractor's Certificate of Merchant's Registration issued by the Treasury Department of Puerto Rico.----------

13R G. Puerto Rico Child Support Administration (ASUME): The Contractor shall present, to the satisfaction of PREPA, the necessary documentation certifying that the Contractor nor any of its owners, affiliates of subsidiaries, if applicable, have any debt, outstanding debt, or legal procedures to collect child support payments that may be registered with the Puerto Rico Child Support Administration (known in Spanish as the Administración Para El Sustento de Menores (ASUME). The Contractor will be given a specific amount of time to deliver said documents. 3 L.P.R.A. § 8611 et seq.;----------

H. The Contractor shall provide a Good Standing Certificate issued by the Department of State of Puerto Rico.----------

I. The Contractor shall provide a Certification of Incorporation, or Certificate of Authorization to do business in Puerto Rico issued by the Department of State of Puerto Rico.----------

J. Special Contribution for Professional and Consulting Services: As required by Act 48-2013, as amended, PREPA will withhold a special contribution of one point five percent (1.5%) of the gross amounts paid under this Contract.----------

K. 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.----------

L. Income Tax Retention Law: PREPA shall deduct and withhold ten percent (10%) of any and all payments to residents of the Commonwealth of Puerto Rico as required by the Internal Revenue Code of Puerto Rico. In case of US citizens and Non-US citizens, which are nonresidents of the Commonwealth of Puerto Rico the Contractor will retain twenty percent (20%) and twenty-nine percent (29%) respectively. PREPA will remit such withholdings to the Government of Puerto Rico's Treasury Department (known in Spanish as Departamento de Hacienda de Puerto Rico). The Contractor will request PREPA not to make such withholdings if, to the satisfaction of PREPA, the Contractor timely provides a release from such obligation by the Government of Puerto Rico's Treasury Department. 3 L.P.R.A. § 8611 et seq., 2011 L.P.R. 232; 232-2011.----------

M. Compliance with Act 1-2012 of Governmental Ethics: The Contractor will certify compliance with Act 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 et seq.;----------

N. Act 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 168-2000, as amended, the same is current and in all aspects in compliance. Act 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.----------

A31

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

V. Rules of Professional Ethics: The Contractor acknowledges and accepts that it is knowledgeable of the rules of ethics of his/her profession and assumes responsibility for his/her own actions.----------

If any of the previously required Certifications shows a debt, and Contractor has requested a review or adjustment of this debt, Contractor will certify that it has made such request at the time of the Contract execution. If the requested review or adjustment is denied and such determination is final, Contractor will provide, immediately, to PREPA a proof of payment of this debt; otherwise, Contractor accepts that the owed amount be offset by PREPA and retained at the origin, deducted from the corresponding payments.-

THIRD: Contractor agrees to comply with the provisions of Act 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 conflicts of interest, or of public policy, between the executive agency and the particular interests it represents.----------

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 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.----------

A3/2

PREPA shall have the right to terminate the Contract 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.----------

Consequences of Non-Compliance: The Contractor expressly agrees that the conditions outlined throughout this Article 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.----------

FOURTH: 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), PREPA may sell, assign, convey, transfer, pledge, mortgage, sublease, delegate, hypothecate, or otherwise dispose (each, a "Transfer") any of its rights, title, or interest in this Contract 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.----------

FIFTH: The Parties agree that all other terms and conditions established in the Contract, shall remain unaltered and fully enforceable. ----------

In WITNESS WHEREOF, the Parties hereto have agreed to execute this Fourth Amendment in San Juan, Puerto Rico, on this 27th day of March, 2020. ----------

Puerto Rico Electric Power Authority

José F. Ortiz Vázquez
Chief Executive Officer
SSN:

ARG Precision Corp.

Armando Rodríguez Gutiérez
President
SSN:

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

FIFTH AMENDMENT
Contract 2019-P00112E

MOBILE GENERATION UNITS

APPEAR

AS FIRST PARTY: The Puerto Rico Electric Power Authority (PREPA), a public corporation and government instrumentality of the Commonwealth of Puerto Rico, created by Act of May 2, 1941, No. 83, as amended, represented in this act by its Chief Executive Officer/Executive Director, José F. Ortiz Vázquez, of legal age, married and resident of San Juan, Puerto Rico.----------

AS SECOND PARTY: ARG Precision Corp. hereinafter referred to as "the Contractor", a partnership organized and existing under the laws of Puerto Rico, authorized to do business in Puerto Rico, represented in this act by its President, Armando Rodríguez Gutiérrez, engineer, married, and resident of San Juan, Puerto Rico, by virtue of Corporate Resolution dated as of May 26, 2020.----------

AJR

Both PREPA and Contractor are herein individuals referred to as a "Party" and collectively referred to as the "Parties".----------

WITNESSETH

In consideration of the mutual covenants hereinafter stated, the Parties agree themselves, their personal representatives, and successors as follows:----------

STATE

WHEREAS: On May 20, 2019, the Parties executed the Contract 2019-P00112, at a cost of fifty eight million ninety three thousand sixteen dollars ($58,093,016), to provide three (3) new, zero-hour FT-8 MobilePac® gas turbine units and perform its delivery, installation, testing, and commissioning. ----------

WHEREAS: The Contractor had a term of sixty (60) calendar days to complete the project scope from the date of the Notice to Proceed. The Notice to Proceed was issued on May 23, 2019. ----------

WHEREAS: On July 31, 2019 the Parties agreed on a First Amendment that extended the term of the Contract until September 30, 2019.----------

WHEREAS: On September 30, 2019, the Parties agreed on a Second Amendment, that extended the term of the Contract until November 29, 2019.----------

WHEREAS: On November 27, 2019, PREPA issued Substantial Completion Certificate but, the Contractor had not completed the work necessary for Final Acceptance, the Parties agreed on a Third Amendment, that extended the term of the Contract until March 28, 2020.----------

ABR WHEREAS: On January 7, 2020, there was an earthquake in the South of the island of an intensity of 6.8 on the Ritcher scale which caused permanent damages to the South Coast Power Plant and the loss of 900MW of power generation. The three mobile units had to be used continuously and permanently to mitigate the emergency situation of lack of power generation. There are some activities of the work included in the punch list that cannot carried out with the units in services.----------

WHEREAS: On March 15, 2020, due to the spread of the COVID-19, the Governor of Puerto Rico, honorable Wanda Vázquez Garced, issued Executive Order 2020-023 ordering the shutdown of businesses and a curfew on the island, until March 30, 2020, further extended until April 2020 and after several Executive Orders have been issued extending the shutdown and the curfew. ----------

WHEREAS: On April 24, 2020, the Contractor was notified to resume the punch list works on April 27, 2020.----------

WHEREAS: On March 27, 2020, the Parties executed the Fourth Amendment of the Contract, to extend its term until May 27, 2020. ----------

WHEREAS: The Contractor had not completed the punch list items required for Final Acceptance due to existing COVID-19 curfew and flight limitations of its technical subcontractors from foreign countries, thus, the term of the Contract shall be extended accordingly.----------

THEREFORE, in consideration of the mutual convenants hereinafter stated, the Parties hereby agrees to amend the Contract as follows:----------

TERMS AND CONDITIONS

FIRST: The term of this Contract shall be extended ninety (90) calendar days for a total of four hundred and sixty three (463) calendar days from the effective date. Therefore, the Contract will be in effect until August 25, 2020. ----------

SECOND: The Contractor will comply with all applicable State Law, Regulations and Executive Orders that regulate the contracting process and establish the requirements for governmental contracting in the Commonwealth of Puerto Rico, including but not limited to those mentioned in this Article. Also, the Contractor shall provide, before the execution of the Contract the following documents and certifications:----------

A. Executive Order Number OE-1991-24 of June 18, 1991 to require certification of compliance with the Internal Revenue Services of the Commonwealth of Puerto Rico: Pursuant to Executive Order Number OE-1991-24 of June 18, 1991, the Contractor will certify and guarantee that it has filed all the necessary and required income tax returns to the Government of Puerto Rico for the last five (5) years. The Contractor further will certify that it has complied and is current with the payment of any and all income taxes that are, or were due, to the Government of Puerto Rico. The Contractor shall provide,

to the satisfaction of PREPA, and whenever requested by PREPA during the term of this Contract, the necessary documentation to support its compliance with this clause. The Contractor will be given a specific amount of time to produce said documents. During the term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico.----------

B. Executive Order Number OE-1992-52 of August 28, 1992 to require certification of compliance with the Department of Labor of the Commonwealth of Puerto Rico. Pursuant to Executive Order Number 1992-52, dated August 28, 1992 amending OE-1991-24, the Contractor will certify and warrant that it has made all payments required for unemployment benefits, workmen's compensation and social security for chauffeurs, whichever is applicable, or that in lieu thereof, has subscribed a payment plan in connection with any such unpaid items and is in full compliance with the terms thereof. The Contractor accepts and acknowledges its responsibility for requiring and obtaining a similar warranty and certification from each and every Contractor and Subcontractor whose service the Contractor has secured in connection with the services to be rendered under this Contract and shall forward evidence to PREPA as to its compliance with this requirement.----------

AJR

C. Government of Puerto Rico Municipal Tax Collection Center: The Contractor will certify and guarantee that it does not have any current debt with regards to property taxes that may be registered with the Government of Puerto Rico's Municipal Tax Collection Center (known in Spanish as Centro de Recaudación de Ingresos Municipales ("CRIM"). The Contractor further will certify to be current with the payment of any and all property taxes that are or were due to the Government of Puerto Rico. The Contractor shall provide, to the satisfaction of PREPA and whenever requested by PREPA during the term

of this Contract, Certification issued by the Municipal Revenues Collection Center (MRCC), assuring that Contractor does not owe any tax accruing to such governmental agency. To request such Certification, Contractor will use the form issued by the MRCC (called "CRIM-Certificados, Radicación, Estado de Cuenta y Todos los Conceptos" in the website). The Contractor will deliver upon request any documentation requested by PREPA. During the Term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico with regards to its property taxes.----------

The Contractor shall provide a Personal Property Tax Filing Certification, issued by the MRCC which indicates that Contractor has filed its Personal Property Tax Return for the last five (5) contributory terms or Negative Debt certification issued by the MRCC with respect to real and property taxes and a sworn statement executed by Contractor indicating that (i) its revenues are derived from the rendering of professional services, (ii) during the last five (5) years (or the time in which it has been providing professional services) it has had no taxable business or personal property on the 1st of January of each year, (iii) that for such reasons it has not been required to file personal property tax returns, as required under Article 6.03 of Act 83-1991, as amended, and (iv) that for such reason it does not have an electronic tax file in the MRCC's electronic system.----------

D. The Contractor shall furnish a Certification issued by the Treasury Department of Puerto Rico which indicates that 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.----------

E. The Contractor shall provide a Puerto Rico Sales and Use Tax Filing Certificate, issued by the Treasury Department of Puerto Rico assuring that Contractor has filed his Puerto Rico Sales and Use Tax for the last sixty (60) contributory periods.----------

F. The Contractor shall provide a copy of Contractor's Certificate of Merchant's Registration issued by the Treasury Department of Puerto Rico.----------

G. Puerto Rico Child Support Administration (ASUME): The Contractor shall present, to the satisfaction of PREPA, the necessary documentation certifying that the Contractor nor any of its owners, affiliates of subsidiaries, if applicable, have any debt, outstanding debt, or legal procedures to collect child support payments that may be registered with the Puerto Rico Child Support Administration (known in Spanish as the Administración para el Sustento de Menores (ASUME). The Contractor will be given a specific amount of time to deliver said documents. 3 L.P.R.A. § 8611 et seq.;----------

H. The Contractor shall provide a Good Standing Certificate issued by the Department of State of Puerto Rico.----------

I. The Contractor shall provide a Certification of Incorporation, or Certificate of Authorization to do business in Puerto Rico issued by the Department of State of Puerto Rico.----------

J. Special Contribution for Professional and Consulting Services: As required by Act 48-2013, as amended, PREPA will withhold a special contribution of one point five percent (1.5%) of the gross amounts paid under this Contract.----------

K. 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.----------

L. Income Tax Retention Law: PREPA shall deduct and withhold ten percent (10%) of any and all payments to residents of the Commonwealth of Puerto Rico as required by the Internal Revenue Code of Puerto Rico. In case of US citizens and Non-US citizens, which are nonresidents of the Commonwealth of Puerto Rico the Contractor will retain twenty percent (20%) and twenty-nine percent (29%) respectively. PREPA will remit such withholdings to the Government of Puerto Rico's Treasury Department (known in Spanish as Departamento de Hacienda de Puerto Rico). The Contractor will request PREPA not to make such withholdings if, to the satisfaction of PREPA, the Contractor timely provides a release from such obligation by the Government of Puerto Rico's Treasury Department. 3 L.P.R.A. § 8611 et seq., 2011 L.P.R. 232; 232-2011.----------

A3R M. Compliance with Act 1-2012 of Governmental Ethics: The Contractor will certify compliance with Act 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 et seq.;----------

N. Act 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 168-2000, as amended, the same is current and in all aspects in compliance. Act 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. Act 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 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 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 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. Dispensation: Any and all necessary dispensations have been obtained from any government entity and that said dispensations shall become part of the contracting record.----------

V. Rules of Professional Ethics: The Contractor acknowledges and accepts that it is knowledgeable of the rules of ethics of his/her profession and assumes responsibility for his/her own actions.----------

If any of the previously required Certifications shows a debt, and Contractor has requested a review or adjustment of this debt, Contractor will certify that it has made such request at the time of the Contract execution. If the requested review or adjustment is denied and such determination is final, Contractor will provide, immediately, to PREPA a proof of payment of this debt; otherwise, Contractor accepts that the owed amount be offset by PREPA and retained at the origin, deducted from the corresponding payments.-

THIRD: Contractor agrees to comply with the provisions of Act 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 conflicts of interest, or of public policy, between the executive agency and the particular interests it represents.----------

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 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.-

ASR 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 Contract 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.----------

Consequences of Non-Compliance: The Contractor expressly agrees that the conditions outlined throughout this Article 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.----------

AJR

FOURTH: 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), PREPA may sell, assign, convey, transfer, pledge, mortgage, sublease, delegate, hypothecate, or otherwise dispose (each, a "Transfer") any of its rights, title, or interest in this Contract 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.----------

FIFTH: The Parties agree that all other terms and conditions established in the Contract, shall remain unaltered and fully enforceable. ----------

In WITNESS WHEREOF, the Parties hereto have agreed to execute this Fifth Amendment in San Juan, Puerto Rico, on this 27th day of May, 2020. ----------

Puerto Rico Electric Power Authority

José F. Ortiz Vázquez
Chief Executive Officer
SSN:

ARG Precision Corp.

Armando Rodríguez Gutiérrez
President
SSN:

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

SIXTH AMENDMENT
Contract 2019-P00112F

MOBILE GENERATION UNITS

APPEAR

AS FIRST PARTY: The Puerto Rico Electric Power Authority (PREPA), a public corporation and government instrumentality of the Commonwealth of Puerto Rico, created by Act of May 2, 1941, No. 83, as amended, represented in this act by its Chief Executive Officer/Executive Director, José F. Ortiz Vázquez, of legal age, married and resident of San Juan, Puerto Rico.----------

AS SECOND PARTY: ARG Precision Corp. hereinafter referred to as "the Contractor", a partnership organized and existing under the laws of Puerto Rico, authorized to do business in Puerto Rico, represented in this act by its President, Armando Rodríguez Gutiérrez, engineer, married, and resident of San Juan, Puerto Rico, by virtue of Corporate Resolution dated as of May 26, 2020.----------

A3R

Both PREPA and Contractor are herein individuals referred to as a "Party" and collectively referred to as the "Parties".----------

WITNESSETH

In consideration of the mutual covenants hereinafter stated, the Parties agree themselves, their personal representatives, and successors as follows:----------

STATE

WHEREAS: On May 20, 2019, the Parties executed the Contract 2019-P00112, at a cost of fifty eight million ninety three thousand sixteen dollars ($58,093,016), to provide three (3) new, zero-hour FT-8 MobilePac® gas turbine units and perform its delivery, installation, testing, and commissioning. ----------

WHEREAS: The Contractor had a term of sixty (60) calendar days to complete the project scope from the date of the Notice to Proceed. The Notice to Proceed was issued on May 23, 2019. ----------

WHEREAS: On July 31, 2019, the Parties agreed on a First Amendment that extended the term of the Contract until September 30, 2019.----------

WHEREAS: On September 30, 2019, the Parties agreed on a Second Amendment, that extended the term of the Contract until November 29, 2019.----------

WHEREAS: On November 27, 2019, PREPA issued Substantial Completion Certificate but, the Contractor had not completed the work necessary for Final Acceptance, the Parties agreed on a Third Amendment, that extended the term of the Contract until March 28, 2020.----------

WHEREAS: On January 7, 2020, there was an earthquake in the South of the island of an intensity of 6.8 on the Ritcher scale which caused permanent damages to the South Coast Power Plant and the loss of 900MW of power generation. The three mobile units had to be used continuously and permanently to mitigate the emergency situation of lack of power generation. There are some activities of the work included in the punch list that cannot carried out with the units in services.----------

WHEREAS: On March 15, 2020, due to the spread of the COVID-19, the Governor of Puerto Rico, honorable Wanda Vázquez Garced, issued Executive Order 2020-023 ordering the shutdown of businesses and a curfew on the island, until March 30, 2020, further extended until April 2020 and after, several Executive Orders have been issued extending the shutdown and the curfew.----------

WHEREAS: On March 27, 2020 the Parties executed the Fourth Amendment, to extend its term until May 27, 2020.----------

WHEREAS: During April, 2020, the Contractor was notified to resume the punch list works.----------

WHEREAS: The Contractor could not complete the punch list items required for Final Acceptance due to existing COVID-19 curfew and flight limitations of its technical subcontractors from foreign countries, thus, on May 27, 2020 the Parties agreed on a Fifth Amendment, that extended the term of the Contract until August 25, 2020.----------

WHEREAS: Due to the inadequacy of generation in the north and metropolitan area, the Generation Directorate recommended, in the best interests of PREPA's generation operation, the installation of the three mobile generation units at the Palo Seco Power Plant.----------

WHEREAS: The installation of the three mobile generation units in Palo Seco Power Plant affected the schedule and involved changes in the layout design, materials and equipment. Also, the Contractor was required by the Generation Directorate to do additional works not included in the Scope of Supply, which increased the Contract Amount by one million seven hundred twenty thousand seven hundred four dollars and nineteen cents ($1,720,704.19) from fifty eight million ninety three thousand sixteen dollars ($58,093,016) to fifty nine million eight hundred thirteen thousand seven hundred twenty dollars and nineteen cents (59,813,720.19).----------

THEREFORE, in consideration of the mutual convenants hereinafter stated, the Parties hereby agrees to amend the Contract as follows:----------

TERMS AND CONDITIONS

FIRST: The Parties agree to amend Article 1, Scope of Contract, and any other part of the Contract which refers to the installation site, to recognize that the three mobile generation units shall be installed in Palo Seco Power Plant.----------

SECOND: The Parties agree to amend the paragraph one of the Article 3, Consideration, as follows:----------

> 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 the Services, the firm price of fifty nine million eight hundred thirteen thousand seven hundred twenty dollars and nineteen cents ($59,813,720.19) which includes all taxes and patents, 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 10. Changes and/or Extra Work, below.----------

A3R

All payments made by PREPA for equipment and / or materials delivered and accepted and/or services rendered and work performed under this Contract will be charged to PREPA's accounts 01-1071-34601-555-101-100000106766 and 01-1747-17559-555-307. ----------

The remaining sentences of this Article, not affected by this Amendment shall remain unaltered and in full force and effect.----------

THIRD: The Contractor will comply with all applicable State Law, Regulations and Executive Orders that regulate the contracting process and establish the requirements

for governmental contracting in the Commonwealth of Puerto Rico, including but not limited to those mentioned in this Article. Also, the Contractor shall provide, before the execution of the Contract the following documents and certifications:----------

A. Executive Order Number OE-1991-24 of June 18, 1991 to require certification of compliance with the Internal Revenue Services of the Commonwealth of Puerto Rico: Pursuant to Executive Order Number OE-1991-24 of June 18, 1991, the Contractor will certify and guarantee that it has filed all the necessary and required income tax returns to the Government of Puerto Rico for the last five (5) years. The Contractor further will certify that it has complied and is current with the payment of any and all income taxes that are, or were due, to the Government of Puerto Rico. The Contractor shall provide, to the satisfaction of PREPA, and whenever requested by PREPA during the term of this Contract, the necessary documentation to support its compliance with this Article. The Contractor will be given a specific amount of time to produce said documents. During the term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico.----------

B. Executive Order Number OE-1992-52 of August 28, 1992 to require certification of compliance with the Department of Labor of the Commonwealth of Puerto Rico. Pursuant to Executive Order Number 1992-52, dated August 28, 1992 amending OE-1991-24, the Contractor will certify and warrant that it has made all payments required for unemployment benefits, workmen's compensation and social security for chauffeurs, whichever is applicable, or that in lieu thereof, has subscribed a payment

plan in connection with any such unpaid items and is in full compliance with the terms thereof. The Contractor accepts and acknowledges its responsibility for requiring and obtaining a similar warranty and certification from each and every Contractor and Subcontractor whose service the Contractor has secured in connection with the services to be rendered under this Contract and shall forward evidence to PREPA as to its compliance with this requirement.----------

C. Government of Puerto Rico Municipal Tax Collection Center: The Contractor will certify and guarantee that it does not have any current debt with regards to property taxes that may be registered with the Government of Puerto Rico's Municipal Tax Collection Center (known in Spanish as Centro de Recaudación de Ingresos Municipales ("CRIM"). The Contractor further will certify to be current with the payment of any and all property taxes that are or were due to the Government of Puerto Rico. The Contractor shall provide, to the satisfaction of PREPA and whenever requested by PREPA during the term of this Contract, Certification issued by the Municipal Revenues Collection Center (MRCC), assuring that Contractor does not owe any tax accruing to such governmental agency. To request such Certification, Contractor will use the form issued by the MRCC (called "CRIM-Certificados, Radicación, Estado de Cuenta y Todos los Conceptos" in the website). The Contractor will deliver upon request any documentation requested by PREPA. During the Term of this Contract, the Contractor agrees to pay and/or to remain current with any repayment plan agreed to by the Contractor with the Government of Puerto Rico with regards to its property taxes.----------

The Contractor shall provide a Personal Property Tax Filing Certification, issued by the MRCC which indicates that Contractor has filed its Personal Property Tax Return for the last five (5) contributory terms or Negative Debt certification issued by the MRCC with respect to real and property taxes and a sworn statement executed by Contractor indicating that (i) its revenues are derived from the rendering of professional services, (ii) during the last five (5) years (or the time in which it has been providing professional services) it has had no taxable business or personal property on the 1st of January of each year, (iii) that for such reasons it has not been required to file personal property tax returns, as required under Article 6.03 of Act 83-1991, as amended, and (iv) that for such reason it does not have an electronic tax file in the MRCC's electronic system.----------

D. The Contractor shall furnish a Certification issued by the Treasury Department of Puerto Rico which indicates that 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.----------

E. The Contractor shall provide a Puerto Rico Sales and Use Tax Filing Certificate, issued by the Treasury Department of Puerto Rico assuring that Contractor has filed his Puerto Rico Sales and Use Tax for the last sixty (60) contributory periods.----------

F. The Contractor shall provide a Contractor's Certificate of Merchant's Registration issued by the Treasury Department of Puerto Rico.----------

G. Puerto Rico Child Support Administration (ASUME): The Contractor shall present, to the satisfaction of PREPA, the necessary documentation certifying that the Contractor

nor any of its owners, affiliates of subsidiaries, if applicable, have any debt, outstanding debt, or legal procedures to collect child support payments that may be registered with the Puerto Rico Child Support Administration (known in Spanish as the Administración Para El Sustento de Menores (ASUME). The Contractor will be given a specific amount of time to deliver said documents. 3 L.P.R.A. § 8611 et seq..--------

H. The Contractor shall provide a Good Standing Certificate issued by the Department of State of Puerto Rico.----------

I. The Contractor shall provide a Certification of Incorporation, or Certificate of Authorization to do business in Puerto Rico issued by the Department of State of Puerto Rico.----------

J. Special Contribution for Professional and Consulting Services: As required by Act 48-2013, as amended, PREPA will withhold a special contribution of one point five percent (1.5%) of the gross amounts paid under this Contract.----------

K. 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.----------

L. Income Tax Retention Law: PREPA shall deduct and withhold ten percent (10%) of any and all payments to residents of the Commonwealth of Puerto Rico as required by the Internal Revenue Code of Puerto Rico. In case of US citizens and Non-US citizens, which are nonresidents of the Commonwealth of Puerto Rico the Contractor will retain twenty percent (20%) and twenty-nine percent (29%)

respectively. PREPA will remit such withholdings to the Government of Puerto Rico's Treasury Department (known in Spanish as Departamento de Hacienda de Puerto Rico). The Contractor will request PREPA not to make such withholdings if, to the satisfaction of PREPA, the Contractor timely provides a release from such obligation by the Government of Puerto Rico's Treasury Department. 3 L.P.R.A. §8611 et seq., 2011 L.P.R. 232; 232-2011.----------

M. Compliance with Act 1-2012 of Governmental Ethics: The Contractor will certify compliance with Act 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 et seq.;----------

N. Act 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 168-2000, as amended, the same is current and in all aspects in compliance. Act 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. Act 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 Act 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 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 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.----------

A32

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

V. Rules of Professional Ethics: The Contractor acknowledges and accepts that it is knowledgeable of the rules of ethics of his/her profession and assumes responsibility for his/her own actions.----------

If any of the previously required Certifications shows a debt, and Contractor has requested a review or adjustment of this debt, Contractor will certify that it has made such request at the time of the Contract execution. If the requested review or adjustment is denied and such determination is final, Contractor will provide, immediately, to PREPA a

proof of payment of this debt; otherwise, Contractor accepts that the owed amount be offset by PREPA and retained at the origin, deducted from the corresponding payments.-

FOURTH: Contractor agrees to comply with the provisions of Act 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 conflicts of interest, or of public policy, between the executive agency and the particular interests it represents.----------

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 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 Contract 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.----------

A32

Consequences of Non-Compliance: The Contractor expressly agrees that the conditions outlined throughout this Article 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 §PREPA all moneys received under this Contract.----------

FIFTH: 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), PREPA may sell, assign, convey, transfer, pledge, mortgage, sublease, delegate, hypothecate, or otherwise dispose (each, a "Transfer") any of its rights, title, or interest in this Contract 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.----------

SIXTH: The Parties agree that all other terms and conditions established in the Contract, shall remain unaltered and fully enforceable. ----------

In WITNESS WHEREOF, the Parties hereto have agreed to execute this Sixth Amendment in San Juan, Puerto Rico, on this 4th day of August 2020. ----------

Puerto Rico Electric Power Authority	ARG Precision Corp.
José F. Ortiz Vázquez Chief Executive Officer	Armando Rodríguez Gutiérrez President

Mega Gens- ARG Precision

Payee Name	Payee Num.	Check Number	Check Date	Check Amount
ARG PRECISION CORP	14305	10009286	22-May-19	11618603.2
ARG PRECISION CORP	14305	10009444	21-Jun-19	18018448.42
ARG PRECISION CORP	14305	10009444	21-Jun-19	18018448.42
ARG PRECISION CORP	14305	10009451	26-Jun-19	23989817.18
ARG PRECISION CORP	14305	1000008301	26-Jul-19	1752588.62
ARG PRECISION CORP	14305	1000008301	26-Jul-19	1752588.62
ARG PRECISION CORP	14305	1000008473	1-Oct-19	849386.9
ARG PRECISION CORP	14305	1000008733	13-Dec-19	432889.26
ARG PRECISION CORP	14305	1000008733	13-Dec-19	432889.26
ARG PRECISION CORP	14305	1000008733	13-Dec-19	432889.26
ARG PRECISION CORP	14305	1000008934	14-Feb-20	2550790.48
ARG PRECISION CORP	14305	1000008934	14-Feb-20	2550790.48
ARG PRECISION CORP	14305	1000009440	7-Jul-20	381096
ARG PRECISION CORP	14305	1000009646	21-Aug-20	1679662.82
ARG PRECISION CORP	14305	1000009806	2-Oct-20	929941.33
ARG PRECISION CORP	14305	1000009806	2-Oct-20	929941.33

Invoice Number	Invoice Date	Invoice Amount	Amount Paid	Pay Group
ARG2019-0520-1	20-May-19	$ 11,618,603.20	$ 11,618,603.20	004-EMPAC
ARG2019-0606	6-Jun-19	$ 590,543.62	$ 590,543.62	004-EMPAC
ARG2019-0620	20-Jun-19	$ 17,427,904.80	$ 17,427,904.80	004-EMPAC
ARG2019-0622	22-Jun-19	$ 22,656,276.24	$ 22,656,276.24	004-EMPAC
ARG2019-0624	24-Jun-19	$ 520,128.74	$ 520,128.74	001-PAGO
ARG2019-0625-1	25-Jun-19	$ 284,632.44	$ 284,632.44	001-PAGO
ARG2019-0627-1	27-Jun-19	$ 849,386.90	$ 849,386.90	003-EMPAC
ARG2019-0626-1	26-Jun-19	$ 260,064.37	$ 260,064.37	003-EMPAC
ARG2019-0627-2	27-Jun-19	$ 78,553.08	$ 78,553.08	003-EMPAC
ARG2019-0628-3A	28-Jun-19	$ 94,271.81	$ 94,271.81	003-EMPAC
ARG2019-0625	27-Nov-19	$ 1,742,790.48	$ 1,742,790.48	004-EMPAC
ARG2019-0628-3	28-Jun-19	$ 808,000.00	$ 808,000.00	004-EMPAC
ARG2020-0212-1	13-Apr-20	$ 386,899.49	$ 381,096.00	003-EMPAC
ARG2020-0615-1	13-Aug-20	$ 1,633,278.11	$ 1,608,778.94	004-EMPAC
ARG2020-0615-1-A	19-Aug-20	$ 87,426.08	$ 87,426.08	004-EMPAC
ARG2020-0822-1	22-Aug-20	$ 701,710.56	$ 691,184.90	004-EMPAC
			$ 59,699,641.60	

Purchase Order Or Contract
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675

PMB 911 PO BOX 2500 TOA BAJA PR 00951

TEL. 261-8644 / FAX 261-9133, Email: admin@argprecisionpr.com

Invoice

Date:	May 17, 2019
Invoice #:	ARG 8295-5172019
Customer ID:	PREPA
Purchase Order #	82695
Payment Due by:	With Contract Signing

Bill To:

Auroridad de Energia Electrica de PR

Division de Tesoreria

Delivery: On Hand

Ship To (If Different):

MOBILE GENERATION UNITS RFP 82695

Description	Line Total
20% With Contract Signing	11,618,603.20

TOTAL $ **11,618,603.20**

Special Notes and Instructions

No interest Certification:
We certify under penalty of nullity that no public servant of PREPA will derive or obtain any benefit or profit of any kind from the contractual relationship which is the basis of this invoice. If such benefit or profit exists, the required waiver has been obtained prior to entering into the Agreement. The only consideration to be received in exchange for the delivery of goods or for the Services provided is the agreed-upon price that has been negotiated with an authorized representative of PREPA. The total amount shown on this invoice is true and correct. The Services have been rendered, and no payment has been received.

CPA 26123

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0520-1

2019-P00112

Contrato # 83675

Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 5/20/2019
Your Ref#
Our Ref#
Payment Terms: Contract signing

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**20% al momento de firmar contrato, según estipulado**				
	Nota: A esta partida no le aplica el 1.5%				$11,618,603.20
	Título del Proyecto: Three (3) Mobile Generation Units				
	Número de Contrato: 83675				
	Cantidad del contrato: $58,093,016				

Sub Total	$11,618,603.20
In advance	$0.00
0	$0.00
Total	**$11,618,603.20**
Freight	
Amount Paid	
Grand Total	**$11,618,603.20**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

APROBADO PARA PAGO
Daniel Hernández Morales
FIRMA

AEE-RECIBIDO

OFIC ADMINISTRATIVA
DIV ING Y SERVS TECS

2019 JUN 13 PM 3:52

ARG PRECISION CORP.
PMB 911 PO Box 2500
Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO:
Ing Jaime Umpierre
Generation Director

FROM:
Armando J. Rodríguez

COMPANY:
PREPA

DATE
13 DE JUNIO DE 2019

SUBJECT::
3 MOBILE GENERATION UNITS
CONTRACTO: 83675

FACTURA ARG2019-0606

Según solicitado, se hace entrega de los siguientes documentos del contrato de referencia para su revisión:

- FACTURA ORIGINAL – ARG2019-0606 POR $590,543.62
- PAYMENT SCHEDULE CORRESPONDIENTE A LA FACTURA
- BOL DE LOS EQUIPOS
- FACTURA COMERCIAL

RECIBIDO POR: _____ FECHA: 6/14/19

Recomendado para pago

A
PRECISION CORP.
G
ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0606

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/6/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%*** *Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia.* Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				$590,543.62

Sub Total	$590,543.62
In advance	$0.00
0	$0.00
Total	**$590,543.62**
Freight	
Amount Paid	
Grand Total	**$590,543.62**

Approved by:

*Equipo Verificado por Carlos M. Bermudez 13 JUN 19.

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

DEPTO. EXTENSIÓN DE VIDA UTIL
RECOMENDADO PARA PAGO
Jaime A Umpierre 6/14/19
NOMBRE
FIRMA
Jefe División
Division Ingeniería y Servicios Técnicos

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675

DATE:: 6/6/2019

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED		BALANCE	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION			PREVIOUS	THIS PERIOD	TOTAL TO DATE	BALANCE
1	FUEL FILTER (DUPLEX)	2	PIECE	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief Valve	$188,543.62	$94,271.81		$188,543 .62	$188,543.62	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE)	2	PIECE	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU including spares for 2 years operation	$402,000.00	$201,000.00		$402,000 .00	$402,000.00	$0.00
3	PADMOUNTED TRANSFORMERS	3	PIECE	500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277, SUNBELT TRANSFORMERS	$121,828.17	$40,609.39				$121,828.17
4	BLACK START GENERATOR UNITS	3	PIECE	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA, (Standby Power Application) @ 0.8 Power Factor, 480/277 Volts, 3 Phase, 4 Wires, 60 Hertz at 1800 RPM,	$780,193.11	$260,064.37				$780,193.11
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94				$422,815.44
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09				$29,381.86
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire, 1/2" Bolt Size, 1 3/4" Hole Spacing, Tin Plated Blind End, Black 106	$204,424.16	$3,407.07				$204,424.16
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74				$115,357.88
				Sub Total	$2,264,544.24					
9	FUEL TREATMENT (5MONTH DEL)	4	PC	WESTFALIA OSE/40	$808,000.00	$202,000.00				$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	PC	HILCO 52HMF-4960	$94,271.81	$94,271.81				$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	PC	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18				$78,553.08
12	CABLES DE 15KV., 600V	SG	MTS	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$172,227.35				$172,227.35
13	BOMBAS DE TRANSF. DE DIESEL	6	PC	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75				$67,984.48
				Sub Total	$1,221,036.72					
				Gran Total	$3,485,580.96			$590,543.62	$590,543.62	$2,895,037.34

fue verificado en sitio 6/13/19

CROWLEY PUERTO RICO SERVICES INC

(2) SHIPPER (Complete Name, Address, & Zip Code) Embarcador		(3) BOOKING NO. Reserva No.	(3c) SCAC Code	(3a) BILL OF LADING/INVOICE NO. Conocimiento de Embarque
		(3b) DATE Fecha		
		(4) EXPORT REFERENCES Referencias de Exportacion		FWDR. REF NO.
(5) CONSIGNEE (Complete Name, Address, & Zip Code) Consignado a: NOT NEGOTIABLE UNLESS CONSIGNED 'TO ORDER'		(6) FORWARDING AGENT Agente Embarcador - Referencias		FMC. NO. / CHB NO.
(7) NOTIFY PARTY (Complete Name, Address, & Zip Code) Dirigir Notificación de Llegada a:		(8) ALSO NOTIFY - ROUTING & INSTRUCTIONS Tambien Notificar - Ruta Doméstica/Instrucciones de Exportación		

(9) VESSEL Nave VOYAGE Viaje FLAG Bandera	(10) PLACE OF RECEIPT * Carga Recibida en:	(11) RELAY POINT Punto de Conexión	(12) POINT & COUNTRY OF ORIGIN OF GOODS Lugar y País de Origen
	(13) PORT OF LOADING Puerto de Carga	(14) LOADING PIER / TERMINAL Muelle	
(16) PORT OF DISCHARGE Puerto de Descarga	(17) PLACE OF DELIVERY * Lugar de Entrega de la Carga	(18) ORIGINALS TO BE RELEASED AT Originales para Entregarse en	

PARTICULARS FURNISHED BY SHIPPER

(19) MARKS & NO'S. / CONTAINER NO'S. Marcas y Números	(20) NO. OF TRLS./ CONTS. / PKGS./ No. de Furgones / Bultos	(21) HM **	(22) DESCRIPTION OF CARGO Contenido Según Embarcador	(23) WEIGHT Libras/Kilos	(24) MEASUREMENT Medidas
			JAXS9M034446 1 NON-NEGOTIABLE LANG MODE : 1 LANG1 TOP : Y FREIGHTED : Y PRNT EXCL CHARG: N PRINT CARGO : N PRNT INB NBR : N PRNT ISS DATE : Y PRNT RELAYS : N PRNT MOVE TYPE : N		

(25) ** HAZARD DECLARATION - I HEREBY DECLARE THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY THE PROPER SHIPPING NAME, AND ARE CLASSIFIED, PACKAGED, MARKED AND LABELLED/ PLACARDED, AND ARE IN ALL RESPECTS IN PROPER CONDITION FOR TRANSPORT ACCORDING TO APPLICABLE INTERNATIONAL AND NATIONAL GOVERNMENTAL REGULATIONS.

EMERGENCY CONTACT: TEL NO.

FREIGHT CHARGES Flete	RATED AS Flete Básico	PER	RATE Tarifa	TO BE PREPAID IN US DOLLARS Prepagado en Dolares U.S.	TO BE COLLECTED IN US DOLLARS A Cobrar en Dolares U.S.	FOREIGN CURRENCY Moneda Local
			TOTALS			

THIS BILL OF LADING CONSISTS OF CONDITIONS AND INFORMATION APPEARING ON THE FRONT AND BACK OF THE DOCUMENT.

SUBJECT TO SECTION 7 OF CONDITIONS, IF THE SHIPMENT IS TO BE DELIVERED TO THE CONSIGNEE WITHOUT RECOURSE ON THE SHIPPER, THE SHIPPER SHALL SIGN THE FOLLOWING STATEMENT: "THE CARRIER SHALL NOT MAKE DELIVERY OF THIS SHIPMENT WITHOUT PAYMENT OF FREIGHT AND ALL OTHER LAWFUL CHARGES."

IN WITNESS WHEREOF THE CARRIER HAS SIGNED ___ ORIGINAL BILLS OF LADING, ALL OF THE SAME TENOR AND DATE, ONE OF WHICH BEING ACCOMPLISHED THE OTHERS TO STAND VOID.

SIGNATURE OF SHIPPER
LIABILITY LIMITED UNLESS INCREASED VALUE DECLARED BELOW, ALL AS SPECIFIED IN SECTION 16:

BY _____

CARR: CROWLEY PUERTO RICO SERVICES INC

DECLARED VALUE: _____

BY _____
FOR SHIPPER

* APPLICABLE ONLY WHEN USED A THROUGH TRANSPORTATION BILL OF LADING

** INDICATE WHETHER ANY OF THE CARGO IS HAZARDOUS MATERIAL UNDER DOT, IMCO, OR OTHER REGULATIONS AND INDICATE THE CORRECT COMMODITY NUMBER IN DESCRIPTION OF CARGO ABOVE.

CROWLEY PUERTO RICO SERVICES INC

BILL OF LADING
CONOCIMIENTO DE EMBARQUE

NON-NEGOTIABLE

(2) SHIPPER (Complete Name, Address, & Zip Code) Embarcador

CIC TRADING GROUP INC.
8562 - 8566 NW 70 STREET
MIAMI FL 33166
UNITED STATES
TEL: 305-477-4648.

4483863-02

(3) BOOKING NO. Reserva No.: CAT114951

(3c) SCAC Code: CPRC

(3a) BILL OF LADING/INVOICE NO. Conocimiento de Embarque: JAXS9M034446

(3b) DATE Fecha: 31 MAY 19

(4) EXPORT REFERENCES Referencias de Exportacion: INVOICE 2019-523 WELLINGTON TURBINES

FWDR. REF NO.

(5) CONSIGNEE (Complete Name, Address, & Zip Code) Consignado a: NOT NEGOTIABLE UNLESS CONSIGNED 'TO ORDER'

AUTORIDAD DE ENERGIA ELECTRICA
DE PUERTO RICO
PLANTA ELECTRICA DE PALO SECO
PALO SECO, TOA BAJA,
00949. PUERTO RICO

0400033-07

(6) FORWARDING AGENT Agente Embarcador - Referencias

FMC. NO.

CHB NO.

(7) NOTIFY PARTY (Complete Name, Address, & Zip Code) Dirigir Notificación de Llegada a:

(8) ALSO NOTIFY - ROUTING & INSTRUCTIONS Tambien Notificar - Ruta Doméstica/Instrucciones de Exportación

PR LOGISTICS
ATTN: MICKEY TORRES
TEL: 787-552-8989

(9) VESSEL Nave	VOYAGE Viaje	FLAG Bandera	(10) PLACE OF RECEIPT * Carga Recibida en:	(11) RELAY POINT Punto de Conexión	(12) POINT & COUNTRY OF ORIGIN OF GOODS Lugar y País de Origen
EL COQUI	043S	US	MEDLEY, FL		
			(13) PORT OF LOADING Puerto de Carga: JACKSONVILLE, FL	(14) LOADING PIER / TERMINAL Muelle: CROWLEY	
(16) PORT OF DISCHARGE Puerto de Descarga: SAN JUAN, PR			(17) PLACE OF DELIVERY * Lugar de Entrega de la Carga	(18) ORIGINALS TO BE RELEASED AT Originales para Entregarse en: JACKSONVILLE, FL	ROUTE D

PARTICULARS FURNISHED BY SHIPPER

(19) MARKS & NO'S. / CONTAINER NO'S. Marcas y Números	(20) NO. OF TRLS./ CONTS. / PKGS./ No. de Furgones / Bultos	(21) HM **	(22) DESCRIPTION OF CARGO Contenido Según Embarcador	(23) WEIGHT Libras/Kilos	(24) MEASUREMENT Medidas
SHPU 8626006 SEAL: A289111 . ITN#: X20190530812627 . (SOL) .	1 40FT		7 PACKAGE(S) 7 CRATES S.T.C. CENTRIFUGES & FILTERS / CENTRIFUGAS Y FILTROS . FREIGHT PREPAID	17942I 8138.49K	

SHIPPER LOAD AND COUNT
.
THESE COMMODITIES LICENSED BY THE UNITED STATES FOR ULTIMATE DESTINATION **PUERTO RICO** DIVERSION CONTRARY TO UNITED STATES LAW PROHIBITED
.
IMPORTANT: CARRIER HAS MADE IT CLEAR IN THE EXCEPTIONS CLAUSE (CLAUSE 18 ON THE BACK OF THIS BILL OF LADING), THAT IT HAS NO LIABILITY FOR HIJACKINGS A
.

(25)** HAZARD DECLARATION - I HEREBY DECLARE THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY THE PROPER SHIPPING NAME, AND ARE CLASSIFIED, PACKAGED, MARKED AND LABELLED/ PLACARDED, AND ARE IN ALL RESPECTS IN PROPER CONDITION FOR TRANSPORT ACCORDING TO APPLICABLE INTERNATIONAL AND NATIONAL GOVERNMENTAL REGULATIONS.

EMERGENCY CONTACT: TEL NO.

FREIGHT CHARGES Flete	RATED AS Flete Básico	PER	RATE Tarifa	TO BE PREPAID IN US DOLLARS Prepagado en Dolares U.S.	TO BE COLLECTED IN US DOLLARS A Cobrar en Dolares U.S.	FOREIGN CURRENCY Moneda Local
			TOTALS			

THIS BILL OF LADING CONSISTS OF CONDITIONS AND INFORMATION APPEARING ON THE FRONT AND BACK OF THE DOCUMENT.

SUBJECT TO SECTION 7 OF CONDITIONS, IF THE SHIPMENT IS TO BE DELIVERED TO THE CONSIGNEE WITHOUT RECOURSE ON THE SHIPPER, THE SHIPPER SHALL SIGN THE FOLLOWING STATEMENT: "THE CARRIER SHALL NOT MAKE DELIVERY OF THIS SHIPMENT WITHOUT PAYMENT OF FREIGHT AND ALL OTHER LAWFUL CHARGES."

IN WITNESS WHEREOF THE CARRIER HAS SIGNED ____ ORIGINAL BILLS OF LADING, ALL OF THE SAME TENOR AND DATE, ONE OF WHICH BEING ACCOMPLISHED THE OTHERS TO STAND VOID.

SIGNATURE OF SHIPPER

LIABILITY LIMITED UNLESS INCREASED VALUE DECLARED BELOW, ALL AS SPECIFIED IN SECTION 16:

BY _____

DECLARED VALUE: _____

CARR: CROWLEY PUERTO RICO SERVICES INC

BY _____
FOR SHIPPER

* APPLICABLE ONLY WHEN USED A THROUGH TRANSPORTATION BILL OF LADING

** INDICATE WHETHER ANY OF THE CARGO IS HAZARDOUS MATERIAL UNDER DOT, IMCO, OR OTHER REGULATIONS AND INDICATE THE CORRECT COMMODITY NUMBER IN DESCRIPTION OF CARGO ABOVE.

CROWLEY PUERTO RICO SERVICES INC

ARRIVAL NOTICE
NOTIFICACION DE LLEGADA

(2) SHIPPER (Complete Name, Address, & Zip Code) Embarcador

4483863-02

CIC TRADING GROUP INC.
8562 - 8566 NW 70 STREET
MIAMI FL 33166
UNITED STATES
TEL: 305-477-4648.

(3) BOOKING NO. Reserva No.: CAT114951

(3c) SCAC Code: CPRC

(3a) BILL OF LADING/INVOICE NO. Conocimiento de Embarque: JAXS9M034446

(3b) DATE Fecha: 31 MAY 19

RLSD

(5) CONSIGNEE (Complete Name, Address, & Zip Code) Consignado a: NOT NEGOTIABLE UNLESS CONSIGNED 'TO ORDER'

0400033-07

AUTORIDAD DE ENERGIA ELECTRICA
DE PUERTO RICO
PLANTA ELECTRICA DE PALO SECO
PALO SECO, TOA BAJA,
00949. PUERTO RICO

VESSEL ETA 06/03/19
REEFERS AVAIL 06/03/19 1400HR
CARGO AVAIL 06/04/19AM
VEHICLES AVAIL 06/05/19
"FOR BONDED CARGO, THE COMPANY
THAT ISSUES THE BOND IS RESPONSIBLE
TO CLOSE THE BOND NO MORE THAN 2
DAYS AFTER THE ARRIVAL AT DESTINATION"
F/X: INVOICE 2019-523
E/S: WELLINGTON TURBINES

(7) NOTIFY PARTY (Complete Name, Address, & Zip Code) Dirigir Notificación de Llegada a:

(8) ALSO NOTIFY - ROUTING & INSTRUCTIONS Tambien Notificar - Ruta Doméstica/Instrucciones de Exportación

PR LOGISTICS
ATTN: MICKEY TORRES
TEL: 787-552-8989

(9) VESSEL Nave	VOYAGE Viaje	FLAG Bandera	(10) PLACE OF RECEIPT * Carga Recibida en:	(11) RELAY POINT Punto de Conexión	(12) POINT & COUNTRY OF ORIGIN OF GOODS Lugar y País de Origen
EL COQUI	043S	US	MEDLEY, FL		
			(13) PORT OF LOADING Puerto de Carga	(14) LOADING PIER / TERMINAL Muelle	
			JACKSONVILLE, FL	CROWLEY	PIER TO PIER
(16) PORT OF DISCHARGE Puerto de Descarga			(17) PLACE OF DELIVERY * Lugar de Entrega de la Carga	(18) ORIGINALS TO BE RELEASED AT Originales para Entregarse en	
SAN JUAN, PR				JACKSONVILLE, FL	ROUTE D

PARTICULARS FURNISHED BY SHIPPER

(19) MARKS & NO'S. / CONTAINER NO'S. Marcas y Números	(20) NO. OF TRLS./ CONTS. / PKGS./ No. de Furgones / Bultos	(21) HM **	(22) DESCRIPTION OF CARGO Contenido Según Embarcador	(23) WEIGHT Libras/Kilos	(24) MEASUREMENT Medidas
SHPU 8626006 SEAL: A289111 . ITN#: X20190530812627 . (SOL) .	1 40FT		7 PACKAGE(S) 7 CRATES S.T.C. CENTRIFUGES & FILTERS / CENTRIFUGAS Y FILTROS . FREIGHT PREPAID	17942 8138.49	
			SHIPPER LOAD AND COUNT . THESE COMMODITIES LICENSED BY THE UNITED STATES FOR ULTIMATE DESTINATION **PUERTO RICO** DIVERSION CONTRARY TO UNITED STATES LAW PROHIBITED . IMPORTANT: CARRIER HAS MADE IT CLEAR IN THE EXCEPTIONS CLAUSE (CLAUSE 18 ON THE BACK OF THIS BILL OF LADING), THAT IT HAS NO LIABILITY FOR HIJACKINGS A .		

D/R	EQUIP	ID	SEAL#	WEIGHT	CUBE
	SHPU	8626006	A289111	17942L	

(25)** HAZARD DECLARATION - I HEREBY DECLARE THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY THE PROPER SHIPPING NAME, AND ARE CLASSIFIED, PACKAGED, MARKED AND LABELLED/ PLACARDED, AND ARE IN ALL RESPECTS IN PROPER CONDITION FOR TRANSPORT ACCORDING TO APPLICABLE INTERNATIONAL AND NATIONAL GOVERNMENTAL REGULATIONS.

EMERGENCY CONTACT: TEL NO.

FREIGHT CHARGES Flete	RATED AS Flete Básico	PER	RATE Tarifa	TO BE PREPAID IN US DOLLARS Prepagado en Dolares U.S.	TO BE COLLECTED IN US DOLLARS A Cobrar en Dolares U.S.	FOREIGN CURRENCY Moneda Local
			TOTALS			

ARRIVAL NOTICE
Notificacion de Llegada

LIABILITY LIMITED UNLESS INCREASED VALUE DECLARED BELOW; ALL AS SPECIFIED IN SECTION 16:

DECLARED VALUE: _____

* APPLICABLE ONLY WHEN USED A THROUGH TRANSPORTATION BILL OF LADING

** INDICATE WHETHER ANY OF THE CARGO IS HAZARDOUS MATERIAL UNDER DOT, IMCO, OR OTHER REGULATIONS AND INDICATE THE CORRECT COMMODITY NUMBER IN DESCRIPTION OF CARGO ABOVE.

Wellington Turbines LLC

COMMERCIAL INVOICE 2019-523

MIAMI, MAY 24, 2019

SOLD TO: ARG PRECISION CORP.
PMB 911 PO BOX 2500
TOA BAJA, PUERTO RICO 00925

SHIP TO: PUERTO RICO ELECTRIC POWER AUTHORITY
PALO SECO POWER PLANT
PALO SECO, TOA BAJA, PUERTO RICO 00949

CONTRACT 83675, SUBCONTRACT NBR. 1		LETTER CREDIT: N/A

SUPPLY OF BALANCE OF PLANT EQUIPMENT FOR PWPS TURBINE GENERATORS

ITEM	PO ITEM	DESCRIPTION		CANT.	UNIt	UNIT PRICE $	TOTAL PRICE $
1	1	DUPLEX FUEL FILTERS, HILCO, MODEL 52HMF-4960, INCLUDING TRANSFER VALVE, DIFFERENTIAL PRESSURE GAUGE AND RELIEF VALVE		2	EA		
2	2	FUEL TREATMENT UNIT, GEA WESTFALIA, MODEL OSE/40-40, CAPACITY 24M3/HR, CONTROL CABINET, SKID MOUNTED, INCLUDING SPARES FOR 2 YEARS OPERATION.		2	EA		-
							-
							-
							-
						TOTAL $	

Verificado en sitio 6/14/19

PAYMENT TERMS: AS PER CONTRACT

NOTE: PLEASE MAKE BANK TRANSFER AS FOLLOWS:

BANK: REGIONS BANK
2800 PONCE DE LEON BLVD,
CORAL GABLES, FLORIDA 33134, USA
ABA: 062005690
SWIFT: UPNBUS44
ACCT.: 0077640462
BENEFICIARY: WELLINGTON TURBINES LLC.

YOURS TRULY;

Ing. William Linares
President

3109 Grand Avenue, Nbr. 457, Coconut Grove, FL 33133
Tel: (678) 315.4061; (470) 318.7714
Email: wlinares@wellingtonturbines.com; welirca@hotmail.com

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ATT. JOSE M CRUZ**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE: 6/17/2019

SUBJECT:
THREE(3) MOBILE GENERATIONS UNITS
ORDEN: 00083675

FACTURA ARG2019-0620

Se incluye el siguiente documento del contrato de referencia para poder tramitar el informe de recibo:

- Factura ARG 2019-0620 (30%)
- Evidencia de embarque

Nombre del funcionario de la Autoridad: Jaime S Umpierre

Firma del funcionario de la Autoridad:

Posición del funcionario de la Autoridad: Jefe División, Ing y Serv. Técnicos

Fecha: 17 de junio de 2019

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0620

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/20/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**30% Delivery of the three (3) units to Puerto Rico port**				$17,427,904.80
	Nota: A esta partida no le aplica el 1.5%				
	Título del Proyecto: Three (3) Mobile Generation Units				
	Número de Contrato: 83675				
	Cantidad del contrato: $58,093,016				

Sub Total	$17,427,904.80
In advance	$0.00
0	$0.00
Total	**$17,427,904.80**
Freight	
Amount Paid	
Grand Total	**$17,427,904.80**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

AEE-RECIBIDO
JEFE DIV INGENIERIA Y SERVICIOS TECNICOS
20 JUN 17 PM 1:42

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
24 DE JUNIO DE 2019

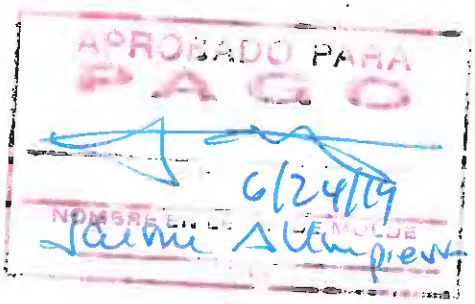
SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 39%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0622 POR $22,656,276.24



RECIBIDO POR: _____ FECHA: 6/24/19
Jaime S. Umpierre

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0622

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/22/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**39% Delivery of units of its final sites (13% per unit)**				$22,656,276.24
	Nota: A esta partida no le aplica el 1.5%	3			
	Título del Proyecto: Three (3) Mobile Generation Units				
	Número de Contrato: 83675				
	Cantidad del contrato: $58,093,016				
	Tres unidades entregadas en Central Palo Seco Día 6/21/19				

Sub Total	$22,656,276.24
In advance	$0.00
0	$0.00
Total	**$22,656,276.24**
Freight	
Amount Paid	
Grand Total	**$22,656,276.24**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

Recibido AOS 6/24/19

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
24 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0624 POR $520,128.74
- PAYMENT SCHEDULE

RECIBIDO POR: Jaime A. Umpierre FECHA: 6/24/19

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-6644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0624

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/24/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) *Nota: A esta partida no le aplica el 1.5%* ***Black start Generator Units*** *(Se están entregando 2 de 3 unidades)* *Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia.* Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016	2		$260,064.37	$520,128.74

APROBADO PARA PAGO
Jaime A Umpierre
NOMBRE EN LETRA DE MOLDE
6/24/19

Sub Total	$520,128.74
In advance	$0.00
0	$0.00
Total	$520,128.74
Freight	
Amount Paid	
Grand Total	$520,128.74

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.

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.

ARMANDO J. RODRIGUEZ, P.E.

Comp. Recibida
Jaime A. Umpierre
6/24/19

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
24 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0625-1 POR $284,632.44
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0625-1

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/25/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%***				
	Padmounted Transformers ***(Se están entregando 3 de 3 unidades)***	3	ea	$40,609.39	$121,828.17
	Cable Trays ***(Se están entregando 365 metros de 550 metros)***	365	mts	$209.74	$76,555.68
	Cables de 15KV, 600V ***(Se están entregando 2,280 pies de 21,500 pies)***	2280	ft	$8.01	$18,264.11
	Bombas de Transf. de Diesel ***(Se están entregando 6 de 6 unidades)***	6	ea	$11,330.75	$67,984.48
	Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia. Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				

Sub Total	$284,632.44
In advance	$0.00
0	$0.00
Total	**$284,632.44**
Freight	
Amount Paid	
Grand Total	$284,632.44

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/26/2019 #3

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277,	$121,828.17	$40,609.39		$0.00	3	$121,828.17	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA,	$780,193.11	$260,064.37	2	$520,128.74		$0.00	2	$520,128.74	1	$260,064.37
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94		$0.00		$0.00	0	$0.00	3000	$422,815.44
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09		$0.00		$0.00	0	$0.00	20	$29,381.86
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07		$0.00		$0.00	0	$0.00	60	$204,424.16
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74		$0.00	365	$76,555.68	365	$76,555.68	185	$38,802.20
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00		$0.00		$0.00	0	$0.00	4	$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81		$0.00		$0.00	0	$0.00	1	$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 W	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18		$0.00		$0.00	0	$0.00	6	$78,553.08
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01		$0.00	2280	$18,264.11	2280	$18,264.11	19220	$153,963.24
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75		$0.00	6	$67,984.48	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$1,110,672.36		**$284,632.44**		$1,395,304.80	0	$2,090,276.16

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
26 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0627-1 POR $849,368.90
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0627-1

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/27/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%***				
	Power Cables ***(Se está entregando 3000 metros de 3,000 metros)***	3000	mts	$140.94	$422,815.44
	Cable Terminal Cup ***(Se está entregando 20 kits de 20 kits)***	20	kits	$1,469.09	$29,381.86
	Cable Connectors ***(Se está entregando 60 kits de 60 kits)***	60	kits	$3,407.07	$204,424.16
	Cable Trays ***(Se está entregando 185 metros de 550 metros)***	185	mts	$209.74	$38,802.20
	Cables de 15 KV, 600V ***(Se está entregando 19,220 pies de 21,500 pies)***	19220	ft	$8.01	$153,963.24
	Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia. Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				

Sub Total	**$849,386.90**
In advance	**$0.00**
0	**$0.00**
Total	**$849,386.90**
Freight	
Amount Paid	
Grand Total	**$849,386.90**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/27/2019 #5

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277,	$121,828.17	$40,609.39	3	$121,828.17	0	$0.00	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA,	$780,193.11	$260,064.37	3	$780,193.11	0	$0.00	3	$780,193.11	0	$0.00
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94	$0.00	$0.00	3000	$422,815.44	3000	$422,815.44	0	$0.00
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09	$0.00	$0.00	20	$29,381.86	20	$29,381.86	0	$0.00
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07	0	$0.00	60	$204,424.16	60	$204,424.16	0	$0.00
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74	365	$76,555.68	185	$38,802.20	550	$115,357.88	0	$0.00
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00	0	$0.00		$0.00	0	$0.00	4	$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81	0	$0.00		$0.00	0	$0.00	1	$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18	0	$0.00		$0.00	0	$0.00	6	$78,553.08
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01	2280	$18,264.11	19220	$153,963.24	21500	$172,227.35	0	$0.00
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75	6	$67,984.48	0	$0.00	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$1,655,369.17		**$849,386.90**		$2,504,756.07	0	$980,824.89

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
26 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0627-2 POR $78,553.08
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0627-2

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/27/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	6% DELIVERY OF BALANCE OF PLANT (BOP)				
	EQUIPMENT TO SITES (2% PER BOP) *Nota: A esta partida no le aplica el 1.5%*				
	Electric Panels *(Se está entregando 6 unidades de 6 unidades)*	6	ea	$13,092.18	$78,553.08
	Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia. Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				

Sub Total	$78,553.08
In advance	$0.00
0	$0.00
Total	**$78,553.08**
Freight	
Amount Paid	
Grand Total	**$78,553.08**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/27/2019 #6

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277,	$121,828.17	$40,609.39	3	$121,828.17	0	$0.00	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA,	$780,193.11	$260,064.37	3	$780,193.11	0	$0.00	3	$780,193.11	0	$0.00
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94	3000	$422,815.44	0	$0.00	3000	$422,815.44	0	$0.00
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09	20	$29,381.86	0	$0.00	20	$29,381.86	0	$0.00
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07	60	$204,424.16	0	$0.00	60	$204,424.16	0	$0.00
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74	550	$115,357.88	0	$0.00	550	$115,357.88	0	$0.00
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00	0	$0.00	0	$0.00	0	$0.00	4	$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81	0	$0.00	0	$0.00	0	$0.00	1	$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18	0	$0.00	6	$78,553.08	6	$78,553.08	0	$0.00
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01	21500	$172,227.35	0	$0.00	21500	$172,227.35	0	$0.00
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75	6	$67,984.48	0	$0.00	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$2,504,756.07		**$78,553.08**		$2,583,309.15	0	$902,271.81

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
28 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0628-3 POR $902,271.81
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0628-3

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/28/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%***				
	Fuel Treatment (5 month del) ***(Se está entregando 4 unidades de 4 unidades)***	4	ea	$202,000.00	$808,000.00
	Fuel Filters (4 month del) ***(Se está entregando 1 unidad de 1 unidad)***	1	ea	$94,271.81	$94,271.81
	Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia. Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				

Sub Total	$902,271.81
In advance	$0.00
0	$0.00
Total	**$902,271.81**
Freight	
Amount Paid	
Grand Total	$902,271.81

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/28/2019 #7

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padm ount Transformer HV: 13,200 D LV: 480 Y 2:77,	$121,828.17	$40,609.39	3	$121,828.17	0	$0.00	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW /625kVA,	$780,193.11	$260,064.37	3	$780,193.11	0	$0.00	3	$780,193.11	0	$0.00
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94	3000	$422,815.44	0	$0.00	3000	$422,815.44	0	$0.00
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Vol tage Cable Terminations, 3M	$29,381.86	$1,469.09	20	$29,381.86	0	$0.00	20	$29,381.86	0	$0.00
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07	60	$204,424.16	0	$0.00	60	$204,424.16	0	$0.00
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp , splices, curves. COOPER	$115,357.88	$209.74	550	$115,357.88	0	$0.00	550	$115,357.88	0	$0.00
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00	0	$0.00	4	$808,000.00	4	$808,000.00	0	$0.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81	0	$0.00	1	$94,271.81	1	$94,271.81	0	$0.00
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18	6	$78,553.08	0	$0.00	6	$78,553.08	0	$0.00
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01	21500	$172,227.35	0	$0.00	21500	$172,227.35	0	$0.00
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75	6	$67,984.48	0	$0.00	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$2,583,309.15		**$902,271.81**		$3,485,580.96	0	$0.00

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
26 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0627-1 POR $849,368.90
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0627-1

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/27/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%***				
	Power Cables ***(Se está entregando 3000 metros de 3,000 metros)***	3000	mts	$140.94	$422,815.44
	Cable Terminal Cup ***(Se está entregando 20 kits de 20 kits)***	20	kits	$1,469.09	$29,381.86
	Cable Connectors ***(Se está entregando 60 kits de 60 kits)***	60	kits	$3,407.07	$204,424.16
	Cable Trays ***(Se está entregando 185 metros de 550 metros)***	185	mts	$209.74	$38,802.20
	Cables de 15 KV, 600V ***(Se está entregando 19,220 pies de 21,500 pies)***	19220	ft	$8.01	$153,963.24
	Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia. Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				

Sub Total	**$849,386.90**
In advance	**$0.00**
0	**$0.00**
Total	**$849,386.90**
Freight	
Amount Paid	
Grand Total	**$849,386.90**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/27/2019 #5

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277,	$121,828.17	$40,609.39	3	$121,828.17	0	$0.00	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA,	$780,193.11	$260,064.37	3	$780,193.11	0	$0.00	3	$780,193.11	0	$0.00
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94	$0.00	$0.00	3000	$422,815.44	3000	$422,815.44	0	$0.00
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09	$0.00	$0.00	20	$29,381.86	20	$29,381.86	0	$0.00
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07	0	$0.00	60	$204,424.16	60	$204,424.16	0	$0.00
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74	365	$76,555.68	185	$38,802.20	550	$115,357.88	0	$0.00
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00	0	$0.00		$0.00	0	$0.00	4	$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81	0	$0.00		$0.00	0	$0.00	1	$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18	0	$0.00		$0.00	0	$0.00	6	$78,553.08
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01	2280	$18,264.11	19220	$153,963.24	21500	$172,227.35	0	$0.00
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75	6	$67,984.48	0	$0.00	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$1,655,369.17		**$849,386.90**		$2,504,756.07	0	$980,824.89

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
26 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0626-1 POR $260,064.37
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0626-1

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/26/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%*** ***Black start Generator Units*** ***(Se está entregando 1 de 3 unidades)*** *Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia.* Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016	1		$260,064.37	$260,064.37

Sub Total	$260,064.37
In advance	$0.00
0	$0.00
Total	**$260,064.37**
Freight	
Amount Paid	
Grand Total	**$260,064.37**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/26/2019 #4

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277,	$121,828.17	$40,609.39	3	$121,828.17	0	$0.00	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA,	$780,193.11	$260,064.37	2	$520,128.74	1	$260,064.37	3	$780,193.11	0	$0.00
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94	$0.00	$0.00		$0.00	0	$0.00	3000	$422,815.44
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09	$0.00	$0.00		$0.00	0	$0.00	20	$29,381.86
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07	0	$0.00		$0.00	0	$0.00	60	$204,424.16
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74	365	$76,555.68	0	$0.00	365	$76,555.68	185	$38,802.20
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00	0	$0.00		$0.00	0	$0.00	4	$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81	0	$0.00		$0.00	0	$0.00	1	$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18	0	$0.00		$0.00	0	$0.00	6	$78,553.08
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01	2280	$18,264.11	0	$0.00	2280	$18,264.11	19220	$153,963.24
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75	6	$67,984.48	0	$0.00	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$1,395,304.80		**$260,064.37**		$1,655,369.17	0	$1,830,211.79

Factura 3%

Opción B

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
25 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 3%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0625-A $580,930.16
- FACTURA ARG2019-0625-B $580,930.16
- FACTURA ARG2019-0625-C $580,930.16

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0625-A

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/25/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**3% Substantial Completion (1% per unit)** **Unidad 1410** ***Nota: A esta partida le aplica el 1.5%*** Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				$580,930.16

Sub Total	$580,930.16
In advance	$0.00
0	$0.00
Total	**$580,930.16**
Freight	
Amount Paid	
Grand Total	**$580,930.16**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0625- B

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/25/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**3% Substantial Completion (1% per unit)** **Unidad 1411** ***Nota: A esta partida le aplica el 1.5%*** Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				$580,930.16

Sub Total	$580,930.16
In advance	$0.00
0	$0.00
Total	**$580,930.16**
Freight	
Amount Paid	
Grand Total	**$580,930.16**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0625-C

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/25/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**3% Substantial Completion (1% per unit)** **Unidad 1412** ***Nota: A esta partida le aplica el 1.5%*** Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				$580,930.16

Sub Total	$580,930.16
In advance	$0.00
0	$0.00
Total	**$580,930.16**
Freight	
Amount Paid	
Grand Total	**$580,930.16**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

Factura 2%

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
25 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 2%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0628-1 POR $1,161,860.32

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0628-1

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/28/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**2% Final Acceptance of Work (0.667% per unit)** ***Nota: A esta partida le aplica el 1.5%*** Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				$1,161,860.32

Sub Total	$1,161,860.32
In advance	$0.00
0	$0.00
Total	**$1,161,860.32**
Freight	
Amount Paid	
Grand Total	**$1,161,860.32**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

Batch Summary Report by ID Number

Company Name:	**Autoridad Energia Electrica**	**Effective Date:**	**10/01/19**
Template ID:	**ACH191001V**	**Release Date and Time:**	**09/27/19 14:38:15**
Template Name:	**ACH191001V**	**Extract File Name:**	
Batch Status :	**Released**	**Entry Class:**	**VendorPayments**

Transaction Details:

Name	ID Number	Amount	D/C	Bank ID	Account#	Acct Type	Trace #	Addenda
ARG PRECISION CORP	1000008473	$849,386.90	C	021502011	052063518	Checking		

Web Cash Manager
Banco Popular de Puerto Rico

Report Date: 30-Sep-2020
Report Time: 14:27:20 AT

Batch Summary Report by ID Number

Company Name:	**Autoridad Energia Electrica**	**Effective Date:**	**10/02/20**
Template ID:	**ACH201002V**	**Release Date and Time:**	**09/30/20 11:01:37**
Template Name:	**ACH201002V**	**Extract File Name:**	**M346051.ACH**
Batch Status :	**Extracted**	**Entry Class:**	**VendorPayments**

Transaction Details:

Name	ID Number	Amount	D/C	Bank ID	Account#	Acct Type	Trace #	Addenda
ARG PRECISION CORP	1000009806	$929,941.33	C	021502011	052063518	Checking	21502010000002	

Web Cash Manager
Banco Popular de Puerto Rico

Report Date: 06-Jul-2020
Report Time: 15:47:44 AT

Batch Summary Report by ID Number

Company Name:	**Autoridad Energia Electrica**	**Effective Date:**	**07/07/20**
Template ID:	**ACH200707V**	**Release Date and Time:**	**07/06/20 15:45:13**
Template Name:	**ACH200707V**	**Extract File Name:**	
Batch Status :	**Released**	**Entry Class:**	**VendorPayments**

Transaction Details:

Name	ID Number	Amount	D/C	Bank ID	Account#	Acct Type	Trace #	Addenda
ARG PRECISION CORP	1000009440	$381,096.00	C	021502011	052063518	Checking		
ARG								

Web Cash Manager
Banco Popular de Puerto Rico

Report Date: 12-Dec-2019
Report Time: 12:57:40 AT

Batch Summary Report by ID Number

Company Name:	**Autoridad Energia Electrica**	**Effective Date:**	**12/13/19**
Template ID:	**ACH191213V**	**Release Date and Time:**	**12/12/19 12:57:12**
Template Name:	**ACH191213V**	**Extract File Name:**	
Batch Status :	**Released**	**Entry Class:**	**VendorPayments**

Transaction Details:

Name	ID Number	Amount	D/C	Bank ID	Account#	Acct Type	Trace #	Addenda
ARG PRECISION CORP	1000008733	$432,889.26	C	021502011	052063518	Checking		

Web Cash Manager
Banco Popular de Puerto Rico

Report Date: 20-Aug-2020
Report Time: 16:17:03 AT

Batch Summary Report by ID Number

Company Name:	**Autoridad Energia Electrica**	**Effective Date:**	**08/21/20**
Template ID:	**ach200821v**	**Release Date and Time:**	**08/20/20 15:49:27**
Template Name:	**ach200821v**	**Extract File Name:**	**M236108.ACH**
Batch Status :	**Extracted**	**Entry Class:**	**VendorPayments**

Transaction Details:

Name	ID Number	Amount	D/C	Bank ID	Account#	Acct Type	Trace #	Addenda
ARG PRECISION CORP	1000009646	$1,679,662.82	C	021502011	052063518	Checking	21502010000001	

Payment 10009286 Details

Preformat Code	288-M (ARG PRECISION CORP)
Debit Account Number / Currency / Name	0400015015 - USD - PR ELECTRIC POWER AUTHORITY
Payment Currency / Amount	USD - 11,618,603.20
Payment Method	Funds Transfer
Payment Type	--
Subsidiary Identifier / Name	-- - --
Transaction Reference Number	10009286
Confidential	No
Beneficiary Reference	10009286
Intra-Company	No
Number of Credit Parties	2 Credit Party Transfer
Ordering Party Name / Address	PUERTO RICO ELECTRIC POWER AUTHORITY
Ordering Party ID Type / ID	/ACCT/ - 0400015015
Value Date	05/22/2019
Priority Flag	No
Beneficiary Account or Other ID Type / ID	/ACCT/ - 7872169881
Beneficiary Is	Not a Bank
Beneficiary Name / Address	ARG PRECISION CORP. CARR. 865, KM 3.5 CANDELARIA ARENAS TOA BAJA, PR 00949
Beneficiary Advice Type	NONE
Charges Indicator	Our
Beneficiary Bank Routing Method / Code	FEDWIRE ROUTING NUMBER - 221571415
Beneficiary Bank Account or Other ID Type / ID	-
Beneficiary Bank Name / Address	ORIENTAL BANK SAN JUAN PR UNITED STATES
Beneficiary Bank Advice Type	--
First Intermediary Bank Routing Method / Code	-
First Intermediary Bank Name / Address	--
Second Intermediary Bank Account or Other ID Type / ID	-
Second Intermediary Bank Advice Type	--
Second Intermediary Bank Name / Address	--
Pre-Advice	No
Pre-Advice Details	--
Payment Details	INV. ARG2019-0520-1
Bank Details	--
Memo Details	--
Submitted By	VICTOR RIVERA-RIVERA
Submission Date/Time	05/22/2019, 13:48:30 GMT-04:00
Cheque Number	--
Status	CB Accepted
Sub-Status	--
Creation Method	Full - Limited Modifications Preformat

citi

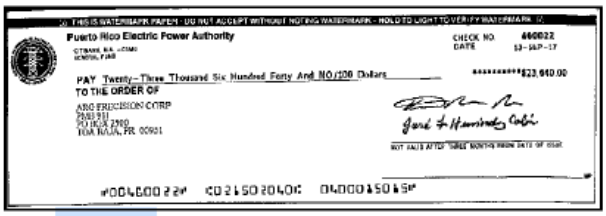
Payment 10009444 Details

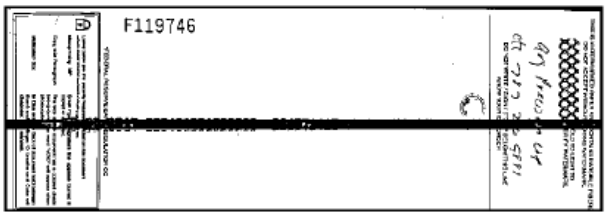
Preformat Code	288-M (ARG PRECISION CORP)
Debit Account Number / Currency / Name	0400015015 - USD - PR ELECTRIC POWER AUTHORITY
Payment Currency / Amount	USD - 18,018,448.42
Payment Method	Funds Transfer
Payment Type	--
Subsidiary Identifier / Name	-- - --
Transaction Reference Number	10009444
Confidential	No
Beneficiary Reference	10009444
Intra-Company	No
Number of Credit Parties	2 Credit Party Transfer
Ordering Party Name / Address	PUERTO RICO ELECTRIC POWER AUTHORITY
Ordering Party ID Type / ID	/ACCT/ - 0400015015
Value Date	2019/06/21
Priority Flag	No
Beneficiary Account or Other ID Type / ID	/ACCT/ - 052063518
Beneficiary Is	Not a Bank
Beneficiary Name / Address	ARG PRECISION CORP. CARR. 865, KM 3.5 CANDELARIA ARENAS TOA BAJA, PR 00949
Beneficiary Advice Type	NONE
Charges Indicator	Our
Beneficiary Bank Routing Method / Code	FEDWIRE ROUTING NUMBER - 021502011
Beneficiary Bank Account or Other ID Type / ID	-
Beneficiary Bank Name / Address	BANCO POPULAR SAN JUAN PR UNITED STATES
Beneficiary Bank Advice Type	--
First Intermediary Bank Routing Method / Code	-
First Intermediary Bank Name / Address	--
Second Intermediary Bank Account or Other ID Type / ID	-
Second Intermediary Bank Advice Type	--
Second Intermediary Bank Name / Address	--
Pre-Advice	No
Pre-Advice Details	--
Payment Details	INV. ARG2019-0606, ARG2019-0620
Bank Details	--
Memo Details	--
Submitted By	MARIEOLGA ANGLERO
Submission Date/Time	2019/06/21, 14:09:06 GMT-04:00
Cheque Number	--
Status	CB Accepted
Sub-Status	--
Creation Method	Full - Limited Modifications Preformat

Payment 10009451 Details

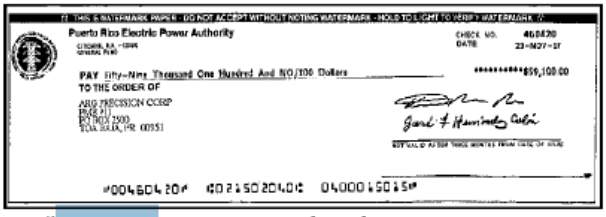
Preformat Code	288-M (ARG PRECISION CORP)
Debit Account Number / Currency / Name	0400015015 - USD - PR ELECTRIC POWER AUTHORITY
Payment Currency / Amount	USD - 23,989,817.18
Payment Method	Funds Transfer
Payment Type	--
Subsidiary Identifier / Name	-- - --
Transaction Reference Number	10009451
Confidential	No
Beneficiary Reference	10009451
Intra-Company	No
Number of Credit Parties	2 Credit Party Transfer
Ordering Party Name / Address	PUERTO RICO ELECTRIC POWER AUTHORITY
Ordering Party ID Type / ID	/ACCT/ - 0400015015
Value Date	2019/06/26
Priority Flag	No
Beneficiary Account or Other ID Type / ID	/ACCT/ - 052063518
Beneficiary Is	Not a Bank
Beneficiary Name / Address	ARG PRECISION CORP. CARR. 865, KM 3.5 CANDELARIA ARENAS TOA BAJA, PR 00949
Beneficiary Advice Type	NONE
Charges Indicator	Our
Beneficiary Bank Routing Method / Code	FEDWIRE ROUTING NUMBER - 021502011
Beneficiary Bank Account or Other ID Type / ID	-
Beneficiary Bank Name / Address	BANCO POPULAR SAN JUAN PR UNITED STATES
Beneficiary Bank Advice Type	--
First Intermediary Bank Routing Method / Code	-
First Intermediary Bank Name / Address	--
Second Intermediary Bank Account or Other ID Type / ID	-
Second Intermediary Bank Advice Type	--
Second Intermediary Bank Name / Address	--
Pre-Advice	No
Pre-Advice Details	--
Payment Details	INV. ARG2019-0621, ARG2019-0622
Bank Details	--
Memo Details	--
Submitted By	MARIEOLGA ANGLERO
Submission Date/Time	2019/06/26, 09:17:42 GMT-04:00
Cheque Number	--
Status	CB Accepted
Sub-Status	--
Creation Method	Full - Limited Modifications Preformat

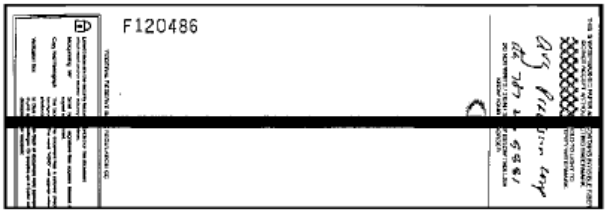
CHEQUES CANCELADOS – ARG PRECISION


Puerto Rico Electric Power Authority
CHECK NO. 460022
DATE 10-OCT-17
PAY Twenty-Three Thousand Six Hundred Forty And NO/100 Dollars $23,640.00
TO THE ORDER OF
ARG PRECISION CORP
PMB 931
PO BOX 2500
TOA BAJA, PR 00951

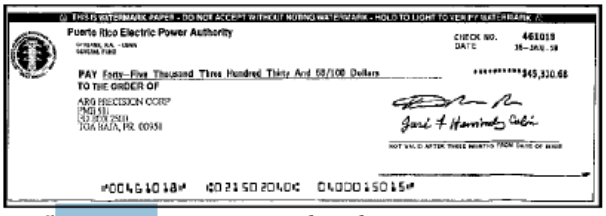

F119746

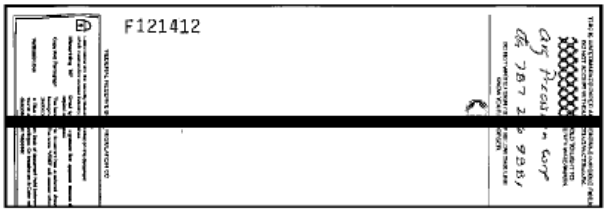
#460022 10/04/17 $23,640.00


Puerto Rico Electric Power Authority
CHECK NO. 460420
DATE 23-NOV-17
PAY Fifty-Nine Thousand One Hundred And NO/100 Dollars $59,100.00
TO THE ORDER OF
ARG PRECISION CORP
PMB 931
PO BOX 2500
TOA BAJA, PR 00951

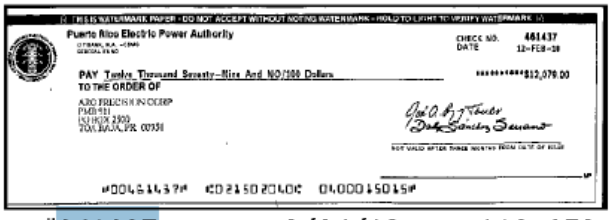

F120486

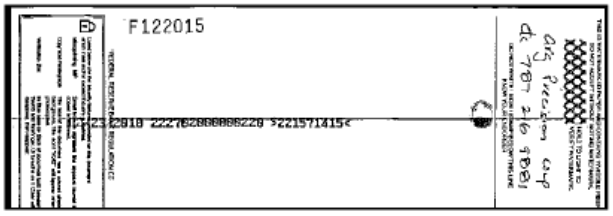
#460420 1/10/18 $59,100.00


Puerto Rico Electric Power Authority
CHECK NO. 461018
DATE 16-JAN-18
PAY Forty-Five Thousand Three Hundred Thirty And 68/100 Dollars $45,330.68
TO THE ORDER OF
ARG PRECISION CORP
PMB 931
PO BOX 2500
TOA BAJA, PR 00951

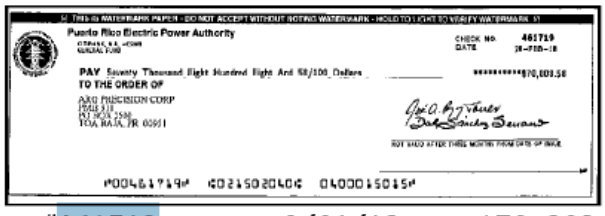

F121412

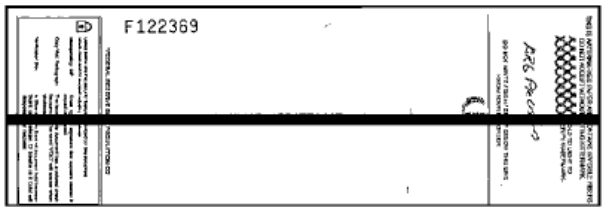
#461018 1/24/18 $45,330.68


Puerto Rico Electric Power Authority
CHECK NO. 461437
DATE 12-FEB-18
PAY Twelve Thousand Seventy-Nine And NO/100 Dollars $12,079.00
TO THE ORDER OF
ARG PRECISION CORP
PMB 931
PO BOX 2500
TOA BAJA, PR 00951

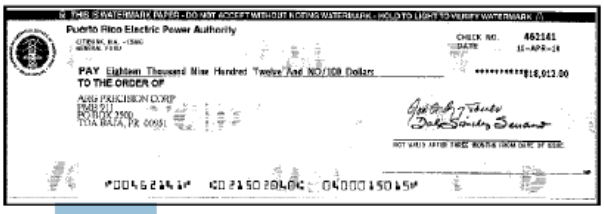

F122015

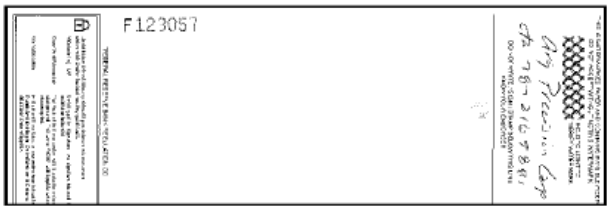
#461437 2/26/18 $12,079.00


Puerto Rico Electric Power Authority
CHECK NO. 461719
DATE 28-FEB-18
PAY Seventy Thousand Eight Hundred Eight And 58/100 Dollars $70,808.58
TO THE ORDER OF
ARG PRECISION CORP
PMB 931
PO BOX 2500
TOA BAJA, PR 00951

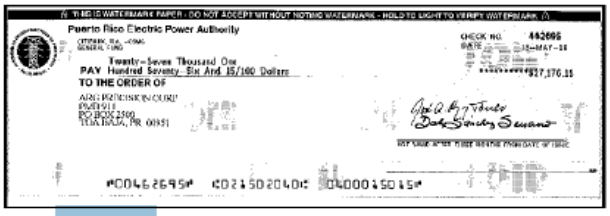

F122369

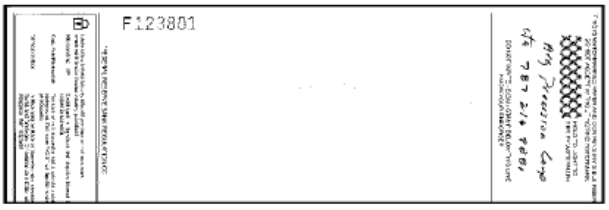
#461719 3/01/18 $70,808.58



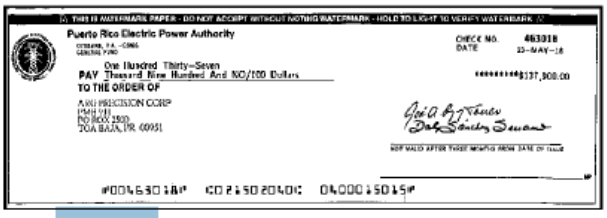


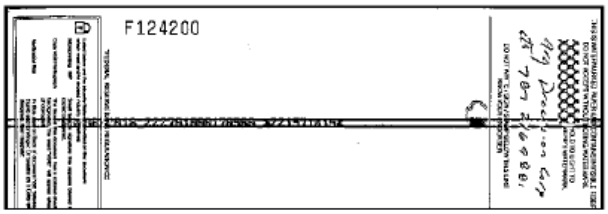
#462141 4/24/18 $18,912.00



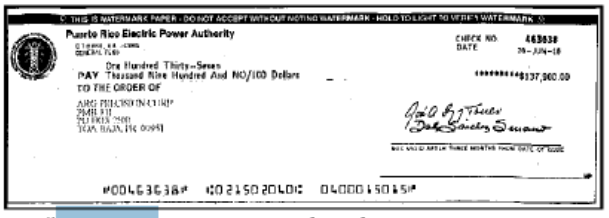


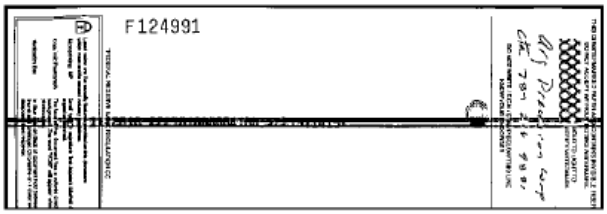
#462695 5/25/18 $27,176.15



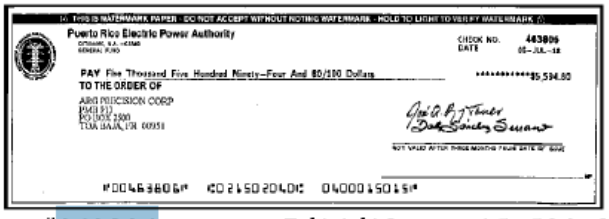


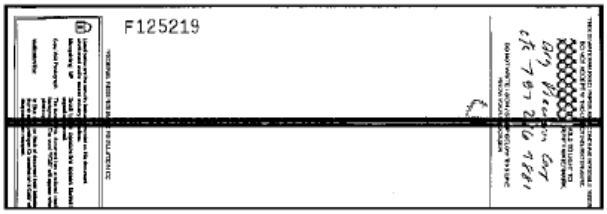
#463018 6/07/18 $137,900.00



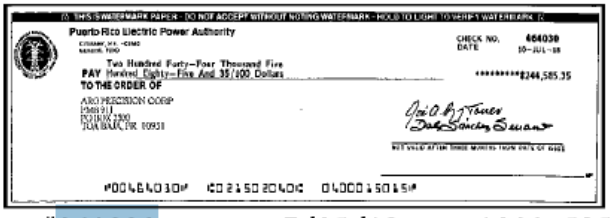


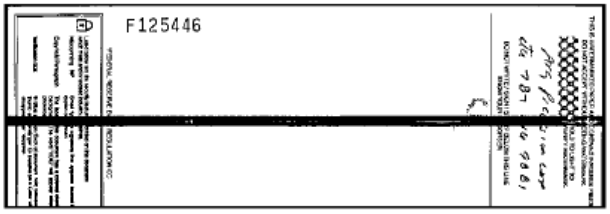
#463638 7/12/18 $137,900.00





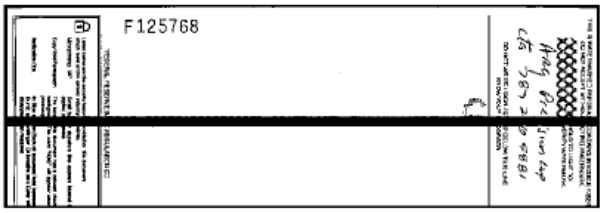
#463806 7/16/18 $5,594.80



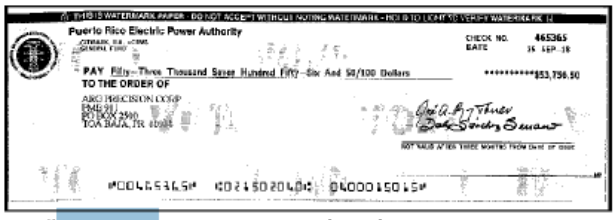


#464030 7/25/18 $244,585.35



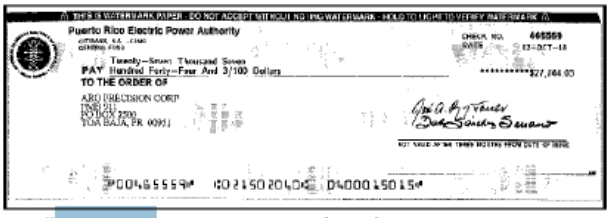


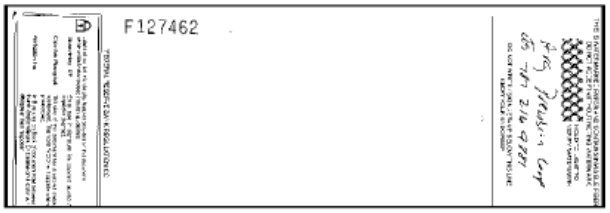
#464260 8/01/18 $23,137.65



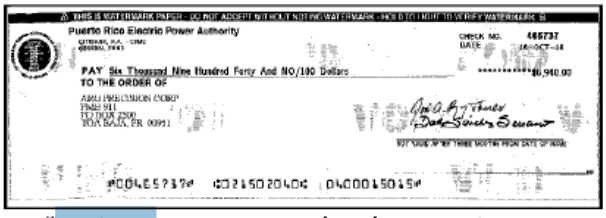


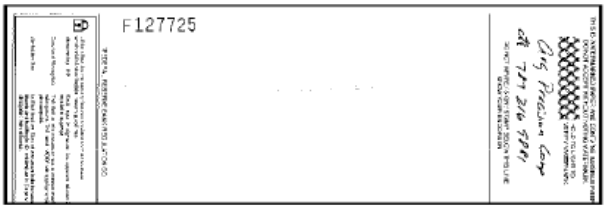
#465365 10/04/18 $53,756.50





#465559 10/15/18 $27,744.03





#465737 10/24/18 $6,940.00

PW Power Systems

A Group Company of Mitsubishi Hitachi Power Systems

FT8® Gas Turbine MOBILEPAC® Unit Commissioning Manual Sign-Off Sheets

Project: 205883 **Unit No.** 1410

Location: _____



PW Power Systems LLC
628 Hebron Avenue, Suite 400
Glastonbury, CT 06033

February 2017

TPMD504 Rev E

WARNING – This document contains technical data the export of which is or may be restricted by the Export Administration Act and the Export Administration Regulations (EAR), 15 C.F.R. parts 730-774. Diversion contrary to U.S. law is prohibited. The export, reexport, transfer or re-transfer of this technical data to any other company, entity, person, or destination, or for any use or purpose other than that for which the technical data was originally provided by PW Power Systems, Inc., is prohibited without prior written approval from PW Power Systems, Inc. and authorization under applicable export control laws.

EAR EXPORT CLASSIFICATION: ECCN EAR99
PW POWER SYSTEMS, INC. PROPRIETARY

PROPRIETARY INFORMATION WARNING

This document is the property of PW Power Systems LLC. You may not possess, use, copy or disclose this document or any information in it, for any purpose, including without limitation to design, manufacture, or repair parts, or to obtain government approval to do so, without the express written permission of PW Power Systems LLC. Neither receipt nor possession of this document alone, from any source, constitutes such permission. Possession, use, copying or disclosure by anyone without the express written permission of PW Power Systems LLC is not authorized and may result in criminal and/or civil liability.

FT8® GAS TURBINE MOBILEPAC® UNIT
COMMISSIONING MANUAL SIGN-OFF SHEETS REVISION RECORD

REVISION NUMBER	DATE OF ISSUE	ISSUED BY
Initial Issue, Rev 0	February 11, 2011	A. Airasian
Rev A	June 15, 2014	D. Budreau
Rev B	May 4, 2015	J. Crean
Rev C	June 30, 2015	J. Crean
Rev D	September 2016	J. Crean
Rev E	February 2017	D. Marshall and C. Pyne

Reason for Revision

Procedure 16 – Engine and Unit Control: Revise T5.0 EGT calibration range in 16C.
Procedure 16A – Engine and Unit Control – For Projects 1503 and Later: Revise T5.0 EGT calibration range in 16A-C.
Procedure 40 – Performance Testing: Add sign-off for copying CITECT data to portable hard drive.

PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 1 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

Print Name Nathan Wilson	Initials NW	Signature Nathan Wilson
Company or Organization Powell	Date 11-13-14	Company Position Q.A.
Print Name Shane McCallister	Initials SM	Signature Shane McCallister
Company or Organization Powell Industries	Date 10/30/2014	Company Position QA
Print Name Norman Breaux	Initials NB	Signature Norman Breaux
Company or Organization Powell	Date 11-13-14	Company Position QA

PW Power Systems

a group company of MITSUBISHI HEAVY INDUSTRIES, LTD.

PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 2 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

Print Name	Initials	Signature / Email:
Michael Blaszak	MB	Michael Blaszak
Company or Organization: Associated Fire Protection	Date: 1/15/15	Company Position: commissioning tech.

Print Name	Initials	Signature / Email:
Conor T. Cashman	CTC	Conor T. Cashman
Company or Organization: Becon Inc.	Date: 1-7-15	Company Position: Test Dept.

Print Name	Initials	Signature / Email:
Jhownathan Rodrigues	JR	Jhownathan00@Gmail.com
Company or Organization: Wellington	Date: 17/08/2019	Company Position: Mechanical Supervisor

EAR Export Classification: ECCN EAR99 - Subject to the export control restrictions on the cover page of this document.

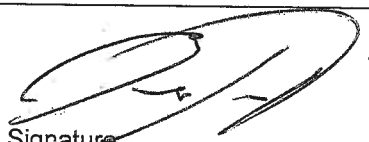
PW Power Systems

a group company of MITSUBISHI HEAVY INDUSTRIES, LTD.

PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 3 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

Rafael Narvaez Print Name	RN Initials	 Signature	Rafael.Narvaez@RFS.mx Email:
Wellington Company or Organization	9/01/19 Date	Technical Specialist Company Position	

Juan Contreras Print Name	JC Initials	 Signature	Email: contrerasjce@gmail.com
Wellington Company or Organization	17/08/19 Date	Sup. Electrical Company Position	

Luis Angel León Print Name	LAL Initials	 Signature	Email: leon_aanyel@hotmail.com
Wellington Company or Organization	17/08/19 Date	Sup. Instrumentation and Control Company Position	

EAR Export Classification: ECCN EAR99 - Subject to the export control restrictions on the cover page of this document.

PW ver Systems

A [illegible] of MITSUBISHI HEAVY INDUSTRIES, LTD.

PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 4 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

Luis Borges Print Name	L B Initials	Signature L B Email: LuisBorges0810@gmail.com
Wellington Company or Organization	17/08/19 Date	Sup. Instrumentation and Control Company Position
MARIO MARQUEZ Print Name	M M Initials	Signature Email: MMARQUEZ@OFSL.IE
OFS - PWPS FSR Company or Organization	10/08/19 Date	FIELD SERVICE ENGINEER Company Position
Print Name	Initials	Signature Email:
Company or Organization	Date	Company Position

EAR Export Classification: ECCN EAR99 - Subject to the export control restrictions on the cover page of this document.

DATE_____

PW Power Systems

A Group Company of Mitsubishi Hitachi Power Systems

FT8® Gas Turbine MOBILEPAC® Unit Commissioning Manual Sign-Off Sheets

Project: 205903 **Unit No.** 1411

Location: _____



PW Power Systems LLC
628 Hebron Avenue, Suite 400
Glastonbury, CT 06033

February 2017

TPMD504 Rev E

WARNING -- This document contains technical data the export of which is or may be restricted by the Export Administration Act and the Export Administration Regulations (EAR), 15 C.F.R. parts 730-774. Diversion contrary to U.S. law is prohibited. The export, reexport, transfer or re-transfer of this technical data to any other company, entity, person, or destination, or for any use or purpose other than that for which the technical data was originally provided by PW Power Systems, Inc., is prohibited without prior written approval from PW Power Systems, Inc. and authorization under applicable export control laws.

EAR EXPORT CLASSIFICATION: ECCN EAR99
PW POWER SYSTEMS, INC. PROPRIETARY

PROPRIETARY INFORMATION WARNING

This document is the property of PW Power Systems LLC. You may not possess, use, copy or disclose this document or any information in it, for any purpose, including without limitation to design, manufacture, or repair parts, or to obtain government approval to do so, without the express written permission of PW Power Systems LLC. Neither receipt nor possession of this document alone, from any source, constitutes such permission. Possession, use, copying or disclosure by anyone without the express written permission of PW Power Systems LLC is not authorized and may result in criminal and/or civil liability.

EAR Export Classification: ECCN EAR99 - Subject to the export control restrictions on the title page of this document.

FT8® GAS TURBINE MOBILEPAC® UNIT
COMMISSIONING MANUAL SIGN-OFF SHEETS REVISION RECORD

REVISION NUMBER	DATE OF ISSUE	ISSUED BY
Initial Issue, Rev 0	February 11, 2011	A. Airasian
Rev A	June 15, 2014	D. Budreau
Rev B	May 4, 2015	J. Crean
Rev C	June 30, 2015	J. Crean
Rev D	September 2016	J. Crean
Rev E	February 2017	D. Marshall and C. Pyne

Reason for Revision

Procedure 16 – Engine and Unit Control: Revise T5.0 EGT calibration range in 16C.
Procedure 16A – Engine and Unit Control – For Projects 1503 and Later: Revise T5.0 EGT calibration range in 16A-C.
Procedure 40 – Performance Testing: Add sign-off for copying CITECT data to portable hard drive.

PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 1 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

Print Name: Nathan Wilson	Initials: NW	Signature: Nathan Wilson
Company or Organization: Powell	Date: 11-21-14	Company Position: Q.A.

Print Name: Shane McMullin	Initials: SM	Signature: Shane McMullin
Company or Organization: Powell Industries	Date: 11/14/2014	Company Position: QA

Print Name: Conor T. Cashman	Initials: CTC	Signature: Conor T. Cashman
Company or Organization: Becon Inc.	Date: 2-6-15	Company Position: Test Dept.

Export Classification ECCN EAR99 - Pratt & Whitney Confidential & Proprietary
Subject to the limitations and restrictions outlined on the cover page.

PW Power Systems

a group company of MITSUBISHI HEAVY INDUSTRIES, LTD.

PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 2 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

Michael Blaszak Print Name	MB Initials	Michael Blaszak Signature	Email:
Associated Fire Protection Company or Organization	2/5/2019 Date	Commissioning Tech. Company Position	
Richard Linares Print Name	RL Initials	 Signature	rlinaresp@wellingtonTurbines.com Email:
Wellington Turbines LLC Company or Organization	25/07/19 Date	Commissioning Tech Company Position	
Rafael Narvaez Print Name	RN Initials	 Signature	Rafael.Narvaez@RFS.mx Email:
Rensen Field Services Company or Organization	 Date	Commissioning Tech Company Position	

EAR Export Classification: ECCN EAR99 - Subject to the export control restrictions on the cover page of this document.

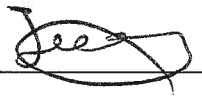
PW Power Systems

a group company of MITSUBISHI HEAVY INDUSTRIES, LTD.

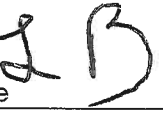
PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 3 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

Print Name Juan Contreras	Initials JC	Signature  Email: ContrerasJCC@gmail.Com
Wellington Company or Organization	25/09/19 Date	Company Position Sup. Electrical

Luis Angel León Print Name	LAL Initials	 Signature Email: Leon_aangel@hotmail.com
Wellington Company or Organization	01/08/19 Date	Company Position Sup. Instrumentation and Control

Luis Borges Print Name	LB Initials	 Signature Email: LuisBorges0810@gmail.Com.
Wellington Company or Organization	01/08/19 Date	Company Position Sup. Instrumentation and Control

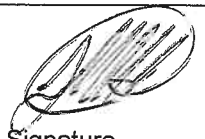
PW Power Systems

A group company of MITSUBISHI HEAVY INDUSTRIES, LTD.

PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 4 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

MARIO MARQUEZ Print Name	M M Initials	 Signature	MMARQUEZ@OFSL.IE Email:
OFS - PWPS FSR Company or Organization	Date	FIELD SERVICE ENGINEER. Company Position	

Print Name	Initials	Signature	Email:
Company or Organization	Date	Company Position	

Print Name	Initials	Signature	Email:
Company or Organization	Date	Company Position	

EAR Export Classification: ECCN EAR99 - Subject to the export control restrictions on the cover page of this document.

DATE_____

PW Power Systems

A Group Company of Mitsubishi Hitachi Power Systems

FT8® Gas Turbine MOBILEPAC® Unit Commissioning Manual Sign-Off Sheets

Project: 205904 **Unit No.** 1412

Location: Palo Seco PR



PW Power Systems LLC
628 Hebron Avenue, Suite 400
Glastonbury, CT 06033

February 2017

TPMD504 Rev E

WARNING -- This document contains technical data the export of which is or may be restricted by the Export Administration Act and the Export Administration Regulations (EAR), 15 C.F.R. parts 730-774. Diversion contrary to U.S. law is prohibited. The export, reexport, transfer or re-transfer of this technical data to any other company, entity, person, or destination, or for any use or purpose other than that for which the technical data was originally provided by PW Power Systems, Inc., is prohibited without prior written approval from PW Power Systems, Inc. and authorization under applicable export control laws.

EAR EXPORT CLASSIFICATION: ECCN EAR99
PW POWER SYSTEMS, INC. PROPRIETARY

PROPRIETARY INFORMATION WARNING

This document is the property of PW Power Systems LLC. You may not possess, use, copy or disclose this document or any information in it, for any purpose, including without limitation to design, manufacture, or repair parts, or to obtain government approval to do so, without the express written permission of PW Power Systems LLC. Neither receipt nor possession of this document alone, from any source, constitutes such permission. Possession, use, copying or disclosure by anyone without the express written permission of PW Power Systems LLC is not authorized and may result in criminal and/or civil liability.

EAR Export Classification: ECCN EAR99 - Subject to the export control restrictions on the title page of this document.

FT8® GAS TURBINE MOBILEPAC® UNIT
COMMISSIONING MANUAL SIGN-OFF SHEETS REVISION RECORD

REVISION NUMBER	DATE OF ISSUE	ISSUED BY
Initial Issue, Rev 0	February 11, 2011	A. Airasian
Rev A	June 15, 2014	D. Budreau
Rev B	May 4, 2015	J. Crean
Rev C	June 30, 2015	J. Crean
Rev D	September 2016	J. Crean
Rev E	February 2017	D. Marshall and C. Pyne

Reason for Revision

Procedure 16 – Engine and Unit Control: Revise T5.0 EGT calibration range in 16C.
Procedure 16A – Engine and Unit Control – For Projects 1503 and Later: Revise T5.0 EGT calibration range in 16A-C.
Procedure 40 – Performance Testing: Add sign-off for copying CITECT data to portable hard drive.

PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 1 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

Print Name Nathan Wilson	Initials NW	Signature Nathan Wilson
Company or Organization Powell	Date 1-7-15	Company Position Q.A.
Print Name Shane McGarrah	Initials SM	Signature Shane McGarrah
Company or Organization Powell Industries	Date 1/7/15	Company Position QA
Print Name Norman Breaux	Initials NB	Signature Norman Breaux
Company or Organization Powell Industries	Date 01/7/2015	Company Position QA

Export Classification ECCN EAR99 - Pratt & Whitney Confidential & Proprietary
Subject to the limitations and restrictions outlined on the cover page.

PW _ _ver Systems

a joint company of MITSUBISHI HEAVY INDUSTRIES, LTD.

PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 2 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

Kyle Schneiderwind Print Name	KS Initials	Signature Email: KSchneiderwind@associatedfire.net
Associated Fire Protection Company or Organization	3/4/2015 Date	Commissioning Tech Company Position
Conor T. Cashman Print Name	CTC Initials	Signature Email: N/A
Recon Inc. Company or Organization	3-4-15 Date	Test Dept Company Position
Richard Linares Print Name	RL Initials	Signature Email: rlinaresp@wellingtonturbines.com
Wellington Turbines LLC Company or Organization	08-01-19 Date	Commissioning Tech Company Position

EAR Export Classification: ECCN EAR99 - Subject to the export control restrictions on the cover page of this document.

PW Power Systems

a group company of MITSUBISHI HEAVY INDUSTRIES, LTD.

PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 3 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

Luis Borges Print Name	L.B Initials	JB Signature	Email: LuisBorges081@gmail.com.
Wellington Company or Organization	04/09/19 Date	Sup. Instrumentacion y Control Company Position	

Rafael Narvaez Print Name	RN Initials	 Signature	Email: Rafael.Narvaez@RFS.mx
Wellington Company or Organization	08-01-19 Date	Commissioning Tech Company Position	

Juan Contreras Print Name	JC Initials	 Signature	Email: ContrerasJce@gmail.Com
Wellington Company or Organization	08/01/19 Date	Sup. Electrical Company Position	

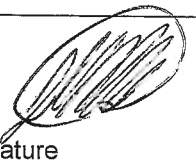
PW Power Systems

A group company of MITSUBISHI HEAVY INDUSTRIES, LTD.

PWPS CONTRACTOR SIGN-OFF SHEET (SHEET 4 OF 4)

NOTE

All individuals designated by the Contractor to perform checkout procedures in accordance with this manual shall provide the following information prior to commencement of all system checkout procedures.

Luis Angel Leon Print Name	LAL Initials	 Signature	Email: leon_aanyel@hotmail.com
Wellington Company or Organization	01/08/19 Date	Sup. Instrumentation and Control Company Position	
MARIO MÁRQUEZ Print Name	M M Initials	 Signature	MMARQUEZ@OFSL.IE Email:
OFS - PWPS FSR. Company or Organization	Date	FIELD SERVICE ENGINEER. Company Position	
JOHN HICKS Print Name	JHH Initials	 Signature	jhicks@OFSL.IE Email:
OFS - PWPS - FSR Company or Organization	11/12/2019 Date	FIELD SERVICE ENGINEER Company Position	

EAR Export Classification: ECCN EAR99 - Subject to the export control restrictions on the cover page of this document.

DATE_____

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ATT. JOSE M CRUZ**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE: 6/17/2019

SUBJECT:
THREE(3) MOBILE GENERATIONS UNITS
ORDEN: 00083675

FACTURA ARG2019-0620

Se incluye el siguiente documento del contrato de referencia para poder tramitar el informe de recibo:

- Factura ARG 2019-0620 (30%)
- Evidencia de embarque

Nombre del funcionario de la Autoridad: Jaime S Umpierre

Firma del funcionario de la Autoridad:

Posición del funcionario de la Autoridad: Jefe División, Ing y Serv. Técnicos

Fecha: 17 de junio de 2019

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0620

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/20/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**30% Delivery of the three (3) units to Puerto Rico port**				$17,427,904.80
	Nota: A esta partida no le aplica el 1.5%				
	Título del Proyecto: Three (3) Mobile Generation Units				
	Número de Contrato: 83675				
	Cantidad del contrato: $58,093,016				

Sub Total	$17,427,904.80
In advance	$0.00
0	$0.00
Total	**$17,427,904.80**
Freight	
Amount Paid	
Grand Total	**$17,427,904.80**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

AEE-RECIBIDO
JEFE DIV INGENIERIA Y SERVICIOS TECNICOS
20 JUN 17 PM 1:42

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
26 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0627-2 POR $78,553.08
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0627-2

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/27/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	6% DELIVERY OF BALANCE OF PLANT (BOP)				
	EQUIPMENT TO SITES (2% PER BOP) *Nota: A esta partida no le aplica el 1.5%*				
	Electric Panels *(Se está entregando 6 unidades de 6 unidades)*	6	ea	$13,092.18	$78,553.08
	Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia. Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				

Sub Total	$78,553.08
In advance	$0.00
0	$0.00
Total	**$78,553.08**
Freight	
Amount Paid	
Grand Total	**$78,553.08**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/27/2019 #6

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277,	$121,828.17	$40,609.39	3	$121,828.17	0	$0.00	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA,	$780,193.11	$260,064.37	3	$780,193.11	0	$0.00	3	$780,193.11	0	$0.00
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94	3000	$422,815.44	0	$0.00	3000	$422,815.44	0	$0.00
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09	20	$29,381.86	0	$0.00	20	$29,381.86	0	$0.00
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07	60	$204,424.16	0	$0.00	60	$204,424.16	0	$0.00
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74	550	$115,357.88	0	$0.00	550	$115,357.88	0	$0.00
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00	0	$0.00	0	$0.00	0	$0.00	4	$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81	0	$0.00	0	$0.00	0	$0.00	1	$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18	0	$0.00	6	$78,553.08	6	$78,553.08	0	$0.00
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01	21500	$172,227.35	0	$0.00	21500	$172,227.35	0	$0.00
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75	6	$67,984.48	0	$0.00	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$2,504,756.07		**$78,553.08**		$2,583,309.15	0	$902,271.81

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
28 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0628-3 POR $902,271.81
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0628-3

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/28/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%***				
	Fuel Treatment (5 month del) ***(Se está entregando 4 unidades de 4 unidades)***	4	ea	$202,000.00	$808,000.00
	Fuel Filters (4 month del) ***(Se está entregando 1 unidad de 1 unidad)***	1	ea	$94,271.81	$94,271.81
	Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia. Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				

Sub Total	$902,271.81
In advance	$0.00
0	$0.00
Total	**$902,271.81**
Freight	
Amount Paid	
Grand Total	$902,271.81

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/28/2019 #7

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padm ount Transformer HV: 13,200 D LV: 480 Y 2:77,	$121,828.17	$40,609.39	3	$121,828.17	0	$0.00	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW /625kVA,	$780,193.11	$260,064.37	3	$780,193.11	0	$0.00	3	$780,193.11	0	$0.00
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94	3000	$422,815.44	0	$0.00	3000	$422,815.44	0	$0.00
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Vol tage Cable Terminations, 3M	$29,381.86	$1,469.09	20	$29,381.86	0	$0.00	20	$29,381.86	0	$0.00
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07	60	$204,424.16	0	$0.00	60	$204,424.16	0	$0.00
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp , splices, curves. COOPER	$115,357.88	$209.74	550	$115,357.88	0	$0.00	550	$115,357.88	0	$0.00
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00	0	$0.00	4	$808,000.00	4	$808,000.00	0	$0.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81	0	$0.00	1	$94,271.81	1	$94,271.81	0	$0.00
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18	6	$78,553.08	0	$0.00	6	$78,553.08	0	$0.00
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01	21500	$172,227.35	0	$0.00	21500	$172,227.35	0	$0.00
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75	6	$67,984.48	0	$0.00	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$2,583,309.15		**$902,271.81**		$3,485,580.96	0	$0.00

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
26 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0627-1 POR $849,368.90
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0627-1

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/27/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%***				
	Power Cables ***(Se está entregando 3000 metros de 3,000 metros)***	3000	mts	$140.94	$422,815.44
	Cable Terminal Cup ***(Se está entregando 20 kits de 20 kits)***	20	kits	$1,469.09	$29,381.86
	Cable Connectors ***(Se está entregando 60 kits de 60 kits)***	60	kits	$3,407.07	$204,424.16
	Cable Trays ***(Se está entregando 185 metros de 550 metros)***	185	mts	$209.74	$38,802.20
	Cables de 15 KV, 600V ***(Se está entregando 19,220 pies de 21,500 pies)***	19220	ft	$8.01	$153,963.24
	Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia. Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				

Sub Total	**$849,386.90**
In advance	**$0.00**
0	**$0.00**
Total	**$849,386.90**
Freight	
Amount Paid	
Grand Total	**$849,386.90**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/27/2019 #5

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277,	$121,828.17	$40,609.39	3	$121,828.17	0	$0.00	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA,	$780,193.11	$260,064.37	3	$780,193.11	0	$0.00	3	$780,193.11	0	$0.00
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94	$0.00	$0.00	3000	$422,815.44	3000	$422,815.44	0	$0.00
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09	$0.00	$0.00	20	$29,381.86	20	$29,381.86	0	$0.00
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07	0	$0.00	60	$204,424.16	60	$204,424.16	0	$0.00
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74	365	$76,555.68	185	$38,802.20	550	$115,357.88	0	$0.00
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00	0	$0.00		$0.00	0	$0.00	4	$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81	0	$0.00		$0.00	0	$0.00	1	$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18	0	$0.00		$0.00	0	$0.00	6	$78,553.08
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01	2280	$18,264.11	19220	$153,963.24	21500	$172,227.35	0	$0.00
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75	6	$67,984.48	0	$0.00	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$1,655,369.17		**$849,386.90**		$2,504,756.07	0	$980,824.89

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
26 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0626-1 POR $260,064.37
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0626-1

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/26/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%*** ***Black start Generator Units*** ***(Se está entregando 1 de 3 unidades)*** *Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia.* Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016	1		$260,064.37	$260,064.37

Sub Total	$260,064.37
In advance	$0.00
0	$0.00
Total	**$260,064.37**
Freight	
Amount Paid	
Grand Total	**$260,064.37**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/26/2019 #4

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277,	$121,828.17	$40,609.39	3	$121,828.17	0	$0.00	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA,	$780,193.11	$260,064.37	2	$520,128.74	1	$260,064.37	3	$780,193.11	0	$0.00
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94	$0.00	$0.00		$0.00	0	$0.00	3000	$422,815.44
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09	$0.00	$0.00		$0.00	0	$0.00	20	$29,381.86
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07	0	$0.00		$0.00	0	$0.00	60	$204,424.16
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74	365	$76,555.68	0	$0.00	365	$76,555.68	185	$38,802.20
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00	0	$0.00		$0.00	0	$0.00	4	$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81	0	$0.00		$0.00	0	$0.00	1	$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18	0	$0.00		$0.00	0	$0.00	6	$78,553.08
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01	2280	$18,264.11	0	$0.00	2280	$18,264.11	19220	$153,963.24
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75	6	$67,984.48	0	$0.00	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$1,395,304.80		**$260,064.37**		$1,655,369.17	0	$1,830,211.79

Factura 3%

Opción B

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
25 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 3%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0625-A $580,930.16
- FACTURA ARG2019-0625-B $580,930.16
- FACTURA ARG2019-0625-C $580,930.16

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0625-A

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/25/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**3% Substantial Completion (1% per unit)** **Unidad 1410** ***Nota: A esta partida le aplica el 1.5%*** Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				$580,930.16

Sub Total	$580,930.16
In advance	$0.00
0	$0.00
Total	**$580,930.16**
Freight	
Amount Paid	
Grand Total	**$580,930.16**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0625- B

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/25/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**3% Substantial Completion (1% per unit)** **Unidad 1411** ***Nota: A esta partida le aplica el 1.5%*** Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				$580,930.16

Sub Total	$580,930.16
In advance	$0.00
0	$0.00
Total	**$580,930.16**
Freight	
Amount Paid	
Grand Total	**$580,930.16**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0625-C

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/25/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**3% Substantial Completion (1% per unit)** **Unidad 1412** ***Nota: A esta partida le aplica el 1.5%*** Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				$580,930.16

Sub Total	$580,930.16
In advance	$0.00
0	$0.00
Total	**$580,930.16**
Freight	
Amount Paid	
Grand Total	**$580,930.16**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

Factura 2%

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
25 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 2%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0628-1 POR $1,161,860.32

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0628-1

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/28/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**2% Final Acceptance of Work (0.667% per unit)** ***Nota: A esta partida le aplica el 1.5%*** Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				$1,161,860.32

Sub Total	$1,161,860.32
In advance	$0.00
0	$0.00
Total	**$1,161,860.32**
Freight	
Amount Paid	
Grand Total	**$1,161,860.32**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

AEE-RECIBIDO

OFIC ADMINISTRATIVA
DIV ING Y SERVS TECS

2019 JUN 13 PM 3:52

ARG PRECISION CORP.
PMB 911 PO Box 2500
Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO:
Ing Jaime Umpierre
Generation Director

FROM:
Armando J. Rodríguez

COMPANY:
PREPA

DATE
13 DE JUNIO DE 2019

SUBJECT::
3 MOBILE GENERATION UNITS
CONTRACTO: 83675

FACTURA ARG2019-0606

Según solicitado, se hace entrega de los siguientes documentos del contrato de referencia para su revisión:

- FACTURA ORIGINAL – ARG2019-0606 POR $590,543.62
- PAYMENT SCHEDULE CORRESPONDIENTE A LA FACTURA
- BOL DE LOS EQUIPOS
- FACTURA COMERCIAL

RECIBIDO POR: _____ FECHA: 6/14/19

Recomendado para pago

A
PRECISION CORP.
G
ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0606

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/6/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%*** *Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia.* Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				$590,543.62

Sub Total	$590,543.62
In advance	$0.00
0	$0.00
Total	**$590,543.62**
Freight	
Amount Paid	
Grand Total	**$590,543.62**

Approved by:

*Equipo Verificado por Carlos M. Bermudez 13 JUN 19.

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

DEPTO. EXTENSIÓN DE VIDA UTIL
RECOMENDADO PARA PAGO
Jaime A Umpierre 6/14/19
NOMBRE
FIRMA
Jefe División
Division Ingeniería y Servicios Técnicos

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675

DATE:: 6/6/2019

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED		BALANCE	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION			PREVIOUS	THIS PERIOD	TOTAL TO DATE	BALANCE
1	FUEL FILTER (DUPLEX)	2	PIECE	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief Valve	$188,543.62	$94,271.81		$188,543 .62	$188,543.62	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE)	2	PIECE	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU including spares for 2 years operation	$402,000.00	$201,000.00		$402,000 .00	$402,000.00	$0.00
3	PADMOUNTED TRANSFORMERS	3	PIECE	500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277, SUNBELT TRANSFORMERS	$121,828.17	$40,609.39				$121,828.17
4	BLACK START GENERATOR UNITS	3	PIECE	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA, (Standby Power Application) @ 0.8 Power Factor, 480/277 Volts, 3 Phase, 4 Wires, 60 Hertz at 1800 RPM,	$780,193.11	$260,064.37				$780,193.11
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94				$422,815.44
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09				$29,381.86
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire, 1/2" Bolt Size, 1 3/4" Hole Spacing, Tin Plated Blind End, Black 106	$204,424.16	$3,407.07				$204,424.16
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74				$115,357.88
				Sub Total	$2,264,544.24					
9	FUEL TREATMENT (5MONTH DEL)	4	PC	WESTFALIA OSE/40	$808,000.00	$202,000.00				$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	PC	HILCO 52HMF-4960	$94,271.81	$94,271.81				$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	PC	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18				$78,553.08
12	CABLES DE 15KV., 600V	SG	MTS	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$172,227.35				$172,227.35
13	BOMBAS DE TRANSF. DE DIESEL	6	PC	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75				$67,984.48
				Sub Total	$1,221,036.72					
				Gran Total	$3,485,580.96			$590,543.62	$590,543.62	$2,895,037.34

fue verificado en sitio 6/13/19

CROWLEY PUERTO RICO SERVICES INC

(2) SHIPPER (Complete Name, Address, & Zip Code) Embarcador		(3) BOOKING NO. Reserva No.	(3c) SCAC Code	(3a) BILL OF LADING/INVOICE NO. Conocimiento de Embarque
		(3b) DATE Fecha		
		(4) EXPORT REFERENCES Referencias de Exportacion		FWDR. REF NO.
(5) CONSIGNEE (Complete Name, Address, & Zip Code) Consignado a: NOT NEGOTIABLE UNLESS CONSIGNED 'TO ORDER'		(6) FORWARDING AGENT Agente Embarcador - Referencias		FMC. NO. / CHB NO.
(7) NOTIFY PARTY (Complete Name, Address, & Zip Code) Dirigir Notificación de Llegada a:		(8) ALSO NOTIFY - ROUTING & INSTRUCTIONS Tambien Notificar - Ruta Doméstica/Instrucciones de Exportación		

(9) VESSEL Nave VOYAGE Viaje FLAG Bandera	(10) PLACE OF RECEIPT * Carga Recibida en:	(11) RELAY POINT Punto de Conexión	(12) POINT & COUNTRY OF ORIGIN OF GOODS Lugar y País de Origen
	(13) PORT OF LOADING Puerto de Carga	(14) LOADING PIER / TERMINAL Muelle	
(16) PORT OF DISCHARGE Puerto de Descarga	(17) PLACE OF DELIVERY * Lugar de Entrega de la Carga	(18) ORIGINALS TO BE RELEASED AT Originales para Entregarse en	

PARTICULARS FURNISHED BY SHIPPER

(19) MARKS & NO'S. / CONTAINER NO'S. Marcas y Números	(20) NO. OF TRLS./ CONTS. / PKGS./ No. de Furgones / Bultos	(21) HM **	(22) DESCRIPTION OF CARGO Contenido Según Embarcador	(23) WEIGHT Libras/Kilos	(24) MEASUREMENT Medidas
			JAXS9M034446 1 NON-NEGOTIABLE LANG MODE : 1 LANG1 TOP : Y FREIGHTED : Y PRNT EXCL CHARG: N PRINT CARGO : N PRNT INB NBR : N PRNT ISS DATE : Y PRNT RELAYS : N PRNT MOVE TYPE : N		

(25) ** HAZARD DECLARATION - I HEREBY DECLARE THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY THE PROPER SHIPPING NAME, AND ARE CLASSIFIED, PACKAGED, MARKED AND LABELLED/ PLACARDED, AND ARE IN ALL RESPECTS IN PROPER CONDITION FOR TRANSPORT ACCORDING TO APPLICABLE INTERNATIONAL AND NATIONAL GOVERNMENTAL REGULATIONS.

EMERGENCY CONTACT: TEL NO.

FREIGHT CHARGES Flete	RATED AS Flete Básico	PER	RATE Tarifa	TO BE PREPAID IN US DOLLARS Prepagado en Dolares U.S.	TO BE COLLECTED IN US DOLLARS A Cobrar en Dolares U.S.	FOREIGN CURRENCY Moneda Local
			TOTALS			

THIS BILL OF LADING CONSISTS OF CONDITIONS AND INFORMATION APPEARING ON THE FRONT AND BACK OF THE DOCUMENT.

SUBJECT TO SECTION 7 OF CONDITIONS, IF THE SHIPMENT IS TO BE DELIVERED TO THE CONSIGNEE WITHOUT RECOURSE ON THE SHIPPER, THE SHIPPER SHALL SIGN THE FOLLOWING STATEMENT: "THE CARRIER SHALL NOT MAKE DELIVERY OF THIS SHIPMENT WITHOUT PAYMENT OF FREIGHT AND ALL OTHER LAWFUL CHARGES."

IN WITNESS WHEREOF THE CARRIER HAS SIGNED ___ ORIGINAL BILLS OF LADING, ALL OF THE SAME TENOR AND DATE, ONE OF WHICH BEING ACCOMPLISHED THE OTHERS TO STAND VOID.

SIGNATURE OF SHIPPER
LIABILITY LIMITED UNLESS INCREASED VALUE DECLARED BELOW, ALL AS SPECIFIED IN SECTION 16:

BY _____

CARR: CROWLEY PUERTO RICO SERVICES INC

DECLARED VALUE: _____

BY _____
FOR SHIPPER

* APPLICABLE ONLY WHEN USED A THROUGH TRANSPORTATION BILL OF LADING

** INDICATE WHETHER ANY OF THE CARGO IS HAZARDOUS MATERIAL UNDER DOT, IMCO, OR OTHER REGULATIONS AND INDICATE THE CORRECT COMMODITY NUMBER IN DESCRIPTION OF CARGO ABOVE.

CROWLEY PUERTO RICO SERVICES INC

BILL OF LADING
CONOCIMIENTO DE EMBARQUE

NON-NEGOTIABLE

(2) SHIPPER (Complete Name, Address, & Zip Code) Embarcador

CIC TRADING GROUP INC.
8562 - 8566 NW 70 STREET
MIAMI FL 33166
UNITED STATES
TEL: 305-477-4648.

4483863-02

(3) BOOKING NO. Reserva No.: CAT114951

(3c) SCAC Code: CPRC

(3a) BILL OF LADING/INVOICE NO. Conocimiento de Embarque: JAXS9M034446

(3b) DATE Fecha: 31 MAY 19

(4) EXPORT REFERENCES Referencias de Exportacion: INVOICE 2019-523 WELLINGTON TURBINES

FWDR. REF NO.

(5) CONSIGNEE (Complete Name, Address, & Zip Code) Consignado a: NOT NEGOTIABLE UNLESS CONSIGNED 'TO ORDER'

AUTORIDAD DE ENERGIA ELECTRICA
DE PUERTO RICO
PLANTA ELECTRICA DE PALO SECO
PALO SECO, TOA BAJA,
00949. PUERTO RICO

0400033-07

(6) FORWARDING AGENT Agente Embarcador - Referencias

FMC. NO.

CHB NO.

(7) NOTIFY PARTY (Complete Name, Address, & Zip Code) Dirigir Notificación de Llegada a:

(8) ALSO NOTIFY - ROUTING & INSTRUCTIONS Tambien Notificar - Ruta Doméstica/Instrucciones de Exportación

PR LOGISTICS
ATTN: MICKEY TORRES
TEL: 787-552-8989

(9) VESSEL Nave	VOYAGE Viaje	FLAG Bandera	(10) PLACE OF RECEIPT * Carga Recibida en:	(11) RELAY POINT Punto de Conexión	(12) POINT & COUNTRY OF ORIGIN OF GOODS Lugar y País de Origen
EL COQUI	043S	US	MEDLEY, FL		
			(13) PORT OF LOADING Puerto de Carga: JACKSONVILLE, FL	(14) LOADING PIER / TERMINAL Muelle: CROWLEY	
(16) PORT OF DISCHARGE Puerto de Descarga: SAN JUAN, PR			(17) PLACE OF DELIVERY * Lugar de Entrega de la Carga	(18) ORIGINALS TO BE RELEASED AT Originales para Entregarse en: JACKSONVILLE, FL	ROUTE D

PARTICULARS FURNISHED BY SHIPPER

(19) MARKS & NO'S. / CONTAINER NO'S. Marcas y Números	(20) NO. OF TRLS./ CONTS. / PKGS./ No. de Furgones / Bultos	(21) HM **	(22) DESCRIPTION OF CARGO Contenido Según Embarcador	(23) WEIGHT Libras/Kilos	(24) MEASUREMENT Medidas
SHPU 8626006 SEAL: A289111 . ITN#: X20190530812627 . (SOL) .	1 40FT		7 PACKAGE(S) 7 CRATES S.T.C. CENTRIFUGES & FILTERS / CENTRIFUGAS Y FILTROS . FREIGHT PREPAID	17942I 8138.49K	

SHIPPER LOAD AND COUNT
.
THESE COMMODITIES LICENSED BY THE UNITED STATES FOR ULTIMATE DESTINATION **PUERTO RICO** DIVERSION CONTRARY TO UNITED STATES LAW PROHIBITED
.
IMPORTANT: CARRIER HAS MADE IT CLEAR IN THE EXCEPTIONS CLAUSE (CLAUSE 18 ON THE BACK OF THIS BILL OF LADING), THAT IT HAS NO LIABILITY FOR HIJACKINGS A
.

(25)** HAZARD DECLARATION - I HEREBY DECLARE THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY THE PROPER SHIPPING NAME, AND ARE CLASSIFIED, PACKAGED, MARKED AND LABELLED/ PLACARDED, AND ARE IN ALL RESPECTS IN PROPER CONDITION FOR TRANSPORT ACCORDING TO APPLICABLE INTERNATIONAL AND NATIONAL GOVERNMENTAL REGULATIONS.

EMERGENCY CONTACT: TEL NO.

FREIGHT CHARGES Flete	RATED AS Flete Básico	PER	RATE Tarifa	TO BE PREPAID IN US DOLLARS Prepagado en Dolares U.S.	TO BE COLLECTED IN US DOLLARS A Cobrar en Dolares U.S.	FOREIGN CURRENCY Moneda Local
			TOTALS			

THIS BILL OF LADING CONSISTS OF CONDITIONS AND INFORMATION APPEARING ON THE FRONT AND BACK OF THE DOCUMENT.

SUBJECT TO SECTION 7 OF CONDITIONS, IF THE SHIPMENT IS TO BE DELIVERED TO THE CONSIGNEE WITHOUT RECOURSE ON THE SHIPPER, THE SHIPPER SHALL SIGN THE FOLLOWING STATEMENT: "THE CARRIER SHALL NOT MAKE DELIVERY OF THIS SHIPMENT WITHOUT PAYMENT OF FREIGHT AND ALL OTHER LAWFUL CHARGES."

IN WITNESS WHEREOF THE CARRIER HAS SIGNED ____ ORIGINAL BILLS OF LADING, ALL OF THE SAME TENOR AND DATE, ONE OF WHICH BEING ACCOMPLISHED THE OTHERS TO STAND VOID.

SIGNATURE OF SHIPPER

LIABILITY LIMITED UNLESS INCREASED VALUE DECLARED BELOW, ALL AS SPECIFIED IN SECTION 16:

BY _____

DECLARED VALUE: _____

CARR: CROWLEY PUERTO RICO SERVICES INC

BY _____
FOR SHIPPER

* APPLICABLE ONLY WHEN USED A THROUGH TRANSPORTATION BILL OF LADING

** INDICATE WHETHER ANY OF THE CARGO IS HAZARDOUS MATERIAL UNDER DOT, IMCO, OR OTHER REGULATIONS AND INDICATE THE CORRECT COMMODITY NUMBER IN DESCRIPTION OF CARGO ABOVE.

CROWLEY PUERTO RICO SERVICES INC

ARRIVAL NOTICE
NOTIFICACION DE LLEGADA

(2) SHIPPER (Complete Name, Address, & Zip Code) Embarcador

4483863-02

CIC TRADING GROUP INC.
8562 - 8566 NW 70 STREET
MIAMI FL 33166
UNITED STATES
TEL: 305-477-4648.

(3) BOOKING NO. Reserva No.: CAT114951

(3c) SCAC Code: CPRC

(3a) BILL OF LADING/INVOICE NO. Conocimiento de Embarque: JAXS9M034446

(3b) DATE Fecha: 31 MAY 19

RLSD

(5) CONSIGNEE (Complete Name, Address, & Zip Code) Consignado a: NOT NEGOTIABLE UNLESS CONSIGNED 'TO ORDER'

0400033-07

AUTORIDAD DE ENERGIA ELECTRICA
DE PUERTO RICO
PLANTA ELECTRICA DE PALO SECO
PALO SECO, TOA BAJA,
00949. PUERTO RICO

VESSEL ETA 06/03/19
REEFERS AVAIL 06/03/19 1400HR
CARGO AVAIL 06/04/19AM
VEHICLES AVAIL 06/05/19
"FOR BONDED CARGO, THE COMPANY
THAT ISSUES THE BOND IS RESPONSIBLE
TO CLOSE THE BOND NO MORE THAN 2
DAYS AFTER THE ARRIVAL AT DESTINATION"
F/X: INVOICE 2019-523
E/S: WELLINGTON TURBINES

(7) NOTIFY PARTY (Complete Name, Address, & Zip Code) Dirigir Notificación de Llegada a:

(8) ALSO NOTIFY - ROUTING & INSTRUCTIONS Tambien Notificar - Ruta Doméstica/Instrucciones de Exportación

PR LOGISTICS
ATTN: MICKEY TORRES
TEL: 787-552-8989

(9) VESSEL Nave	VOYAGE Viaje	FLAG Bandera	(10) PLACE OF RECEIPT * Carga Recibida en:	(11) RELAY POINT Punto de Conexión	(12) POINT & COUNTRY OF ORIGIN OF GOODS Lugar y País de Origen
EL COQUI	043S	US	MEDLEY, FL		
			(13) PORT OF LOADING Puerto de Carga	(14) LOADING PIER / TERMINAL Muelle	
			JACKSONVILLE, FL	CROWLEY	PIER TO PIER
(16) PORT OF DISCHARGE Puerto de Descarga			(17) PLACE OF DELIVERY * Lugar de Entrega de la Carga	(18) ORIGINALS TO BE RELEASED AT Originales para Entregarse en	
SAN JUAN, PR				JACKSONVILLE, FL	ROUTE D

PARTICULARS FURNISHED BY SHIPPER

(19) MARKS & NO'S. / CONTAINER NO'S. Marcas y Números	(20) NO. OF TRLS./ CONTS. / PKGS./ No. de Furgones / Bultos	(21) HM **	(22) DESCRIPTION OF CARGO Contenido Según Embarcador	(23) WEIGHT Libras/Kilos	(24) MEASUREMENT Medidas
SHPU 8626006 SEAL: A289111 . ITN#: X20190530812627 . (SOL) .	1 40FT		7 PACKAGE(S) 7 CRATES S.T.C. CENTRIFUGES & FILTERS / CENTRIFUGAS Y FILTROS . FREIGHT PREPAID	17942 8138.49	
			SHIPPER LOAD AND COUNT . THESE COMMODITIES LICENSED BY THE UNITED STATES FOR ULTIMATE DESTINATION **PUERTO RICO** DIVERSION CONTRARY TO UNITED STATES LAW PROHIBITED . IMPORTANT: CARRIER HAS MADE IT CLEAR IN THE EXCEPTIONS CLAUSE (CLAUSE 18 ON THE BACK OF THIS BILL OF LADING), THAT IT HAS NO LIABILITY FOR HIJACKINGS A .		

D/R	EQUIP	ID	SEAL#	WEIGHT	CUBE
	SHPU	8626006	A289111	17942L	

(25)** HAZARD DECLARATION - I HEREBY DECLARE THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY THE PROPER SHIPPING NAME, AND ARE CLASSIFIED, PACKAGED, MARKED AND LABELLED/ PLACARDED, AND ARE IN ALL RESPECTS IN PROPER CONDITION FOR TRANSPORT ACCORDING TO APPLICABLE INTERNATIONAL AND NATIONAL GOVERNMENTAL REGULATIONS.

EMERGENCY CONTACT: TEL NO.

FREIGHT CHARGES Flete	RATED AS Flete Básico	PER	RATE Tarifa	TO BE PREPAID IN US DOLLARS Prepagado en Dolares U.S.	TO BE COLLECTED IN US DOLLARS A Cobrar en Dolares U.S.	FOREIGN CURRENCY Moneda Local
			TOTALS			

ARRIVAL NOTICE
Notificacion de Llegada

LIABILITY LIMITED UNLESS INCREASED VALUE DECLARED BELOW; ALL AS SPECIFIED IN SECTION 16:

DECLARED VALUE: _____

* APPLICABLE ONLY WHEN USED A THROUGH TRANSPORTATION BILL OF LADING

** INDICATE WHETHER ANY OF THE CARGO IS HAZARDOUS MATERIAL UNDER DOT, IMCO, OR OTHER REGULATIONS AND INDICATE THE CORRECT COMMODITY NUMBER IN DESCRIPTION OF CARGO ABOVE.

Wellington Turbines LLC

COMMERCIAL INVOICE 2019-523

MIAMI, MAY 24, 2019

SOLD TO: ARG PRECISION CORP.
PMB 911 PO BOX 2500
TOA BAJA, PUERTO RICO 00925

SHIP TO: PUERTO RICO ELECTRIC POWER AUTHORITY
PALO SECO POWER PLANT
PALO SECO, TOA BAJA, PUERTO RICO 00949

CONTRACT 83675, SUBCONTRACT NBR. 1		LETTER CREDIT: N/A

SUPPLY OF BALANCE OF PLANT EQUIPMENT FOR PWPS TURBINE GENERATORS

ITEM	PO ITEM	DESCRIPTION		CANT.	UNIt	UNIT PRICE $	TOTAL PRICE $
1	1	DUPLEX FUEL FILTERS, HILCO, MODEL 52HMF-4960, INCLUDING TRANSFER VALVE, DIFFERENTIAL PRESSURE GAUGE AND RELIEF VALVE		2	EA		
2	2	FUEL TREATMENT UNIT, GEA WESTFALIA, MODEL OSE/40-40, CAPACITY 24M3/HR, CONTROL CABINET, SKID MOUNTED, INCLUDING SPARES FOR 2 YEARS OPERATION.		2	EA		-
							-
							-
							-
						TOTAL $	

Verificado en sitio 6/14/19

PAYMENT TERMS: AS PER CONTRACT

NOTE: PLEASE MAKE BANK TRANSFER AS FOLLOWS:

BANK: REGIONS BANK
2800 PONCE DE LEON BLVD,
CORAL GABLES, FLORIDA 33134, USA
ABA: 062005690
SWIFT: UPNBUS44
ACCT.: 0077640462
BENEFICIARY: WELLINGTON TURBINES LLC.

YOURS TRULY;

Ing. William Linares
President

3109 Grand Avenue, Nbr. 457, Coconut Grove, FL 33133
Tel: (678) 315.4061; (470) 318.7714
Email: wlinares@wellingtonturbines.com; welirca@hotmail.com

PMB 911 PO BOX 2500 TOA BAJA PR 00951

TEL. 261-8644 / FAX 261-9133, Email: admin@argprecisionpr.com

Invoice

Date:	May 17, 2019
Invoice #:	ARG 8295-5172019
Customer ID:	PREPA
Purchase Order #	82695
Payment Due by:	With Contract Signing

Bill To:

Auroridad de Energia Electrica de PR

Division de Tesoreria

Delivery: On Hand

Ship To (If Different):

MOBILE GENERATION UNITS RFP 82695

Description	Line Total
20% With Contract Signing	11,618,603.20

TOTAL $ **11,618,603.20**

Special Notes and Instructions

No interest Certification:
We certify under penalty of nullity that no public servant of PREPA will derive or obtain any benefit or profit of any kind from the contractual relationship which is the basis of this invoice. If such benefit or profit exists, the required waiver has been obtained prior to entering into the Agreement. The only consideration to be received in exchange for the delivery of goods or for the Services provided is the agreed-upon price that has been negotiated with an authorized representative of PREPA. The total amount shown on this invoice is true and correct. The Services have been rendered, and no payment has been received.

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
24 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0624 POR $520,128.74
- PAYMENT SCHEDULE

RECIBIDO POR: Jaime A. Umpierre FECHA: 6/24/19

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-6644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0624

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/24/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) *Nota: A esta partida no le aplica el 1.5%* ***Black start Generator Units*** *(Se están entregando 2 de 3 unidades)* *Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia.* Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016	2		$260,064.37	$520,128.74

APROBADO PARA PAGO
Jaime A Umpierre
NOMBRE EN LETRA DE MOLDE
6/24/19

Sub Total	$520,128.74
In advance	$0.00
0	$0.00
Total	$520,128.74
Freight	
Amount Paid	
Grand Total	$520,128.74

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.

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.

ARMANDO J. RODRIGUEZ, P.E.

Comp. Recibida
Jaime A. Umpierre
6/24/19

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
24 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0625-1 POR $284,632.44
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0625-1

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/25/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%***				
	Padmounted Transformers ***(Se están entregando 3 de 3 unidades)***	3	ea	$40,609.39	$121,828.17
	Cable Trays ***(Se están entregando 365 metros de 550 metros)***	365	mts	$209.74	$76,555.68
	Cables de 15KV, 600V ***(Se están entregando 2,280 pies de 21,500 pies)***	2280	ft	$8.01	$18,264.11
	Bombas de Transf. de Diesel ***(Se están entregando 6 de 6 unidades)***	6	ea	$11,330.75	$67,984.48
	Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia. Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				

Sub Total	$284,632.44
In advance	$0.00
0	$0.00
Total	**$284,632.44**
Freight	
Amount Paid	
Grand Total	$284,632.44

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/26/2019 #3

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277,	$121,828.17	$40,609.39		$0.00	3	$121,828.17	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA,	$780,193.11	$260,064.37	2	$520,128.74		$0.00	2	$520,128.74	1	$260,064.37
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94		$0.00		$0.00	0	$0.00	3000	$422,815.44
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09		$0.00		$0.00	0	$0.00	20	$29,381.86
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07		$0.00		$0.00	0	$0.00	60	$204,424.16
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74		$0.00	365	$76,555.68	365	$76,555.68	185	$38,802.20
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00		$0.00		$0.00	0	$0.00	4	$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81		$0.00		$0.00	0	$0.00	1	$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 W	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18		$0.00		$0.00	0	$0.00	6	$78,553.08
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01		$0.00	2280	$18,264.11	2280	$18,264.11	19220	$153,963.24
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75		$0.00	6	$67,984.48	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$1,110,672.36		**$284,632.44**		$1,395,304.80	0	$2,090,276.16

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
26 DE JUNIO DE 2019

SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 6%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0627-1 POR $849,368.90
- PAYMENT SCHEDULE

RECIBIDO POR: _____ FECHA: _____

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0627-1

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/27/2019
Your Ref#
Our Ref#
Payment Terms:
Payment Schedule

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**6% DELIVERY OF BALANCE OF PLANT (BOP)**				
	EQUIPMENT TO SITES (2% PER BOP) ***Nota: A esta partida no le aplica el 1.5%***				
	Power Cables ***(Se está entregando 3000 metros de 3,000 metros)***	3000	mts	$140.94	$422,815.44
	Cable Terminal Cup ***(Se está entregando 20 kits de 20 kits)***	20	kits	$1,469.09	$29,381.86
	Cable Connectors ***(Se está entregando 60 kits de 60 kits)***	60	kits	$3,407.07	$204,424.16
	Cable Trays ***(Se está entregando 185 metros de 550 metros)***	185	mts	$209.74	$38,802.20
	Cables de 15 KV, 600V ***(Se está entregando 19,220 pies de 21,500 pies)***	19220	ft	$8.01	$153,963.24
	Favor de referirse al "Payment Schedule" del Item #4 del contrato de referencia. Título del Proyecto: Three (3) Mobile Generation Units Número de Contrato: 83675 Cantidad del contrato: $58,093,016				

Sub Total	**$849,386.90**
In advance	**$0.00**
0	**$0.00**
Total	**$849,386.90**
Freight	
Amount Paid	
Grand Total	**$849,386.90**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

BOP EQUIPMENT 6% (ITEM 4 OF PAYMENT SCHEDULE) DELIVERY OF BALANCE OF PLANT (BOP) EQUIPMENT TO SITES -BREAKDOWN

LOCATION : MOBILE GENERATION UNITS CONTRACT 83675 DATE: 6/27/2019 #5

	EQUIPMENT				VALUE	UNIT VALUE	DELIVERED				DELIVERED TO DATE		BALANCE TO FINISH	
	DESCRIPTION	QTY	UNIT	TECHNICAL DESCRIPTION	VALUE	UNIT VALUE	QTY	PREVIOUS	QTY	THIS PERIOD	QTY	TOTAL TO DATE	QTY	AMOUNT
1	FUEL FILTER (DUPLEX)	2	EA	HILCO 52HMF-4960 Transfer Valve Differential Pressure Gauge & relief	$188,543.62	$94,271.81	2	$188,543.62		$0.00	2	$188,543.62	0	$0.00
2	FUEL TREATMENT UNIT (CENTRIFUGE	2	EA	Type OSE , Capacity 24m3/h, GEA WESTFALIA Control Cabinet. Comunication MODBUS RTU	$402,000.00	$201,000.00	2	$402,000.00		$0.00	2	$402,000.00	0	$0.00
3	PADMOUNTED TRANSFORMERS	3	EA	SUNBELT 500 kVA Padmount Transformer HV: 13,200 D LV: 480 Y 277,	$121,828.17	$40,609.39	3	$121,828.17	0	$0.00	3	$121,828.17	0	$0.00
4	BLACK START GENERATOR UNITS	3	EA	CATERPILLAR POWER ENCLOSED GENERATOR SET, MODEL C15 500kW/625kVA,	$780,193.11	$260,064.37	3	$780,193.11	0	$0.00	3	$780,193.11	0	$0.00
5	POWER CABLES	3000	MTS	15KV, 750MCM, XLPE, 133% INSULATIO LEVEL, MV 105, ALLIED WIRE	$422,815.44	$140.94	$0.00	$0.00	3000	$422,815.44	3000	$422,815.44	0	$0.00
6	CABLE TERMINAL CUP	20	KITS	Heat Shrink Medium Voltage Cable Terminations, 3M	$29,381.86	$1,469.09	$0.00	$0.00	20	$29,381.86	20	$29,381.86	0	$0.00
7	CABLE CONNECTORS	60	KITS	15kV / 1600 Amp (3 poles) - SLOB Model, BURNDY/OKONITE Copper Two-Hole Lug - Straight Long Barrel - max 35KV, 750 kcmil Wire,	$204,424.16	$3,407.07	0	$0.00	60	$204,424.16	60	$204,424.16	0	$0.00
8	CABLE TRAYS	550	MTS	Mill galvanized steel. Stair type bottom with cover Accesories: Clamp, splices, curves. COOPER	$115,357.88	$209.74	365	$76,555.68	185	$38,802.20	550	$115,357.88	0	$0.00
9	FUEL TREATMENT (5MONTH DEL)	4	EA	WESTFALIA OSE/40	$808,000.00	$202,000.00	0	$0.00		$0.00	0	$0.00	4	$808,000.00
10	FUEL FILTERS (4MONTH DEL.)	1	EA	HILCO 52HMF-4960	$94,271.81	$94,271.81	0	$0.00		$0.00	0	$0.00	1	$94,271.81
11	ELECTRIC PANELS 480/208/120V (8 WEEK DEL.)	6	EA	EATON PANEL BOARDS, 400A., 480/120V; 1200A. 277V.	$78,553.08	$13,092.18	0	$0.00		$0.00	0	$0.00	6	$78,553.08
12	CABLES DE 15KV., 600V	21500	FT	4/0 BARE COPPER, 2/0 THW, 2AWG, 4AWG, 6AWG, 8AWG, 10AWG, 12AWG,	$172,227.35	$8.01	2280	$18,264.11	19220	$153,963.24	21500	$172,227.35	0	$0.00
13	BOMBAS DE TRANSF. DE DIESEL	6	EA	MOSHERFLOW G1X1.56 CD4 CASING. 12X39X1/2.	$67,984.48	$11,330.75	6	$67,984.48	0	$0.00	6	$67,984.48	0	$0.00
				TOTALS	$3,485,580.96			$1,655,369.17		**$849,386.90**		$2,504,756.07	0	$980,824.89

CPA 26123

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0520-1

2019-P00112

Contrato # 83675

Venta e Instalación

Tres (3) "Mobile Generation Units"

Central Palo Seco & Estación de Yabucoa

BILL TO:

AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 5/20/2019
Your Ref#
Our Ref#
Payment Terms: Contract signing

VENDOR # 014305

Line	Description	Quantity	UM	Unit Price	Amount
1	**20% al momento de firmar contrato, según estipulado**				
	Nota: A esta partida no le aplica el 1.5%				$11,618,603.20
	Título del Proyecto: Three (3) Mobile Generation Units				
	Número de Contrato: 83675				
	Cantidad del contrato: $58,093,016				

Sub Total	$11,618,603.20
In advance	$0.00
0	$0.00
Total	**$11,618,603.20**
Freight	
Amount Paid	
Grand Total	**$11,618,603.20**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

APROBADO PARA PAGO
Daniel Hernández Morales
FIRMA

ARG PRECISION CORP.
PMB 911 PO Box 2500, Toa Baja PR 00951
Tel. 261-8644/9188Fax: 261-9133
Email: admin@argprecisionpr.com

TRANSMITTAL SHEET

TO: **ING JAIME UMPIERRE**
DIVISION DE INGENERIA
EDIFICIO NEOM, PISO 5 OFIC 507
MONACILLOS, PUERTO RICO

FROM:
ARMANDO J RODRIGUEZ, PE
ARG PRECISION CORP.

COMPANY:
PREPA

DATE:
24 DE JUNIO DE 2019

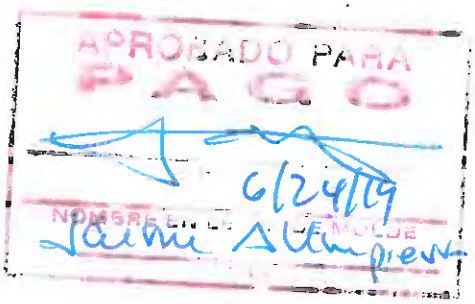
SUBJECT:
MOBILE GENERATION UNITS (3)
PALO SECO & YABUCOA

FACTURA 39%

ORDEN: 00083675

Se incluye el siguiente documento del contrato de referencia para el trámite correspondiente:

- FACTURA ARG2019-0622 POR $22,656,276.24



RECIBIDO POR: _____ FECHA: 6/24/19
Jaime S. Umpierre

ARG PRECISION CORP.
PMB 911, PO BOX 2500, TOA BAJA, PR, 00951
Tel : (787) 261-8644, Fax : (787) 261-9133, Email : admin@argprecisionpr.com
Website : www.argprecisionpr.com

INVOICE

ARG 2019-0622

Contrato # 83675
Venta e Instalación
Tres (3) "Mobile Generation Units"
Central Palo Seco & Estación de Yabucoa

BILL TO:
AEE - DIVISION DE TESORERIA
P.O Box 70253
San Juan, Puerto Rico 00936-8253

Date 6/22/2019
Your Ref#
Our Ref#
Payment Terms: See contract terms

VENDOR # 0 1 4 3 0 5

Line	Description	Quantity	UM	Unit Price	Amount
1	**39% Delivery of units of its final sites (13% per unit)**				$22,656,276.24
	Nota: A esta partida no le aplica el 1.5%	3			
	Título del Proyecto: Three (3) Mobile Generation Units				
	Número de Contrato: 83675				
	Cantidad del contrato: $58,093,016				
	Tres unidades entregadas en Central Palo Seco Día 6/21/19				

Sub Total	$22,656,276.24
In advance	$0.00
0	$0.00
Total	**$22,656,276.24**
Freight	
Amount Paid	
Grand Total	**$22,656,276.24**

Approved by:

Bajo pena de nulidad absoluta, certifico que ningún empleado, funcionario o directivo de su empresa es parte o tiene algún interés en las ganancias o beneficios producto de este contrato y de ser parte o tener interés en las ganancias o beneficios de este 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 agencia.**

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.

ARMANDO J. RODRIGUEZ, P.E.

Recibido AOS 6/24/19

Mega Gens- ARG Precision

Payee Name	Payee Num.	Check Number	Check Date	Check Amount
ARG PRECISION CORP	14305			

Invoice Number	Invoice Date	Invoice Amount	Amount Paid	Pay Group
ARG2019-0520-1	20-May-19	$ 11,618,603.20	$ 11,618,603.20	004-EMPAC
ARG2019-0606	6-Jun-19	$ 590,543.62	$ 590,543.62	004-EMPAC
ARG2019-0620	20-Jun-19	$ 17,427,904.80	$ 17,427,904.80	004-EMPAC
ARG2019-0622	22-Jun-19	$ 22,656,276.24	$ 22,656,276.24	004-EMPAC
ARG2019-0624	24-Jun-19	$ 520,128.74	$ 520,128.74	001-PAGO
ARG2019-0625-1	25-Jun-19	$ 284,632.44	$ 284,632.44	001-PAGO
ARG2019-0627-1	27-Jun-19	$ 849,386.90	$ 849,386.90	003-EMPAC
ARG2019-0626-1	26-Jun-19	$ 260,064.37	$ 260,064.37	003-EMPAC
ARG2019-0627-2	27-Jun-19	$ 78,553.08	$ 78,553.08	003-EMPAC
ARG2019-0628-3A	28-Jun-19	$ 94,271.81	$ 94,271.81	003-EMPAC
ARG2019-0625	27-Nov-19	$ 1,742,790.48	$ 1,742,790.48	004-EMPAC
ARG2019-0628-3	28-Jun-19	$ 808,000.00	$ 808,000.00	004-EMPAC
ARG2020-0212-1	13-Apr-20	$ 386,899.49	$ 381,096.00	003-EMPAC
ARG2020-0615-1	13-Aug-20	$ 1,633,278.11	$ 1,608,778.94	004-EMPAC
ARG2020-0615-1-A	19-Aug-20	$ 87,426.08	$ 87,426.08	004-EMPAC
ARG2020-0822-1	22-Aug-20	$ 701,710.56	$ 691,184.90	004-EMPAC

Purchase Order Or Contract
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675
CT-00083675

Batch Summary Report by ID Number

Company Name:	**Autoridad Energia Electrica**	**Effective Date:**	**10/01/19**
Template ID:	**ACH191001V**	**Release Date and Time:**	**09/27/19 14:38:15**
Template Name:	**ACH191001V**	**Extract File Name:**	
Batch Status :	**Released**	**Entry Class:**	**VendorPayments**

Transaction Details:

Name	ID Number	Amount	D/C	Bank ID	Account#	Acct Type	Trace #	Addenda
ARG PRECISION CORP	1000008473	$849,386.90	C	021502011	052063518	Checking		

Web Cash Manager
Banco Popular de Puerto Rico

Report Date: 30-Sep-2020
Report Time: 14:27:20 AT

Batch Summary Report by ID Number

Company Name:	**Autoridad Energia Electrica**	**Effective Date:**	**10/02/20**
Template ID:	**ACH201002V**	**Release Date and Time:**	**09/30/20 11:01:37**
Template Name:	**ACH201002V**	**Extract File Name:**	**M346051.ACH**
Batch Status :	**Extracted**	**Entry Class:**	**VendorPayments**

Transaction Details:

Name	ID Number	Amount	D/C	Bank ID	Account#	Acct Type	Trace #	Addenda
ARG PRECISION CORP	1000009806	$929,941.33	C	021502011	052063518	Checking	21502010000002	

Web Cash Manager
Banco Popular de Puerto Rico

Report Date: 06-Jul-2020
Report Time: 15:47:44 AT

Batch Summary Report by ID Number

Company Name:	**Autoridad Energia Electrica**	**Effective Date:**	**07/07/20**
Template ID:	**ACH200707V**	**Release Date and Time:**	**07/06/20 15:45:13**
Template Name:	**ACH200707V**	**Extract File Name:**	
Batch Status :	**Released**	**Entry Class:**	**VendorPayments**

Transaction Details:

Name	ID Number	Amount	D/C	Bank ID	Account#	Acct Type	Trace #	Addenda
ARG PRECISION CORP	1000009440	$381,096.00	C	021502011	052063518	Checking		
ARG								

Web Cash Manager
Banco Popular de Puerto Rico

Report Date: 12-Dec-2019
Report Time: 12:57:40 AT

Batch Summary Report by ID Number

Company Name:	**Autoridad Energia Electrica**	**Effective Date:**	**12/13/19**
Template ID:	**ACH191213V**	**Release Date and Time:**	**12/12/19 12:57:12**
Template Name:	**ACH191213V**	**Extract File Name:**	
Batch Status :	**Released**	**Entry Class:**	**VendorPayments**

Transaction Details:

Name	ID Number	Amount	D/C	Bank ID	Account#	Acct Type	Trace #	Addenda
ARG PRECISION CORP	1000008733	$432,889.26	C	021502011	052063518	Checking		

Web Cash Manager
Banco Popular de Puerto Rico

Report Date: 20-Aug-2020
Report Time: 16:17:03 AT

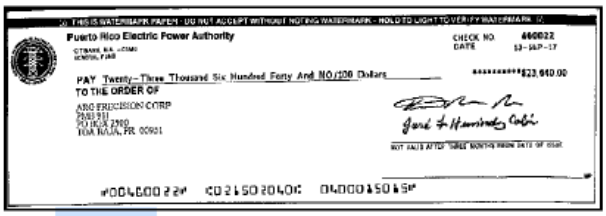
Batch Summary Report by ID Number

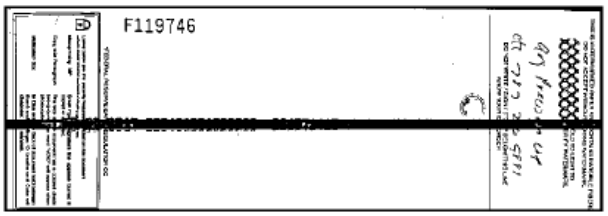
Company Name:	**Autoridad Energia Electrica**	**Effective Date:**	**08/21/20**
Template ID:	**ach200821v**	**Release Date and Time:**	**08/20/20 15:49:27**
Template Name:	**ach200821v**	**Extract File Name:**	**M236108.ACH**
Batch Status :	**Extracted**	**Entry Class:**	**VendorPayments**

Transaction Details:

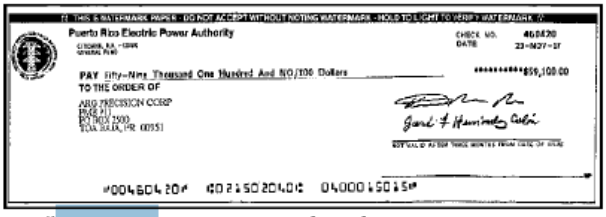
Name	ID Number	Amount	D/C	Bank ID	Account#	Acct Type	Trace #	Addenda
ARG PRECISION CORP	1000009646	$1,679,662.82	C	021502011	052063518	Checking	21502010000001	

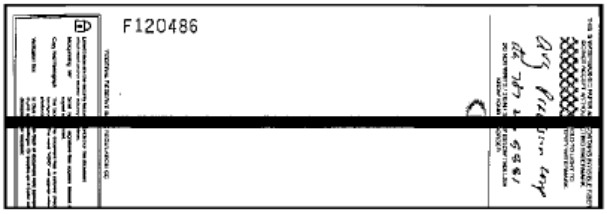
CHEQUES CANCELADOS – ARG PRECISION


Puerto Rico Electric Power Authority
CHECK NO. 460022
DATE 10-OCT-17
PAY Twenty-Three Thousand Six Hundred Forty And NO/100 Dollars $23,640.00
TO THE ORDER OF
ARG PRECISION CORP
PMB 931
PO BOX 2500
TOA BAJA, PR 00951

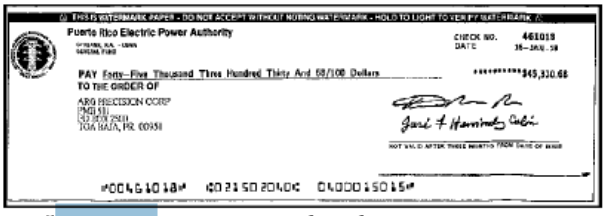

F119746

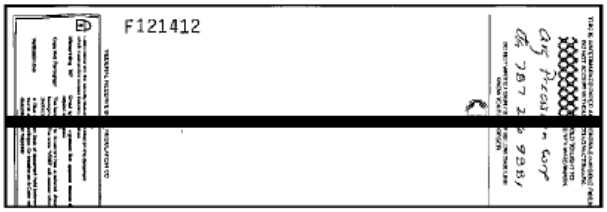
#460022 10/04/17 $23,640.00


Puerto Rico Electric Power Authority
CHECK NO. 460420
DATE 23-NOV-17
PAY Fifty-Nine Thousand One Hundred And NO/100 Dollars $59,100.00
TO THE ORDER OF
ARG PRECISION CORP
PMB 931
PO BOX 2500
TOA BAJA, PR 00951

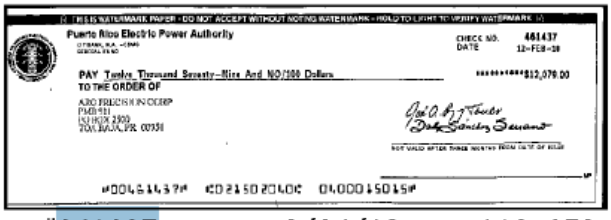

F120486

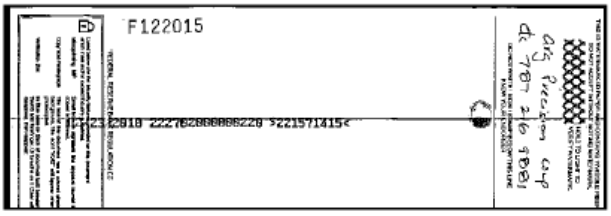
#460420 1/10/18 $59,100.00


Puerto Rico Electric Power Authority
CHECK NO. 461018
DATE 16-JAN-18
PAY Forty-Five Thousand Three Hundred Thirty And 68/100 Dollars $45,330.68
TO THE ORDER OF
ARG PRECISION CORP
PMB 931
PO BOX 2500
TOA BAJA, PR 00951

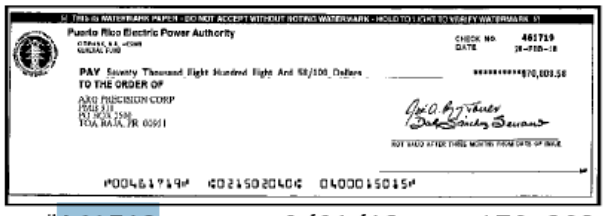

F121412

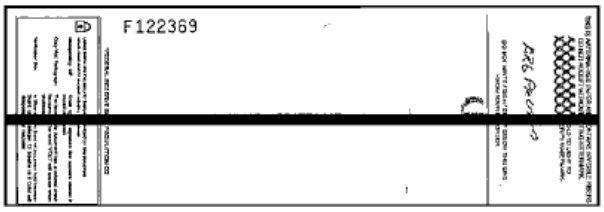
#461018 1/24/18 $45,330.68


Puerto Rico Electric Power Authority
CHECK NO. 461437
DATE 12-FEB-18
PAY Twelve Thousand Seventy-Nine And NO/100 Dollars $12,079.00
TO THE ORDER OF
ARG PRECISION CORP
PMB 931
PO BOX 2500
TOA BAJA, PR 00951

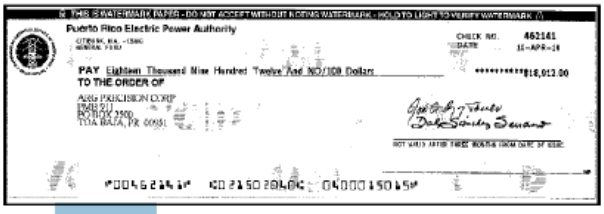

F122015

#461437 2/26/18 $12,079.00


Puerto Rico Electric Power Authority
CHECK NO. 461719
DATE 28-FEB-18
PAY Seventy Thousand Eight Hundred Eight And 58/100 Dollars $70,808.58
TO THE ORDER OF
ARG PRECISION CORP
PMB 931
PO BOX 2500
TOA BAJA, PR 00951

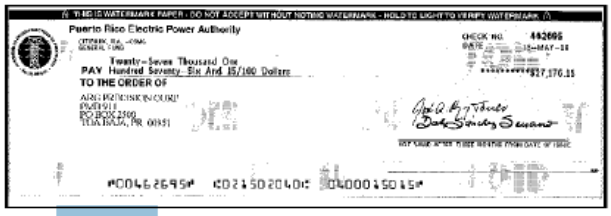

F122369

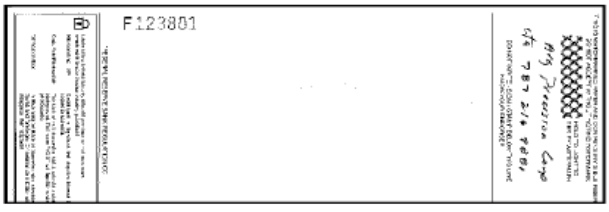
#461719 3/01/18 $70,808.58



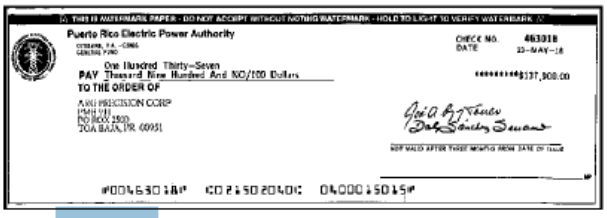


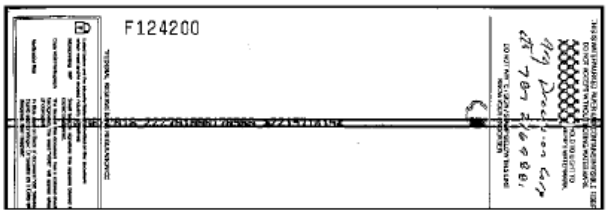
#462141 4/24/18 $18,912.00



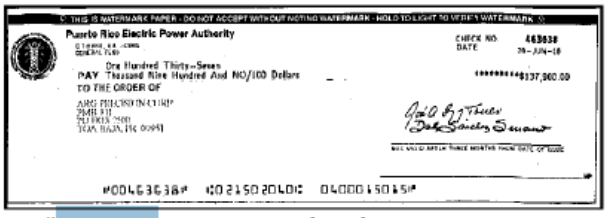


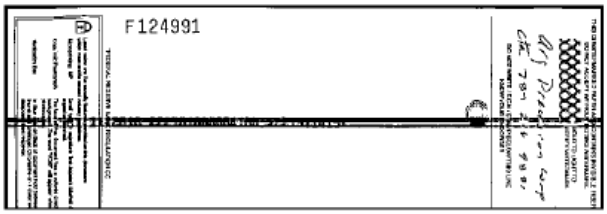
#462695 5/25/18 $27,176.15



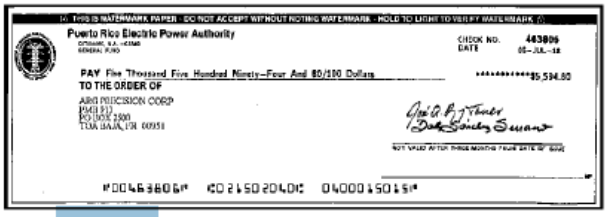


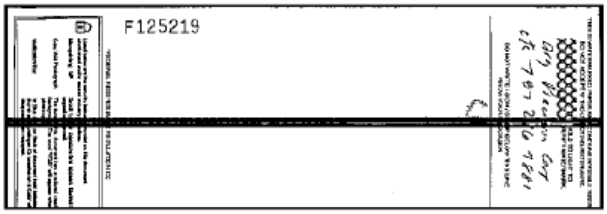
#463018 6/07/18 $137,900.00



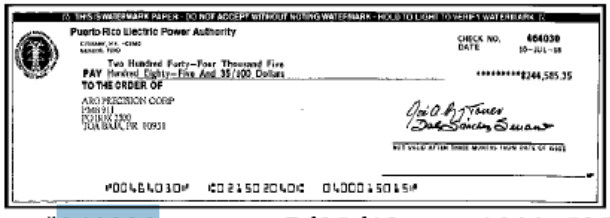


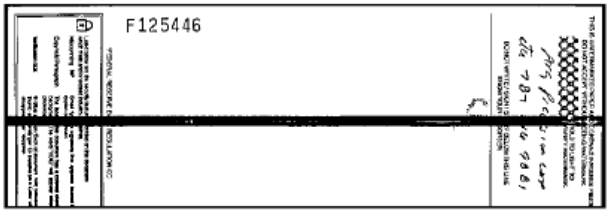
#463638 7/12/18 $137,900.00



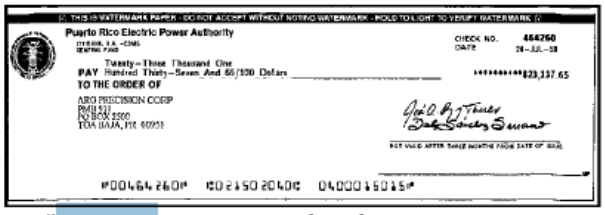


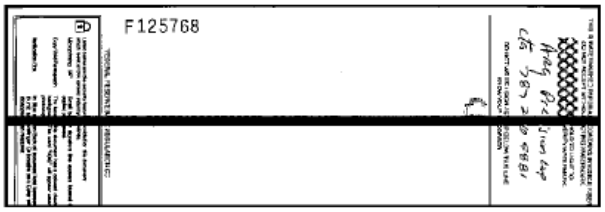
#463806 7/16/18 $5,594.80



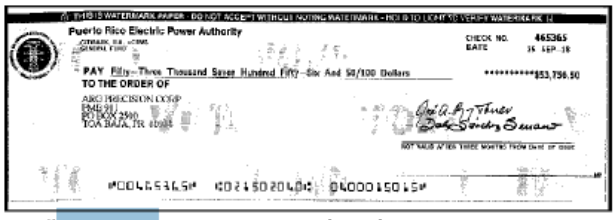


#464030 7/25/18 $244,585.35



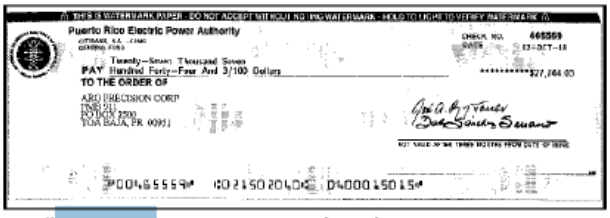


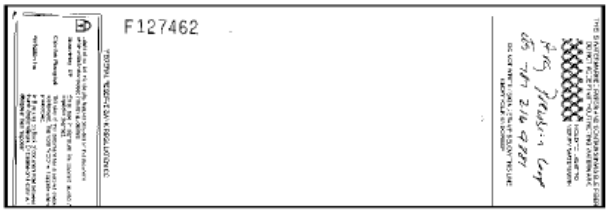
#464260 8/01/18 $23,137.65



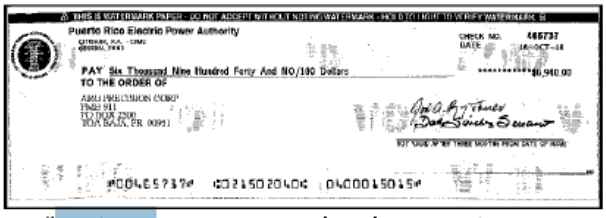


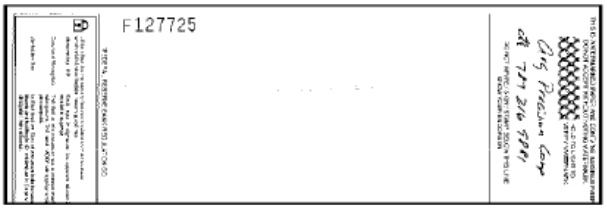
#465365 10/04/18 $53,756.50





#465559 10/15/18 $27,744.03





#465737 10/24/18 $6,940.00

Payment 10009286 Details

Preformat Code	288-M (ARG PRECISION CORP)
Debit Account Number / Currency / Name	0400015015 - USD - PR ELECTRIC POWER AUTHORITY
Payment Currency / Amount	USD - 11,618,603.20
Payment Method	Funds Transfer
Payment Type	--
Subsidiary Identifier / Name	-- - --
Transaction Reference Number	10009286
Confidential	No
Beneficiary Reference	10009286
Intra-Company	No
Number of Credit Parties	2 Credit Party Transfer
Ordering Party Name / Address	PUERTO RICO ELECTRIC POWER AUTHORITY
Ordering Party ID Type / ID	/ACCT/ - 0400015015
Value Date	05/22/2019
Priority Flag	No
Beneficiary Account or Other ID Type / ID	/ACCT/ - 7872169881
Beneficiary Is	Not a Bank
Beneficiary Name / Address	ARG PRECISION CORP. CARR. 865, KM 3.5 CANDELARIA ARENAS TOA BAJA, PR 00949
Beneficiary Advice Type	NONE
Charges Indicator	Our
Beneficiary Bank Routing Method / Code	FEDWIRE ROUTING NUMBER - 221571415
Beneficiary Bank Account or Other ID Type / ID	-
Beneficiary Bank Name / Address	ORIENTAL BANK SAN JUAN PR UNITED STATES
Beneficiary Bank Advice Type	--
First Intermediary Bank Routing Method / Code	-
First Intermediary Bank Name / Address	--
Second Intermediary Bank Account or Other ID Type / ID	-
Second Intermediary Bank Advice Type	--
Second Intermediary Bank Name / Address	--
Pre-Advice	No
Pre-Advice Details	--
Payment Details	INV. ARG2019-0520-1
Bank Details	--
Memo Details	--
Submitted By	VICTOR RIVERA-RIVERA
Submission Date/Time	05/22/2019, 13:48:30 GMT-04:00
Cheque Number	--
Status	CB Accepted
Sub-Status	--
Creation Method	Full - Limited Modifications Preformat

citi

Payment 10009444 Details

Preformat Code	288-M (ARG PRECISION CORP)
Debit Account Number / Currency / Name	0400015015 - USD - PR ELECTRIC POWER AUTHORITY
Payment Currency / Amount	USD - 18,018,448.42
Payment Method	Funds Transfer
Payment Type	--
Subsidiary Identifier / Name	-- - --
Transaction Reference Number	10009444
Confidential	No
Beneficiary Reference	10009444
Intra-Company	No
Number of Credit Parties	2 Credit Party Transfer
Ordering Party Name / Address	PUERTO RICO ELECTRIC POWER AUTHORITY
Ordering Party ID Type / ID	/ACCT/ - 0400015015
Value Date	2019/06/21
Priority Flag	No
Beneficiary Account or Other ID Type / ID	/ACCT/ - 052063518
Beneficiary Is	Not a Bank
Beneficiary Name / Address	ARG PRECISION CORP. CARR. 865, KM 3.5 CANDELARIA ARENAS TOA BAJA, PR 00949
Beneficiary Advice Type	NONE
Charges Indicator	Our
Beneficiary Bank Routing Method / Code	FEDWIRE ROUTING NUMBER - 021502011
Beneficiary Bank Account or Other ID Type / ID	-
Beneficiary Bank Name / Address	BANCO POPULAR SAN JUAN PR UNITED STATES
Beneficiary Bank Advice Type	--
First Intermediary Bank Routing Method / Code	-
First Intermediary Bank Name / Address	--
Second Intermediary Bank Account or Other ID Type / ID	-
Second Intermediary Bank Advice Type	--
Second Intermediary Bank Name / Address	--
Pre-Advice	No
Pre-Advice Details	--
Payment Details	INV. ARG2019-0606, ARG2019-0620
Bank Details	--
Memo Details	--
Submitted By	MARIEOLGA ANGLERO
Submission Date/Time	2019/06/21, 14:09:06 GMT-04:00
Cheque Number	--
Status	CB Accepted
Sub-Status	--
Creation Method	Full - Limited Modifications Preformat

Payment 10009451 Details

Preformat Code	288-M (ARG PRECISION CORP)
Debit Account Number / Currency / Name	0400015015 - USD - PR ELECTRIC POWER AUTHORITY
Payment Currency / Amount	USD - 23,989,817.18
Payment Method	Funds Transfer
Payment Type	--
Subsidiary Identifier / Name	-- - --
Transaction Reference Number	10009451
Confidential	No
Beneficiary Reference	10009451
Intra-Company	No
Number of Credit Parties	2 Credit Party Transfer
Ordering Party Name / Address	PUERTO RICO ELECTRIC POWER AUTHORITY
Ordering Party ID Type / ID	/ACCT/ - 0400015015
Value Date	2019/06/26
Priority Flag	No
Beneficiary Account or Other ID Type / ID	/ACCT/ - 052063518
Beneficiary Is	Not a Bank
Beneficiary Name / Address	ARG PRECISION CORP. CARR. 865, KM 3.5 CANDELARIA ARENAS TOA BAJA, PR 00949
Beneficiary Advice Type	NONE
Charges Indicator	Our
Beneficiary Bank Routing Method / Code	FEDWIRE ROUTING NUMBER - 021502011
Beneficiary Bank Account or Other ID Type / ID	-
Beneficiary Bank Name / Address	BANCO POPULAR SAN JUAN PR UNITED STATES
Beneficiary Bank Advice Type	--
First Intermediary Bank Routing Method / Code	-
First Intermediary Bank Name / Address	--
Second Intermediary Bank Account or Other ID Type / ID	-
Second Intermediary Bank Advice Type	--
Second Intermediary Bank Name / Address	--
Pre-Advice	No
Pre-Advice Details	--
Payment Details	INV. ARG2019-0621, ARG2019-0622
Bank Details	--
Memo Details	--
Submitted By	MARIEOLGA ANGLERO
Submission Date/Time	2019/06/26, 09:17:42 GMT-04:00
Cheque Number	--
Status	CB Accepted
Sub-Status	--
Creation Method	Full - Limited Modifications Preformat

GOBIERNO DE PUERTO RICO
DEPARTAMENTO DE RECURSOS NATURALES Y AMBIENTALES

24 OCT. 2019

ING. JOSÉ ORTIZ
Director Ejecutivo
Autoridad de Energía Eléctrica de Puerto Rico
Apartado 364267
San Juan, PR 00936-4267

Att: Efran Paredes Maisonet
Director Planificación y Protección Ambiental

Estimado ingeniero Ortiz,

Re: Solicitud de Dispensa de Emergencia
Autoridad de Energía Eléctrica de Puerto Rico.
Central Palo Seco
TV-4911-70-1196-0015

En carta con fecha del 11 de octubre de 2019 el Sr. Efran Paredes Maisonet, Director Planificación y Protección Ambiental de la Autoridad de Energía Eléctrica de Puerto Rico (en adelante AEE) presentó una solicitud de dispensa de emergencia para la instalación y operación de tres turbinas de gas con una capacidad de generación de aproximadamente 23 MW. La solicitud se presenta para asegurar la confiabilidad y resiliencia del sistema eléctrico. Esta solicitud se presenta conforme las disposiciones de la Regla 302 del Reglamento para el Control de la Contaminación Atmosférica (RCCA), Reglamento Núm. 5300, según enmendado. El inciso A de la Regla 302 del RCCA establece que:

A) La Junta podrá conceder dispensas de emergencia solo bajo circunstancias muy especiales, como por ejemplo, para evitar una amenaza inminente a la salud.
...

Según establece la AEE en su solicitud de dispensa, actualmente tiene varias unidades de carga base que están fuera de servicios debido a mantenimientos o reparaciones, o están limitadas a parte de su capacidad de generación de electricidad. Esta situación afecta la resiliencia del sistema eléctrico del país. Razón por la cual presentaron la solicitud de dispensa.

Conforme a lo anterior, se aprueba la solicitud de dispensa por un periodo que no podrá exceder de 90 días a partir de la fecha de esta notificación. Durante el periodo de dispensa deberá cumplir con todas las condiciones incluidas en el anejo. La información y condiciones sometidas en su solicitud de permiso forman parte de esta autorización.

24 OCT. 2019

De conformidad con la Sección 5.4 de la Ley Núm. 38-2017, conocida como, Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico, se le apercibe que: "Toda persona a la que la agencia deniegue la concesión de una licencia, franquicia, permiso, endoso, autorización o gestión similar, tendrá derecho a impugnar la determinación de la agencia por medio de un procedimiento adjudicativo, según se establezca en la ley especial de que se trate y en el Capítulo III de dicha Ley." Para esto, se concede un término de veinte (20) días a partir de la notificación del mismo.

La agencia podrá revocar esta autorización en cualquier momento si se violan las condiciones del mismo o reglamentos y/o regulaciones aplicables. La agencia, además, podrá emitir una Orden de Cese y Desistimiento y Mostrar Causa.

Cualquier duda o pregunta, puede comunicarse con el Ing. Luis Sierra, Gerente Interino del Área de Calidad de Aire, al 787-767-8181, extensión 2300, o a través del correo electrónico luissierra@jca.pr.gov.

Cordialmente,

Tania Vázquez Rivera
Secretaria

TVR/lst

24 OCT. 2019

ANEJO: CONDICIONES DE DISPENSA

1. Por este medio se autoriza una dispensa por emergencia la instalación y operación de tres turbinas de gas en la Central Palo Seco, con una capacidad de generación de aproximadamente 23 MW cada una. Esta dispensa tendrá una duración que no excederá de 90 días a partir de la aprobación de la misma.
2. Deberá mantener copia de esta dispensa en la instalación en todo momento. La misma estará disponible para inspección por el personal técnico del Departamento de Recursos Naturales y Ambientales (en adelante DRNA) o la Agencia Federal de Protección Ambiental (EPA, en inglés).
3. Una vez culmine la dispensa, las unidades deberán ser desconectadas, a menos que un permiso para la construcción para las unidades, según las disposiciones de la Regla 203 del Reglamento 5300, según enmendado, haya sido emitido por esta agencia.
4. Esta dispensa no exime de acciones de cumplimiento y/o legales por la construcción/instalación de las unidades previo a la otorgación de esta dispensa de emergencia.
5. * Para la operación de los generadores, el contenido máximo de azufre en el combustible No. 2 no excederá de 0.5 porciento por peso y en el gas natural no excederá de 5 gr/100 sft^3.
6. Deberá tener un registro de operación y consumo de combustible con contenido de azufre y horas de operación para cada turbina.
7. Deberá enviar un informe de aplicabilidad, y/o notificación inicial de ser necesario, con respecto a las disposiciones del 40 CFR, Parte 60, Subparte GG, Subparte KKKK o cualquier otra regulación que sea aplicable a las turbinas. Deberán indicar en el informe todos los requisitos aplicables a la unidad de emisión. De existir regulaciones que sean potencialmente aplicables, deberá indicar en el informe las razones por las cuales no le aplica.
8. Deberá cumplir con todos los requisitos aplicables en el informe enviado a la agencia. El no identificar adecuadamente la regulación aplicable, no les exime de incumplimiento con la regulación federal y/o estatal.
9. Estas unidades fueron clasificadas en su solicitud de dispensa como unidades estacionarias de emisión. Deberá llevar a cabo las pruebas de funcionamiento requeridas por la regulación federal para fuentes estacionarias, en los términos establecidos en el estándar de emisión aplicable.
10. Deberá someter un informe mensual indicando en una base diaria el contenido de azufre (porciento por peso) en los combustibles quemados o consumidos en la unidad durante cada mes. Este informe será enviado a la Junta a la atención de la Jefa de la División de Validación de Datos Modelaje Matemático del Área de Calidad de Aire, la Sra. Lula Lucia Fernández Fontán. Todos los informes mensuales deberán ser enviados en o antes de los treinta (30) días siguientes al final de cada mes natural.
11. La tonalidad de los gases emitidos durante la operación de cada motor incluido en este permiso no excederá del 20% de opacidad. Se permitirá una tonalidad de hasta 60% de opacidad sólo en un periodo no mayor de 4 minutos dentro de cualquier periodo de 30 minutos consecutivos.

Nota Importante

(1) Condición #5 se corrige contenido maximo de azufre en el combustible NO. 2 No excederá de 0.05 porciento. DRNA enviara documento corregido.

(2) Dispensa autoriza
120 horas de operación
256,000 Galones de Consumo de combustible diesel total o
91,329,000 SCF de Gas Natural.

(3) Pruebas de funcionamiento deberán realizarse dentro de los 180 días a partir del primer encendido de la primera unidad.

10/24/2019

GOBIERNO DE PUERTO RICO
DEPARTAMENTO DE RECURSOS NATURALES Y AMBIENTALES

24 OCT. 2019

ING. JOSÉ ORTIZ
Director Ejecutivo
Autoridad de Energía Eléctrica de Puerto Rico
Apartado 364267
San Juan, PR 00936-4267

Att: Efran Paredes Maisonet
Director Planificación y Protección Ambiental

Estimado ingeniero Ortiz,

Re: Solicitud de Dispensa de Emergencia
Autoridad de Energía Eléctrica de Puerto Rico.
Central Palo Seco
TV-4911-70-1196-0015

En carta con fecha del 11 de octubre de 2019 el Sr. Efran Paredes Maisonet, Director Planificación y Protección Ambiental de la Autoridad de Energía Eléctrica de Puerto Rico (en adelante AEE) presentó una solicitud de dispensa de emergencia para la instalación y operación de tres turbinas de gas con una capacidad de generación de aproximadamente 23 MW. La solicitud se presenta para asegurar la confiabilidad y resiliencia del sistema eléctrico. Esta solicitud se presenta conforme las disposiciones de la Regla 302 del Reglamento para el Control de la Contaminación Atmosférica (RCCA), Reglamento Núm. 5300, según enmendado. El inciso A de la Regla 302 del RCCA establece que:

A) La Junta podrá conceder dispensas de emergencia solo bajo circunstancias muy especiales, como por ejemplo, para evitar una amenaza inminente a la salud.
...

Según establece la AEE en su solicitud de dispensa, actualmente tiene varias unidades de carga base que están fuera de servicios debido a mantenimientos o reparaciones, o están limitadas a parte de su capacidad de generación de electricidad. Esta situación afecta la resiliencia del sistema eléctrico del país. Razón por la cual presentaron la solicitud de dispensa.

Conforme a lo anterior, se aprueba la solicitud de dispensa por un periodo que no podrá exceder de 90 días a partir de la fecha de esta notificación. Durante el periodo de dispensa deberá cumplir con todas las condiciones incluidas en el anejo. La información y condiciones sometidas en su solicitud de permiso forman parte de esta autorización.

24 OCT. 2019

De conformidad con la Sección 5.4 de la Ley Núm. 38-2017, conocida como, Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico, se le apercibe que: "Toda persona a la que la agencia deniegue la concesión de una licencia, franquicia, permiso, endoso, autorización o gestión similar, tendrá derecho a impugnar la determinación de la agencia por medio de un procedimiento adjudicativo, según se establezca en la ley especial de que se trate y en el Capítulo III de dicha Ley." Para esto, se concede un término de veinte (20) días a partir de la notificación del mismo.

La agencia podrá revocar esta autorización en cualquier momento si se violan las condiciones del mismo o reglamentos y/o regulaciones aplicables. La agencia, además, podrá emitir una Orden de Cese y Desistimiento y Mostrar Causa.

Cualquier duda o pregunta, puede comunicarse con el Ing. Luis Sierra, Gerente Interino del Área de Calidad de Aire, al 787-767-8181, extensión 2300, o a través del correo electrónico luissierra@jca.pr.gov.

Cordialmente,

Tania Vázquez Rivera
Secretaria

TVR/lst

24 OCT. 2019

ANEJO: CONDICIONES DE DISPENSA

1. Por este medio se autoriza una dispensa por emergencia la instalación y operación de tres turbinas de gas en la Central Palo Seco, con una capacidad de generación de aproximadamente 23 MW cada una. Esta dispensa tendrá una duración que no excederá de 90 días a partir de la aprobación de la misma.
2. Deberá mantener copia de esta dispensa en la instalación en todo momento. La misma estará disponible para inspección por el personal técnico del Departamento de Recursos Naturales y Ambientales (en adelante DRNA) o la Agencia Federal de Protección Ambiental (EPA, en inglés).
3. Una vez culmine la dispensa, las unidades deberán ser desconectadas, a menos que un permiso para la construcción para las unidades, según las disposiciones de la Regla 203 del Reglamento 5300, según enmendado, haya sido emitido por esta agencia.
4. Esta dispensa no exime de acciones de cumplimiento y/o legales por la construcción/instalación de las unidades previo a la otorgación de esta dispensa de emergencia.
5. Para la operación de los generadores, el contenido máximo de azufre en el combustible No. 2 no excederá de 0.5 porciento por peso y en el gas natural no excederá de 5 gr/100 sft^3.
6. Deberá tener un registro de operación y consumo de combustible con contenido de azufre y horas de operación para cada turbina.
7. Deberá enviar un informe de aplicabilidad, y/o notificación inicial de ser necesario, con respecto a las disposiciones del 40 CFR, Parte 60, Subparte GG, Subparte KKKK o cualquier otra regulación que sea aplicable a las turbinas. Deberán indicar en el informe todos los requisitos aplicables a la unidad de emisión. De existir regulaciones que sean potencialmente aplicables, deberá indicar en el informe las razones por las cuales no le aplica.
8. Deberá cumplir con todos los requisitos aplicables en el informe enviado a la agencia. El no identificar adecuadamente la regulación aplicable, no les exime de incumplimiento con la regulación federal y/o estatal.
9. Estas unidades fueron clasificadas en su solicitud de dispensa como unidades estacionarias de emisión. Deberá llevar a cabo las pruebas de funcionamiento requeridas por la regulación federal para fuentes estacionarias, en los términos establecidos en el estándar de emisión aplicable.
10. Deberá someter un informe mensual indicando en una base diaria el contenido de azufre (porciento por peso) en los combustibles quemados o consumidos en la unidad durante cada mes. Este informe será enviado a la Junta a la atención de la Jefa de la División de Validación de Datos Modelaje Matemático del Área de Calidad de Aire, la Sra. Lula Lucia Fernández Fontán. Todos los informes mensuales deberán ser enviados en o antes de los treinta (30) días siguientes al final de cada mes natural.
11. La tonalidad de los gases emitidos durante la operación de cada motor incluido en este permiso no excederá del 20% de opacidad. Se permitirá una tonalidad de hasta 60% de opacidad sólo en un periodo no mayor de 4 minutos dentro de cualquier periodo de 30 minutos consecutivos.

10 de febrero de 2021

Victor V. De Castro Carlo
Puerto Rico Electric Power Authority (PREPA) Palo Seco
PO Box 364267
San Juan, PR 00949

ENM. 141-20-0340
Generadores de Emergencia
Palo Seco Power Plant
PR-870, Palo Seco
Toa Baja, Puerto Rico

Estimado señor De Castro:

El Área de Evaluación de Documentos Ambientales adscrita a la Secretaría Auxiliar de Cumplimiento Ambiental del Departamento de Recursos Naturales y Ambientales (DRNA) recibió el 10 de febrero del 2021, la comunicación del Ing. Ricardo Ramos De Juan, que lee como sigue:

"Por este medio la Autoridad de Energía de Puerto Rico – División de Ingeniería y Servicios Técnicos por conducto del Ing. Ricardo Ramos De Juan solicita – una Evaluación Ambiental bajo la Regla 141 para Tres unidades de turbo generadores móviles generatricesde 30 MW cada una United Technologies Pratt & Whitney (descripción abajo). Se incluye la data técnica y cálculos de emisión. Las unidades se ubicaran en PREPA Palo Seco, ubicada en la PR-870, en Toa Baja.

Se aclara que dichas unidades son Unidades Peaking.

Dichas Unidades Peaking tendrán un uso de operación se estima en 2,680 horas / año.

I. Unidad Peaking- Movil

El generador es marca: Brush Electrical Machines
Modelo Frame no. MXI 44.07 no. 925501.00, 30,000 KW
Motor marca United Technologies Pratt & Whitney,
Modelo FT8, GG8-3 / PT8-6. Caballaje: 40,800 HP
Tiempo de operación se estima en 2,680 hrs/yr.
El consumo de combustible es de 1,980 gal/hr
Combustible utilizado: Dual Fuel (diésel y gas natural)
Tubo de escape: largo de 120 pulgadas, ancho de 140 pulgadas y altura de 244.75 pulgadas.

II. Unidad Peaking- Movil

El generador es marca Toshiba Mitsubishi-Electrical System Corporation
Modelo: Serial #D1577020AW,30,000 KW
Motor marca United Technologies Pratt & Whitney
Modelo GG8-3 / PT8-6. Caballaje: 40,800 HP
Tiempo de operación se estima en 2,680 hrs/yr.
El consumo de combustible es de 1980 gal/hr
Combustible utilizado: Dual Fuel (diésel y gas natural)
Tubo de escape: largo de 120 pulgadas, ancho de 60 pulgadas y altura de 244.75 pulgadas.

III. Unidad Peaking- Movil

El generador es marca Toshiba Mitsubishi-Electrical System Corporation
Modelo: Serial #D1580200AW, 30,000 KW
Motor marca United Technologies Pratt & Whitney
Modelo GG8-3/PT8-6. Caballaje: 40,800 HP
Tiempo de operación se estima en 2,680 hrs/yr.
El consumo de combustible es de 1980 gal/hr
Combustible utilizado: Dual Fuel (diésel y gas Natural)
Tubo de escape: largo de 120 pulgadas, ancho de 140 pulgadas y altura de 244.75 pulgadas.

Las tres unidades utilizan un tanque de acero externo con dique de capacidad de 670,316 galones".

La Secretaria Auxiliar de Cumplimiento Ambiental del DRNA (anterior Junta de Calidad Ambiental), amparada en la Regla 141 del Reglamento Núm. 8858 del 23 de noviembre de 2016, conocido como el "Reglamento Para el Proceso de Evaluación Ambiental (RPEA)" ha determinado que la acción propuesta no ocasionará impactos significativos al ambiente. El documento sometido para la acción propuesta cumple con lo requerido en el Artículo 4-B (3) de la Ley sobre Política Pública Ambiental, Ley 416-2004, según enmendada.

No obstante, se le requiere que cumpla con todas las disposiciones de las leyes y reglamentos estatales y federales aplicables, incluyendo las siguientes:

1. Obtener los correspondiente permisos o modificaciones de permisos de construcción y operación, otorgados por el Área de Calidad de Aire, conforme al Reglamento Núm. 5300 del 28 de agosto de 1995, conocido como el "Reglamento para el Control de la Contaminación Atmosférica".

2. Las especificaciones y nuevos cálculos de emisiones certificados por un ingeniero o químico licenciado y autorizado a ejercer su profesión en Puerto Rico, deberán incluirse durante el proceso de modificación o solicitud del permiso.

3. Controlar los olores objetables que puedan afectar la atmósfera comunal.

4. Revisar el Plan de Emergencia de la facilidad de referencia de manera que este incluya todos los tanques sobre tierra que se utilicen para almacenar combustible(s) o sustancias químicas; y de ser necesario se deberá presentar el mismo ante el Área de Calidad de Agua, reflejando las acciones a tomar para evitar, controlar y remediar derrames de combustible(s) o cualquier otra sustancia química, a tenor con la Regla 1306.5 del Reglamento Núm. 9079 del 26 de abril de 2019, conocido como el "Reglamento de Estándares de Calidad de Agua de Puerto Rico".

5. Cumplir con el Reglamento Núm. 8019 del 9 de mayo de 2011, conocido como el "Reglamento para el Control de la Contaminación por Ruido" en lo relacionado al nivel de sonido máximo permitido.

6. Según la Regla 138 (Vigencia de la Determinación de Cumplimiento Ambiental), Inciso C del RPEA, la vigencia de la determinación de cumplimiento ambiental a tenor con la Regla 141 será de cinco (5) años o hasta la fecha límite para el comienzo de la acción propuesta o hasta que se otorgue o modifique el permiso solicitado, lo que ocurra primero.

Las recomendaciones presentadas en esta comunicación, no eximen de cumplir con cualquier otro requerimiento o permiso del DRNA o de cualquier otra agencia estatal o federal, que sean aplicables a la acción propuesta.

Cordialmente,

Ing. Luis Sierra
Secretario Auxiliar
Secretaria Auxiliar de Permisos
Endosos, y Servicios Especializados

ADL/adl

Número de Caso:
2019-268588-DEC-077849

Certificación de Cumplimiento Ambiental por Exclusión Categórica

Puerto Rico Electric Power Authority (PREPA) Palo Seco

Fecha de Expedición:

26/JUN/2019

Datos de Localización

De conformidad con las disposiciones contenidas en las leyes y los reglamentos vigentes, se expide la presente Certificación de Exclusión Categórica para la acción(es) antes descrita(s):

Dirección Física:

Dirección: PALO SECO POWER PLANT
PR-870,
PUERTO RICO, 00949
Municipio: Toa Baja
Estado: Puerto Rico
Código Postal: 00949

Dueño:

Autoridad Energia Electrica

Sometido por:

Autoridad Energia Electrica

Número(s) de Catastro:

039-000-008-04

Calificación

Distrito(s) de Calificación: I-P (50%), CR (49%), DT-G (1%)

Distrito en el Mapa de Inundabilidad: X (57.5%), 0.2 PCT (33.2%), AE (9.1%), VE (0.2%)
Tipo de Suelo: Ud (82.6%), Hy (13.3%), W (4.0%), Sm (0.1%)

Datos de determinación

Exclusión Categórica

Números de exclusión categórica aplicables de acuerdo a la R-11-17 de la JCA*:

21,26

Fecha de Expedición:

26/JUN/2019

Condiciones Generales

De acuerdo con la solicitud de esta Determinación, se certificó cumplimiento con los siguientes requisitos, cuyo incumplimiento podrá repercutir en la revocación de esta Determinación:

1. Las actividades de uso o de construcciones livianas de nuevas estructuras no están ubicadas o desarrolladas en:

a. Areas especiales de riesgo de inundaciones, derrumbes o marejadas.

b. Areas en las que la Junta de Calidad Ambiental (JCA) u otras agencias gubernamentales estatales o federales hayan determinado que existe un grado de contaminación que excede el permitido por los reglamentos vigentes.

c. Areas ecológicamente sensitivas o protegidas, según establecido por el Departamento de Recursos Naturales y Ambientales (DRNA), en las que existan especies únicas de fauna o flora o que estén en peligro de extinción o en las que puedan afectarse ecológicamente sistemas naturales o artificiales, ya sea en forma directa o indirecta.

d. Areas en las que existan problemas de infraestructura o de deficiencias en los sistemas de servicios de suministro de agua potable, disposición de las aguas sanitarias, suministro de energía eléctrica o capacidad vial para el manejo adecuado del tránsito de vehículos de motor.

e. Areas que constituyan yacimientos minerales, conocidos o potenciales.

f. Areas en las que existen yacimientos arqueológicos o de valor cultural, según determinado por el Instituto

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Certificación de Cumplimiento Ambiental por Exclusión Categórica

de Cultura Puertorriqueña (ICP).

g. Areas de topografía escarpada, en cuencas hidrográficas donde se puedan afectar fuentes de abasto de agua potable.

h. Cualquier otra acción que la JCA haya establecido mediante Resolución.

2. No descargarán contaminantes a cuerpos de agua, ni generará desperdicios peligrosos o emisiones al aire que excedan dos (2) toneladas al año de contaminantes de aire criterio, o cinco (5) toneladas de cualquier combinación de contaminantes criterios, ni emitirá al aire contaminantes peligrosos o tóxicos u olores objetables.

3. La disposición o descarga de las aguas usadas se realizará mediante acometidas a un sistema sanitario existente, lo cual requerirá la obtención del endoso de la AAA previo a la solicitud de permisos de construcción.

4. Que existe la infraestructura necesaria (agua potable y alcantarillado sanitario suministrado por la AAA, energía eléctrica, alcantarillado pluvial, vías de acceso) para servir a la operación del proyecto o actividad propuesta, con excepción de los proyectos agrícolas que se ubican por regla general en las áreas rurales, así como las residencias unifamiliares asociadas en las que las instalaciones de esa naturaleza son limitadas.

5. La operación de la actividad no afectará áreas residenciales o zonas de tranquilidad por contaminación sónica según establecido por el Reglamento para el Control de la Contaminación por Ruido.

6. Que el desarrollo de la instalación comercial, industrial, de servicio, institucional y de desarrollo de terrenos para uso turístico y proyectos recreativos no excede de cinco mil (5,000) pies cuadrados de conStrucción en área total de ocupación y área bruta de piso y que cumple con las condiciones de ubicación y operación establecidas por la OGPe u otra agencia con jurisdicción, según sean aplicables.

7. El uso de edificios o estructuras existentes para facilidades comerciales, almacenes y usos industriales o de servicios no excederán de cien mil (100,000) pies cuadrados en área total de ocupación y área bruta de piso. Dicha operación deberá cumplir con las condiciones de ubicación y operación establecidas por la OGPe u otra agencia con jurisdicción, según sean aplicables, y las establecidas para las exclusiones categóricas en este Reglamento.

8. Para la ejecución o desarrollo de las acciones aprobadas como exclusiones categóricas, se requerirá la obtención de los permisos aplicables de las agencias gubernamentales para las etapas de construcción y operación.

9. La acción no ha sido fragmentada o segmentada para fines de la evaluación y será determinación de la agencia proponente si la misma satisface o no los requisitos para ser considerada y ejecutada bajo una exclusión categórica.

10. Que ha cumplido con el requisito de publicación de un Aviso Público de conformidad con la Regla 122 del Reglamento de Evaluación y Trámite de Documentos Ambientales de la JCA, en el caso que la acción propuesta esté relacionada al uso u otorgamiento de fondos federales que requieran un proceso de evaluación parecido al de NEPA (NEPA-Like Process).

Aviso

Si luego de haberse aquí dado cumplimiento con el Artículo 4(B) de la Ley Núm. 416 surgieran variaciones sustanciales en la acción propuesta que requieran la evaluación a los impactos ambientales, habrá que presentar el correspondiente documento ambiental, de conformidad con la Ley sobre Política Pública Ambiental.

Condiciones Especiales

NINGUNA

Firma / Sellos

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Certificación de Cumplimiento Ambiental por Exclusión Categórica

Fecha de Expedición:
26/JUN/2019



Arq. María R. Cintrón Flores

Secretaria Auxiliar de la OGPe, DDEC

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

ASSISTANT ADMINISTRATOR
FOR ENFORCEMENT AND
COMPLIANCE ASSURANCE

May 18, 2020

Adam Kushner
Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, D.C. 20004

RE: Extension of Earthquake-Related No Action Assurances for the Puerto Rico Electric Power Authority (PREPA)

Dear Mr. Kushner,

This letter is in response to your April 29, 2020 request, on behalf of the Puerto Rico Electric Power Authority (PREPA), to extend the majority of two of the three No Action Assurances (NAAs) previously issued to PREPA following the recent earthquakes in Puerto Rico. These two NAAs are as follows:

(1) Fuel Consumption and Analysis NAA *(issued January 31, 2020)*: relates to specified fuel consumption, fuel quality, and fuel quality analysis requirements at certain gas turbines; and
(2) Mercury and Air Toxics Standards (MATS) NAA *(issued February 13, 2020)*: relates to specified violations of MATS requirements at certain electric generating units.

The two NAAs are included here as Attachments A and B to this letter, respectively.[1]

More specifically, regarding the Fuel Consumption and Analysis NAA, PREPA is seeking to 1) extend the fuel consumption limits portion of the NAA and 2) expand its request to cover two additional units (Aguirre GT 2-2 and Vega Baja GT 1-2) that have come back online since the last NAA was issued. Regarding the MATS NAA, PREPA is seeking to extend all of the NAA except for the limited-use limit for San Juan Unit 8, MATS performance testing requirements, and certain MATS work practice standards. Further, PREPA is asking for an NAA for regulatory reporting requirements at Costa Sur due to what it describes as limited and restricted access to the site for safety reasons.

Beginning with earthquakes registering 4.7 and 5.0 on the Richter scale around December 28, 2019, Puerto Rico experienced multiple earthquakes and aftershocks causing extreme damage to its power

[1] Note that neither of these initial NAAs, nor the extension being granted today, applies or applied to requirements under the existing 1999 consent decree, amended in 2004, in *United States of America et al., v. Puerto Rico Electric Power Authority*, Civil Action No. 93-2527 CCC (D.P.R.). The NAAs relate to the specified Clean Air Act regulatory requirements only.

grid, with the largest earthquake being a 6.4 magnitude earthquake on January 7, 2020. Specifically, the earthquakes rendered the Costa Sur power station, a critical baseload station, inoperable. On January 7, 2020, the Governor of Puerto Rico signed an Executive Order decreeing a state of emergency throughout Puerto Rico; on January 16, 2020, the President signed a major disaster declaration for Puerto Rico.

The U.S. Environmental Protection Agency had previously determined that issuance of these NAAs was necessary to enable PREPA to supply electricity to residential and business customers; today, the EPA is determining that an extension of these two NAAs is necessary to continue to allow PREPA to address earthquake-related impacts. The EPA has thus determined that extending the requested portions of the two No Action Assurances, attached, is in the public interest given the conditions in Puerto Rico. The EPA has also determined that the addition to the NAA of relief regarding fuel consumption limits for two gas turbines and the following Costa Sur reporting requirements is also in the public interest given the conditions in Puerto Rico:

- CAA Title V reporting for Costa Sur:
    - Heat Input and Excess Emissions Report for 2nd Semester 2019 and 1st Semester 2020 (information for the period of January 1 to January 7, 2020)
    - Yearly Emergency Generators Report 2019
- MATS regulatory reporting requirements for Costa Sur:
    - 2019 Second Half Semiannual Report
    - 2019 4th Quarter Report
    - 2020 1st Quarter Report (information for the period of January 1 to January 7, 2020).

Through the issuance of this NAA extension, the EPA is continuing its commitment to address the very difficult circumstances caused by recent earthquakes.

The portions of the two NAAs extended by today's action, and the new additions to the NAA, are those that are listed in the table included at Attachment C to this NAA. Pursuant to this NAA extension, the EPA will not enforce violations of the requirements specified in Attachment C, for the period of this NAA extension. Nothing in this exercise of enforcement discretion relieves any person of the obligation under law, if any, to report emissions from the operation of equipment covered by this action.

The units subject to this NAA extension continue to be subject to the relevant conditions outlined in the two initial NAAs. Further, as a condition of this NAA extension, for all units subject to the initial Fuel NAA or the initial MATS NAA, PREPA must submit the complete final report for the term of the relevant initial NAA by the date indicated in that NAA. If Costa Sur Unit 5 and/or Aguirre Unit 2 become available to generate electricity prior to the termination date for this NAA, PREPA must provide EPA notice within 3 days of Costa Sur Unit 5 and/or Aguirre Unit 2 becoming operational. Aguirre GT 2-2 and Vega Baja GT 1-2 shall be subject to the relevant conditions in the initial Fuel Consumption and Analysis NAA. Costa Sur shall be subject to the following conditions:

1. PREPA shall continue to meet all reporting obligations that it is able to meet without entering areas of the Costa Sur facility deemed unsafe. This includes accessing record copies (backup or otherwise) not contained in areas deemed unsafe. This also includes submitting partial reports where some but not all necessary information is available.

2. As accessing the relevant information becomes safe, PREPA shall inform EPA within 10 days and shall make all efforts to expeditiously meet all reporting requirements.
3. PREPA shall comply with all recordkeeping requirements for the Costa Sur facility for facility operations on or after Jan. 8, 2020.

PREPA must submit a report to the EPA within thirty (30) days of the termination of the NAA extension containing the following information for the term of the NAA extension:

1. The name, address, and contact information for the person submitting the report;
2. Regarding the units covered by the initial Fuel Consumption and Analysis NAA, as well as Aguirre GT 2-2 and Vega Baja GT 1-2:
    a. A description of the amount of fuel used for each covered Generating Unit during the period this NAA is in effect;
    b. A description of how the energy was used, including any benefits provided to the public; and
    c. A description of any instances in which fuel quality analysis results received after PREPA began burning newly-received fuel indicated that the fuel was not compliant.
3. Regarding the units covered by the initial MATS NAA:
    a. For each of the two (2) electric generating units identified as limited use and covered by both the NAA and the NAA extension (San Juan Unit 7, Palo Seco Unit 1), the hours operated, the fuel burned, and calculations of the excess emissions generated;
    b. For each of the five (5) electric generating units covered by this NAA (San Juan Unit 9, Palo Seco Unit 3, Palo Seco Unit 4, Aguirre Unit 1, and Aguirre Unit 2), a calculation of the total emissions during the period of the NAA; and
    c. A description of how the energy was used, including any benefits provided to the public.
4. Regarding Costa Sur:
    a. A list of all reporting requirements that PREPA was unable to meet due to safety concerns, including the specific reports or portions of reports that were not submitted, a description of the specific information that was inaccessible, and the specific safety issue that made it inaccessible (including the duration of the safety issue).

The report referenced above must be sent by email to Gregory Fried at fried.gregory@epa.gov and to Harish Patel at patel.harish@epa.gov. The report must be in portable document format (PDF) and be clearly labeled as "Report for PREPA Generators Operated Pursuant to the No Action Assurance Extension Issued (insert date of issuance of this NAA)." Where the information for these reports is not available due to the emergency circumstances, the EPA would accept instead an explanation of those circumstances and specifically how they prevented the collection or transmission of that information.

This NAA extension is effective as of today and terminates at 11:59 PM Atlantic Standard Time, August 14, 2020 or the date Costa Sur Unit 5 is operational, whichever is earlier. As always, the EPA reserves the right to revoke or modify the NAA extension if the EPA believes that such action is necessary to protect public health and the environment, including but not limited to if EPA's understanding of the factual basis for this NAA extension changes. This NAA does not apply to any other federal requirements that may apply to regulated activities at this facility other than those listed above. EPA will not extend any of the no action assurances provided in this letter beyond August 14, 2020. By August 14, 2020 each of the units addressed herein must be (a) operating in compliance with applicable law; (b)

on an enforceable schedule to come into compliance with applicable law that includes appropriate limits on emissions in the interim; or (c) the subject of an enforceable schedule to come into compliance with applicable law that is awaiting approval by a federal district court (or is rapidly progressing towards such an agreement).

The issuance of an NAA for this period of time is in the public interest. Through today's NAA, the EPA is continuing its commitment to address the very difficult circumstances caused by the recent earthquakes. Nothing in this NAA is intended to over-ride Puerto Rico or local authorities.

Please contact Gregory Fried, Chief, Stationary Source Enforcement Branch, with questions. Mr. Fried can be reached at (202) 564-7016 or fried.gregory@epa.gov.

Sincerely,

Susan Parker Bodine

Enclosure

cc: Peter D. Lopez, Regional Administrator, EPA Region 2

Attachment C

TABLE 1: Clean Air Act Requirements Subject to this NAA Extension

Facility	Unit	Clean Air Act Requirements and Title V Permit Obligations
San Juan	7 (100 MW)	MATS limited-use restrictions specified in the initial MATS NAA.
	9 (100 MW)	MATS particulate matter ("PM") emission limit requirements in Subpart UUUUU specified in the initial MATS NAA.
Costa Sur	5 (410 MW) 6 (410 MW)	The following Clean Air Act Title V reporting obligations: • Heat Input and Excess Emissions Report for 2nd Semester 2019 and 1st Semester 2020 (information for the period of January 1 to January 7, 2020) • Yearly Emergency Generators Report 2019 The following MATS reporting requirements: • 2019 Second Half Semiannual Report • 2019 4th Quarter Report • 2020 1st Quarter Report (information for the period of January 1 to January 7, 2020)
Palo Seco	1 (85 MW)	MATS limited-use restrictions specified in the initial MATS NAA, as well as related Palo Seco Title V Permit requirements.
	3 (216 MW)	MATS PM emission limit and related work practice standard requirements in Subpart UUUUU specified in the initial MATS NAA, as well as related Palo Seco Title V Permit conditions.
	4 (216 MW)	MATS PM emission limit requirements in Subpart UUUUU specified in the initial MATS NAA, as well as related Palo Seco Title V Permit conditions.
Palo Seco GTs	GT 1-1 (21 MW) GT 1-2 (21 MW)	Palo Seco Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Aguirre	1 (450 MW) 2 (450 MW)	MATS PM emission limit and related work practice standard requirements in Subpart UUUUU specified in the initial MATS NAA, as well as related Aguirre Title V Permit conditions.

Facility	Unit	Clean Air Act Requirements and Title V Permit Obligations
Aguirre combined cycle gas turbines ("CCGT")	CCGT 1-1 (50 MW) CCGT 1-2 (50 MW) CCGT 1-3 (50MW) CCGT 1-4 (50 MW) CCGT 2-1 (50 MW) CCGT 2-3 (50 MW) CCGT 2-4 (50 MW)	Aguirre Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Aguirre GT	GT 2-2 (21 MW)*	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel consumption limits (barrels per year) at Conditions V(B) and/or V(B)(d).
Mayaguez	GT-5 (54 MW) GT-6 (54 MW) GT-7 (54 MW) GT-8 (54 MW)	Mayaguez Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Cambalache Peakers	2 (83 MW) 3 (83 MW)	Cambalache Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Daguao Peakers	GT 1-1 (21 MW) GT 1-2 (21 MW)	Daguao Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Yabucoa Peaker	GT 1-1 (21 MW)	Yabucoa Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Jobos Peaker	GT 1-2 (21 MW)	Jobos Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Vega Baja Peaker	GT 1-2 (21 MW)*	Vega Baja Title V permit No. PFE-TV-4911-74-0106-0021 for conditions pertaining to fuel consumption limits (barrels per year) at Conditions V(A)(1) and/or (V)(A)(1)(d).

GOBIERNO DE PUERTO RICO
Departamento de Recursos Naturales y Ambientales

NOV 0 4 2019

Sr. Victor V. De Castro Carlo
Autoridad de Energía Eléctrica
PO Box 364267
San Juan, PR 00936

141-19-0538
Generadores de Electricidad para Emergencias
"Palo Seco Power Plant", PR-870
Toa Baja, Puerto Rico

Estimado señor De Castro:

El Departamento de Recursos Naturales y Ambientales (DRNA) ha recibido la documentación sometida para la instalación y operación de tres (3) generadores de electricidad para emergencias en la facilidad de referencia.

Los tres generadores (1, 2 y 3) son idénticos: marca Caterpillar modelo LC6 con capacidad generación nominal de 400 kW, motor marca Caterpillar, modelo C-13, con capacidad o potencia de 609 HP, operación máxima de 500 horas/año, y razón de consumo de combustible diésel de 28.4 gal/hr. La chimenea (tubo de escape): muflers de 10" de diámetro y altura de 8'-0".

Las tres unidades poseen tanques de combustible diésel de acero doble pared, integrados a los generadores, y con capacidad de 1041 galones cada uno.

La Secretaria Auxiliar de Cumplimiento Ambiental del DRNA (anterior Junta de Calidad Ambiental), amparado en la Regla 141 del Reglamento Núm. 8858 del 23 de noviembre de 2016, conocido como el "Reglamento Para el Proceso de Evaluación Ambiental" ha determinado que la acción propuesta no ocasionará impactos significativos al ambiente. El documento sometido para la acción propuesta cumple con lo requerido en el Artículo 4-B (3) de la Ley sobre Política Pública Ambiental, Ley 416-2004, según enmendada.

No obstante, se le requiere que cumpla con todas las disposiciones de las leyes y reglamentos estatales y federales aplicables, incluyendo las siguientes:

1. Solicitar a través de la Oficina de Gerencia de Permisos (OGPe) los correspondientes permisos conforme al Reglamento Núm. 7308 del 1 de marzo de 2007, conocido como el "Reglamento para el Trámite de Permisos Generales".

NOV 0 4 2019

2. Controlar los olores objetables que puedan afectar la atmósfera comunal.

3. Cumplir con el Reglamento Núm. 8019 del 9 de mayo de 2011, conocido como el "Reglamento para el Control de la Contaminación por Ruido" en lo relacionado al nivel de sonido máximo permitido.

4. Revisar el Plan de Emergencia de la facilidad de referencia de manera que este incluya los tanques sobre tierra para suplir combustible diésel a los generadores, y todos los tanques sobre tierra que se utilicen para almacenar combustible diésel o sustancias químicas; y presentar el mismo ante el Área de Calidad de Agua, reflejando las acciones a tomar para evitar, controlar y remediar derrames de diésel o cualquier otra sustancia química, a tenor con la Regla 1306.5 del Reglamento Núm. 9079 del 26 de abril de 2019, conocido como el "Reglamento de Estándares de Calidad de Agua de Puerto Rico".

Las recomendaciones presentadas en esta comunicación, no eximen de cumplir con cualquier otro requerimiento o permiso del DRNA o de cualquier otra agencia estatal o federal, que sean aplicables a la acción propuesta.

Cordialmente,

PVZ

Tania Vázquez Rivera
Secretaria

ADL/adl

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C., 20460

ASSISTANT ADMINISTRATOR
FOR ENFORCEMENT AND
COMPLIANCE ASSURANCE

JAN 3 1 2020

Adam Kushner
Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, D.C. 20004

RE: No Action Assurance for Puerto Rico Power Authority for Fuel Consumption and Analysis

Dear Mr. Kushner:

This letter is in response to your January 14, 2020, request, on behalf of the Puerto Rico Electric Power Authority (PREPA), for No Action Assurance (NAA) regarding the operation of certain electric generating units operated by PREPA in Puerto Rico. More specifically, this letter responds to that portion of PREPA's request that seeks relief for the fuel consumption limits and fuel quality and quality analysis requirements described below. Beginning on or about December 28, 2019, and continuing through at least January 7, 2020, Puerto Rico has experienced multiple earthquakes and aftershocks that have caused extreme damage to its power grid. Among other things, the earthquakes have rendered the Costa Sur power station, a critical baseload station, inoperable. On January 7, 2020, the Governor of Puerto Rico signed an Executive Order delaring a state of emergency throughout Puerto Rico; on January 16, 2020, the President signed a major disaster declaration for Puerto Rico.

The U.S. Environmental Protection Agency has determined that issuance of this NAA is necessary to enable PREPA to supply electricity to residential and business customers. Because the request for an NAA covers multiple units in varying operating circumstances, after discussions with counsel for PREPA the EPA has determined that the most appropriate way to timely address the requested action is to issue this NAA covering a subset of the units identified in the January 14, 2020 request. To that end, as set forth below, this NAA addresses the generating units identified in Table 1 below for the permit provisions and requirements of law specifically identified in the Table.

The EPA has determined that issuing an NAA, as detailed below, is in the public interest given the conditions in Puerto Rico. Through the issuance of this NAA, the EPA is continuing its commitment to address the very difficult circumstances caused by recent earthquakes.

Nothing in this exercise of enforcement discretion relieves any person of the obligation under law, if any, to report emissions from the operation of equipment covered by this action. Pursuant to this NAA, the EPA will not enforce violations of the following requirements that occur during the period of this NAA:

- The fuel consumption limits identified in Table 1 for the identified Generating Unit; and
- The fuel quality and quality analysis requirements identified in Table 1 for the identified Generating Unit, to the extent that the requirements mandate that the analysis of the fuel sample must be completed prior to firing of the fuel in the Generating Unit.

This NAA is subject to the following conditions:

1. Fuel consumption limits: Once the NAA terminates, in calculating the 365-day rolling total fuel consumption, PREPA may exclude fuel consumption data from days it operated pursuant to this NAA and instead calculate the 365-day rolling total fuel consumption by including 365 days of fuel consumption data from consecutive days immediately prior to the effective date and immediately after the termination date of this NAA, but excluding each day that PREPA operated a covered Generating Unit pursuant to this NAA. PREPA must, however, also provide the Puerto Rico Department of Natural and Environmental Resources with the 365-day rolling total fuel consumption calculation using the total fuel consumption data during the time it operated pursuant to this NAA;
2. Fuel quality and quality analysis: Where results of the fuel quality analysis are not available prior to the need to burn the fuel, PREPA will rely on bulk analysis documentation from the fuel supplier regarding the content of the fuel to show that the fuel is compliant with the required standard. PREPA will also not blend the newly received fuel with other fuel not known to be compliant prior to receipt of its own fuel quality analysis results. In the event PREPA becomes aware that it is burning noncompliant fuel, through receiving lab results or otherwise, PREPA will notify the EPA immediately and timely take any actions required by EPA to address the noncompliant fuel;
3. To the best of its ability, while the NAA is in effect PREPA will report on fuel consumption for the 365 days prior to this NAA in accordance with any reporting requirement in an applicable permit or regulation;
4. PREPA informs the EPA within 48 hours that it has obtained sufficient generation from units compliant with the Clean Air Act and all applicable permits to allow discontinuation of operation of covered Generating Units under this NAA; and
5. PREPA complies with all conditions imposed by territory or local authorities on these emergency operations.

PREPA must submit a report to the EPA within thirty (30) days of the termination of the NAA containing the following information:

1. The name, address, and contact information for the person submitting the report;
2. A description of the amount of fuel used for each covered Generating Unit during the period this NAA is in effect;
3. A description of how the energy was used, including any benefits provided to the public; and
4. A description of any instances in which fuel quality analysis results received after PREPA began burning newly-received fuel indicated that the fuel was not compliant.

The report referenced above must be sent by email to Gregory Fried, Chief, Stationary Source Enforcement Branch, within EPA's Air Enforcement Division, at fried.gregory@epa.gov. The report

must be in portable document format (PDF) and be clearly labeled as "Report for PREPA Generators Operated Pursuant to the No Action Assurance First Issued (insert date of issuance of this NAA)." Where the information for these reports is not available due to the emergency circumstances, the EPA would accept instead an explanation of those circumstances and specifically how they prevented the collection or transmission of that information.

This NAA terminates at 11:59 PM Atlantic Standard Time, April 30, 2020. The EPA will assess whether an extension to or revision of this NAA is necessary and appropriate. The EPA reserves the right to revoke or modify the NAA if the EPA believes that such action is necessary to protect public health and the environment. This NAA does not apply to any other federal requirements that may apply to regulated activities at this facility other than those listed above. The EPA intends to use the period of the NAA to evaluate the appropriate longer-term approach for addressing this situation.

The issuance of an NAA for this period of time is in the public interest. Through today's NAA, the EPA is continuing its commitment to address the very difficult circumstances caused by the recent earthquakes. Nothing in this NAA is intended to over-ride Puerto Rico or local authorities.

Please contact Gregory Fried, Chief, Stationary Source Enforcement Branch, with questions. Mr. Fried can be reached at (202) 564-7016 or fried.gregory@epa.gov.

Sincerely,

Susan Parker Bodine

cc: Peter D. Lopez, Regional Administrator, EPA Region 2

TABLE 1: Covered Generating Units and Associated Clean Air Act Permit Requirements

Facility	Generating Unit	Clean Air Act Permit Requirements
Palo Seco	GT 1-1 (21MW)	Palo Seco Title V permit No. PFE-TV-4911-70-1196-0015 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B) and V(B)(c)–(d).
Palo Seco	GT 1-2 (21MW)	Palo Seco Title V permit No. PFE-TV-4911-70-1196-0015 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B) and V(B)(c)–(d).
Palo Seco	GT 3-1 (21MW)	Palo Seco Title V permit No. PFE-TV-4911-70-1196-0015 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B) and V(B)(c)–(d).
Aguirre	Combined cycle gas turbine "CCGT" 1-1 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Aguirre	CCGT 1-2 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Aguirre	CCGT 1-3 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Aguirre	CCGT 1-4 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Aguirre	CCGT 2-1 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B),

Facility	Generating Unit	Clean Air Act Permit Requirements
		V(B)(c)–(d), and V(C).
Aguirre	CCGT 2-3 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Aguirre	CCGT 2-4 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Mayaguez	GT-5 (54MW)	Mayaguez construction permit no. PFE-50-0307-0286-I-II-C for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions II; and III(A)(31)–(33) and (37).
Mayaguez	GT-6 (54MW)	Mayaguez construction permit no. PFE-50-0307-0286-I-II-C for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions II; and III(A)(31)–(33) and (37).
Mayaguez	GT-7 (54MW)	Mayaguez construction permit no. PFE-50-0307-0286-I-II-C for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions II; and III(A)(31)–(33) and (37).
Mayaguez	GT-8 (54MW)	Mayaguez construction permit no. PFE-50-0307-0286-I-II-C for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions II; and III(A)(31)–(33) and (37).
Cambalache Peakers	2 (83MW)	Cambalache PSD Permit Modification for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Attachment I (general description); and Attachment II, Conditions VII(1), (2), (5), and X.
Cambalache Peakers	3 (83MW)	Cambalache PSD Permit Modification for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Attachment I (general description); and Attachment II, Conditions VII(1), (2), (5), and X.

Facility	Generating Unit	Clean Air Act Permit Requirements
Daguao Peakers	GT 1-1 (21MW)	Daguao Title V permit No. PFE-TV-4911-63-0212-0447 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(A)(1) and V(A)(1)(c)–(d).
Daguao Peakers	GT 1-2 (21MW)	Daguao Title V permit No. PFE-TV-4911-63-0212-0447 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(A)(1) and V(A)(1)(c)–(d).
Yabucoa Peakers	GT 1-1 (21MW)	Yabucoa Title V permit No. PFE-TV-4911-77-0707-0759 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(A)(1) and V(A)(1)(c)–(d).
Jobos Peakers	GT 1-2 (21MW)	Jobos Title V permit No. PFE-TV-4911-30-1107-0991 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(A)(1) and V(A)(1)(c)–(d).

CN 078-04495
Rev. 11/17

GOVERNMENT OF PUERTO RICO
Puerto Rico Electric Power Authority

December 17, 2019

Eng. Luis R. Sierra Torres, Chief
Inspection and Compliance Division
Acting Director, Air Quality Area
Department of Natural and Environmental Resources
PO Box 11488
San Juan, Puerto Rico 00910

Subject: Permit to Construct Application for Proposed Peaking Combustion Turbines to Replace Existing Units PSGT 2-2, 3-1, and 3-2 at our Palo Seco Plant

Dear engineer Sierra:

The Puerto Rico Electric Power Authority (PREPA) presents the New Source Review (NSR) applicability analysis and Construction Permit Application (See Appendix A) to replace combustion turbine units PSGT 2-2, 3-1, and 3-2 at the Palo Seco Power Plant (Central Palo Seco or the plant) with PW Power Systems (PWPS) model FT8® MOBILEPAC dual fuel combustion turbines ("project "). The proposed dual fuel combustion turbines will initially fire distillate oil as the sole fuel. When natural gas becomes available, it is expected that natural gas will be the primary fuel with backup firing of distillate oil. The project will also include the installation of three black start generators (BSGs) engines to support startup of the new combustion turbines during periods when the transmission system is down. As described below, the project will not result in a significant increase of any pollutant regulated under the NSR Program of the Environmental Protection Agency of the United States (EPA). Therefore, the project is not subject to NSR permitting requirements.

The project is a crucial component of PREPA's plan to transition its generation fleet to cleaner fuels, including natural gas. This transition is expected to have significant environmental and economic benefits for Puerto Rico. Among other things, this project: a) will improve the profile of the total emissions of the Central Palo Seco plant, b) will result in significant cost savings for our customers due to the projected lower price of natural gas as compared to oil as well as the higher efficiency of the new turbines; and c) improve the reliability of the System. The Project is vital, especially in the recovery of Puerto Rico after the devastation caused by recent hurricanes, to improve reliability and PREPA fleet diversity. In advance, PREPA appreciates the continued support that the Department of Natural and Environmental Resources (DNER/EQB) has always given us and whoever will provide us support during this transition.

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."

Introduction

PREPA plans to replace combustion turbine units PSGT 2-2, 3-1, and 3-2 at Central Palo Seco with PWPS model FT8® MOBILEPAC dual fuel combustion turbines. The proposed dual fuel combustion turbines will fire distillate oil and natural gas when it becomes available. The BSGs will be fired solely with ultra-low sulfur distillate oil (ULSD). The fuel conversion project is necessary to ensure reliable energy to Puerto Rico. PREPA applied to EQB requesting an Emergency Waiver for the Installation of (3) Combustion Turbines at Palo Seco under PRCCAP Rule 302, EQB granted this request on October 24, 2019.

The NSR regulations do not require projects that involve only simple cycle combustion turbines (i.e. electric generating units that do not use steam) and net out of PSD to provide the EPA with the netting analysis prior to construction. In accordance with 40 CFR §52.21(r)(6)(ii) as a modification of an existing major NSR source, PREPA must develop the following information prior to beginning construction of the project: a description of the project; identification of the emission unit(s), whose contaminant regulated by the NSR may be affected for the project; and a description of the applicability test used to determine that the project is not a major modification for any regulated pollutant of the NSR, including current reference emissions (Baseline), current emissions projected, the amount of emissions excluded and an explanation why such amount, and net verification calculations, if applicable. This application provides PREPA's analysis in compliance with the NSR regulations for the proposed project and was prepared and submitted to the DNER/EQB in accordance with Rule 203 of the Regulations for the Control of Atmospheric Pollution of the EQB (RCAP) and 40 CFR §52.21(r)(6)(i).

As described below, PREPA determined that the project will not result in a significant increase in emissions above current baseline emissions for any regulated pollutant of the NSR. This analysis was performed in accordance with the applicability test provisions pursuant to 40 CFR §52.21(a)(2)(iv)(d) for projects that only involve construction of new emissions units. This test compares the potential emissions from the proposed new emission units to the baseline actual emissions. For this analysis, PREPA has proposed enforceable emission limits on the new PWPS model FT8® MOBILEPAC combustion turbines and the BSGs. In addition to the proposed new combustion turbines and BSGs, the project will include new natural gas handling infrastructure at the facility. Potential fugitive natural gas emissions from the new natural gas handling infrastructure were also estimated. Fugitive natural gas emissions will include methane as greenhouse gases (GHGs) with small amounts of volatile organic compounds (VOCs).

Natural gas will be provided by pipeline from a proposed fuel management facility in the metropolitan area. The fuel management facility will be owned and operated by a separate entity and PREPA will not have any ownership or control of this facility. The fuel management facility will not be part of the Palo Seco Power Plant and therefore is not considered part of the project according to 40 CFR §52.21(b)(6)(i).

PREPA's analysis of applicability demonstrates that the project will not result in a significant increase in the emissions of any NSR regulated contaminant. So, it is not necessary for PREPA to obtain a permit under the NSR program. The technical evaluation was carried out by environmental consultants of PREPA and these are available to answer any questions that the DNER/EQB.

Project Description

The plant includes four (4) boilers with No. 6 oil burning and steam turbines (Units 1-4) and six (6) simple cycle combustion turbines firing No. 2 oil (Units PSGT 1-1, 1-2, 2-1, 2-2, 3-1, and 3-2). Each simple cycle combustion turbine is rated at 301.5 million British Thermal Units per hour (MMBtu/hr) with an output per unit of approximately 21 megawatts (MW). The project includes replacing simple cycle combustion turbine Units PSGT 2-2, 3-1, and 3-2 with three new PWPS model FT8® MOBILEPAC combustion turbines and the three BSGs. The proposed PWPS model FT8® MOBILEPAC combustion turbines will be rated at 294.8 MMBtu/hr firing natural gas and 283.3 MMBtu/hr firing distillate oil with an output per unit of approximately 27.9 MW. The proposed BSGs will be Caterpillar Model C13 emergency generator engines; the engines will be rated at 609 brake-horsepower (bhp) powering an electric generator rated at 400 kilowatts (kW).

In addition to the new combustion turbines and BSGs, new systems will be necessary for support of the project including natural gas supply infrastructure on site. The natural gas supply infrastructure will include pipes and their supports, pressure control systems, interconnections in the plant, and a measurement system. The three new combustion turbines will be equipped with independent natural gas meters for continuous monitoring and recording of natural gas consumption.

The existing boilers and combustion turbines were commissioned between 1960 and 1973, prior to the promulgation of the prevention significant deterioration (PSD) program, and therefore were not subject to PSD permitting. However, based upon the potential emissions from the existing emission sources, the plant is an existing major source under the (PSD) program for emissions of nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM), PM with a diameter equal to or less than 10 micrometers (PM_{10}), PM with a diameter equal to or less than 2.5 micrometers ($PM_{2.5}$), VOCs, GHGs and sulfuric acid mist (H_2SO_4). Therefore, any modifications at the facility, including modifications to existing emission units or installation of new emission units, must be evaluated against the applicable PSD significance thresholds for each PSD regulated pollutant.

The project includes installation of new emission units and therefore, an evaluation is required to determine if the project meets the requirements of a "major modification" as defined under 40 CFR §52.21(b)(2)(i). The project will be considered a major modification if it results in a significant emissions increase (as defined in 40 CFR §52.21(b)(40)) of a regulated NSR pollutant and a significant net emissions increase of that pollutant (as defined in 40 CFR §52.21(b)(3)(i)). The project will result in a significant emissions increase if the combined potential emissions of the new combustion turbines, BSGs, and the natural gas handling equipment exceeds a PSD significance threshold for one or more pollutants. Net emissions are defined in 40 CFR §52.21(b)(3)(i) and include the increase in emissions from the proposed new emission sources and any other creditable

increase and reduction in emissions at the plant that is contemporaneous with the project. In accordance with 40 CFR §52.21(a)(2)(iv)(a), the project will be a major modification if it causes two types of emissions increases, a significant emissions increase (as defined in 40 CFR §52.21 (b)(40)), and a significant net emissions increase (as defined in 40 CFR §52.21(b)(3) and 40 CFR §52.21(b)(23)).

The project will include only new emission sources. Therefore, the significant emissions increase (as defined in 40 CFR §52.21(b)(40)) evaluation was carried out according to 40 CFR §52.21(a)(2)(iv)(d), which includes an actual-to-potential test for projects that only involve construction of a new emissions units. The significant net emissions increase (as defined in §52.21(b)(3) and §52.21(b)(23)) evaluation includes the potential emissions increase from the proposed new emission sources minus the creditable reduction in actual emissions from the shutdown of Units PSGT 2-2, 3-1, and 3-2. As detailed below, the results of this applicability test show that there will be a significant increase in emissions but not a significant net emissions increase of a regulated pollutant by the NSR as a result of the project. Therefore, the proposed project does not trigger PSD permitting.

Significant Increase in Emissions Test

In accordance with 40 CFR §52.21(a)(2)(iv)(d), for projects that only include new emission units, a significant emissions increase of a regulated NSR pollutant occurs if the sum of the difference between the potential to emit (as defined in 40 CFR §52.21(b)(4)) from each new emissions unit following completion of the project, and the baseline actual emissions (as defined in 40 CFR §52.21(b)(48)(iii)) of these units before the project, equals or exceeds the significant amount for that pollutant (as defined in 40 CFR §52.21(b)(23)). As defined under 40 CFR §52.21(b)(48)(iii), the baseline emissions of the new emission units shall equal zero. Therefore, the increase in emissions will be equal to the potential emissions of the new emission units, which includes the three proposed combustion turbines, three BSGs, and onsite natural gas handling equipment.

Pursuant to 40 CFR §52.21(b)(4), potential to emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit. Pursuant to 40 CFR §52.21(b)(18), secondary emissions include emissions from any offsite support facility which would not be constructed or increase its emissions except as a result of the construction or operation of the major stationary source or major modification. Secondary emissions also do not include emissions from a mobile source.

Provided in Table 1 is a summary of the potential emissions from the proposed new emission sources versus the applicable PSD significance thresholds. Emissions of NO_x, PM, PM_{10}, $PM_{2.5}$, VOC and CO from the proposed combustion turbines and BSGs are based upon vendor performance emissions data. Emissions of SO_2 are based upon the maximum sulfur content of the fuels, which will be 5 grains per 100 cubic feet of natural gas and 0.05 percent for distillate oil.

H_2SO_4 emissions are based upon 10 percent conversion of SO_2 to H_2SO_4. Emissions of GHGs are based upon the emission factors in 40 CFR §98, Subpart A, Table A-1 and 40 CFR §98, Subpart C, Tables C-1 and C-2.

PREPA is proposing to assume federally enforceable limits on emissions from the combustion turbines to meet the requirements of 40 CFR §52.21(b)(4). PREPA is proposing to quantify emissions each day from the combustion turbines and calculate rolling 365-day emissions to document that the emissions are below the proposed caps. Each BSG will be limited to no more than 500 hours per year.

The natural gas supply infrastructure will be a new source of emissions from the plant with fugitive natural gas emissions from the connections, valves, meters, and other system components. These emissions will be composed of methane (as GHGs) with a small amount of VOCs. An estimate of potential fugitive emissions was conducted based on EPA emission factors from the "*Protocol for Emission Estimates in Equipment Leaks*" (November 1995) and the inventory of components in the diagram of pipe and instrumentation for natural gas supply infrastructure. The potential fugitive emissions are based upon 8,760 hours per year. This analysis results in possible VOC emissions of less than 1 tpy as documented in Appendix B.

Table 1: Significant Increase in Emissions Test

Pollutant	Combustion Turbine Potential (tpy)	BSGs Potential (tpy)	Natural Gas Handling Potential (tpy)	Project Total Potential (tpy)	PSD Significance Threshold (tpy)
NO_x	191.34	4.92	0	196.4	40
PM	19.57	0.13	0	19.7	25
PM_{10}	19.57	0.13	0	19.7	15
$PM_{2.5}$	19.57	0.13	0	19.7	10
CO	99.45	2.29	0	101.7	100
VOC	7.85	0.14	0.55	8.54	40
SO_2	55.82	0.004	0	55.8	40
H_2SO_4	8.55	0.001	0	8.55	7
GHGs (as CO_2e)	180,889	481	124	181,494	75,000

Table 1 shows that the project will result in a significant increase in emissions of NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, H_2SO_4, and GHGs as defined in §52.21(b)(40). Therefore, an evaluation must be conducted for these pollutants to determine if there will be a significant net emissions increase as defined in 40 CFR §52.21(b)(3) and §52.21(b)(23). There will not be a significant increase in emissions of PM and VOC and therefore a net emissions increase evaluation is not required for these pollutants.

Significant Net Increase in Emissions Test

An evaluation of the net emissions increases of the project, as defined in 40 CFR §52.21(b)(3), was conducted to determine if the net emissions increase would be significant for one or more of the pollutants determined to have a significant increase in emissions in the first step. Pursuant to 40 CFR §52.21(b)(3)(i), net emissions increase means the amount by which the sum of the following exceeds zero:

a) The increase in emissions from a particular physical change or change in the method of operation at a stationary source as calculated pursuant to paragraph 40 CFR §52.21(a)(2)(iv); and

b) Any other increases and decreases in actual emissions at the major stationary source that are contemporaneous with the particular change and are otherwise creditable. Baseline actual emissions for calculating increases and decreases shall be determined as provided in paragraph 40 CFR §52.21(b)(48), except that paragraphs 40 CFR §52.21(b)(48)(i)(*c*) and (b)(48)(ii)(*d*) shall not apply.

The increase in emissions for 40 CFR §52.21(b)(3)(i)(a) is equal to the project total potential emissions presented in Table 1. Pursuant to 40 CFR §52.21(b)(3)(ii), an increase or decrease in actual emissions is contemporaneous only if it occurs between the date five years before construction on the project and the date that the increase from the project occurs. There are no contemporaneous increases in emissions at the plant to be accounted for in the net emissions increase analysis. There will be a contemporaneous reduction in actual emissions resulting from the shutdown of units PSGT 2-2, 3-1, and 3-2. Pursuant to 40 CFR §52.21(b)(3)(vi), the contemporaneous reduction in actual emissions resulting from the shutdown of units PSGT 2-2, 3-1, and 3-2 is creditable only to the extent that:

a. The old level of actual emissions or the old level of allowable emissions, whichever is lower, exceeds the new level of actual emissions;

b. It is enforceable as a practical matter at and after the time that actual construction on the particular change begins; and

c. It has approximately the same qualitative significance for public health and welfare as that attributed to the increase from the particular change.

The contemporaneous reduction in actual emissions resulting from the shutdown of units PSGT 2-2, 3-1, and 3-2 is creditable as it meets all of the criteria:

a. Units PSGT 2-2, 3-1, and 3-2 will be shut down and therefore the new level of actual emissions after the project will be zero;

b. The reduction in emissions from units PSGT 2-2, 3-1, and 3-2 will be enforceable at and after the time that actual construction on the proposed project begins; and

c. The reduction in emissions will occur at the same facility and from the same type of stationary source and therefore, will have approximately the same qualitative significance for public health and welfare as that attributed to the increase from the project.

As the reduction in emissions from the shutdown of units PSGT 2-2, 3-1, and 3-2 is both contemporaneous and creditable, this reduction can be accounted for in the net emissions increase analysis for the project.

Baseline Emissions of PSGT 2-2, 3-1, and 3-2

The reduction in emissions is equal to the baseline actual emissions of units PSGT 2-2, 3-1, and 3-2 as determined in accordance with 40 CFR §52.21(b)(48), except that paragraphs 40 CFR §52.21(b)(48)(i)(*c*) and (b)(48)(ii)(*d*) shall not apply. Units PSGT 2-2, 3-1, and 3-2 are not electric utility steam generating units and therefore, in accordance with 40 CFR §52.21(b)(48)(ii), baseline emissions means the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 10-year period immediately preceding either the start of construction of the project or the date a complete permit application is received by the Administrator for a permit required under this section or by the reviewing authority for a permit required by a plan, whichever is earlier. Therefore, the applicable baseline period is any consecutive 24-month period within 10-years from the filing of this complete application.

Pursuant to 40 CFR §52.21(b)(48)(ii)(*a*) through (*c*), the baseline emissions shall account for the following:

(a) Shall include fugitive emissions to the extent quantifiable, and emissions associated with startups, shutdowns, and malfunctions.

(b) Shall be adjusted downward to exclude any non-compliant emissions that occurred while the source was operating above an emission limitation that was legally enforceable during the consecutive 24-month period.

(c) Shall be adjusted downward to exclude any emissions that would have exceeded an emission limitation with which the major stationary source must currently comply, had such major stationary source been required to comply with such limitations during the consecutive 24-month period.

There are no fugitive emissions from units PSGT 2-2, 3-1, and 3-2 and emissions associated with startups, shutdowns, and malfunctions are not quantifiable. Units PSGT 2-2, 3-1, and 3-2 do not have any emission limitations for NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, H_2SO_4, and GHGs. Therefore, the baseline emissions do not need to be adjusted in any manner to address 40 CFR §52.21(b)(48)(ii)(*a*) through (*c*).

Baseline emissions from units PSGT 2-2, 3-1, and 3-2 were determined from the monthly fuel oil throughput and fuel oil sulfur content. The combustion turbines are not equipped with a continuous emissions monitoring systems (CEMS) and no stack emission tests have been performed on the units.

Emissions of NO_x, PM_{10}, $PM_{2.5}$, and CO were estimated in accordance with EPA's Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources, Chapter 3.1 (AP-42 3.1) and the recorded monthly fuel throughput. It was assumed that all PM was $PM_{2.5}$ and therefore baseline PM_{10} emissions are the same as $PM_{2.5}$. SO_2 emissions were quantified by mass balance from the monthly fuel throughput and sulfur content assuming that 100 percent of the sulfur was oxidized to SO_2. H_2SO_4 emissions are based upon 10 percent conversion of SO_2 to H_2SO_4. Emissions of GHGs are based upon the global warming potentials and emission factors in 40 CFR §98, Subpart A, Table A-1 and 40 CFR §98, Subpart C, Tables C-1 and C-2. Detailed emission calculations are provided in Appendix B including potential emission estimates for Hazardous Air Pollutants (HAP's).

From the information provided in Appendix B, PREPA selected a 24-month period consecutive from May 2016 through April 2018 for all pollutants, which is well within the 10-year period preceding the submittal of this application. The calculated baseline emissions of NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, H_2SO_4, and GHGs for units PSGT 2-2, 3-1, and 3-2 are provided in Table 2 and documented in the Appendix B.

Table 2: Baseline Actual Emissions for Units PSGT 2-2, 3-1, and 3-2

Pollutant	Baseline Actual Emissions (tpy)	24-Month Consecutive Period
NO_x	718.4	May 2016 through April 2018
$PM_{10}/PM_{2.5}$	9.8	May 2016 through April 2018
CO	2.7	May 2016 through April 2018
SO_2	19.8	May 2016 through April 2018
H_2SO_4	3.04	May 2016 through April 2018
GHGs (as CO_2e)	133,596	May 2016 through April 2018

The baseline emissions presented in Table 2 will be creditable and contemporaneous reductions in emissions with the project.

Net Emissions Increase

Table 3: Significant Net Increase In Emissions Test

Pollutant	Project Total Potential (tpy)	Reduction In Emissions (tpy)	Project Net Increase in Emissions (tpy)	PSD Significance Threshold (tpy)
NO_x	196.3	718.4	-522.1	40
PM_{10}	19.7	9.8	9.9	15
$PM_{2.5}$	19.7	9.8	9.9	10
CO	101.7	2.7	99.0	100
SO_2	55.8	19.8	36.0	40
H_2SO_4	8.55	3.04	5.51	7
GHGs (as CO_2e)	181,494	133,596	47,898	75,000

The net emissions increase summary in Table 3 demonstrates that the project will not result in a significant net increase in emissions of NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, H_2SO_4, or GHGs.

NSR Applicability Conclusion

The project constitutes a modification of an existing major NSR source. In accordance with 40 CFR §52.21(a)(2)(iv)(a), the project would be a major modification if it causes two types of emissions increases, a significant emissions increase (as defined in 40 CFR §52.21 (b)(40)), and a significant net emissions increase (as defined in 40 CFR §52.21(b)(3) and 40 CFR §52.21(b)(23)). As the project will only include new emission sources, an emissions increase evaluation was carried in accordance with 40 CFR §52.21(a)(2)(iv)(d), which is an actual-to-potential test. The emissions increase evaluation showed that there would be a significant increase in emissions of NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, and GHGs but not for PM, VOC, and H_2SO_4. A net increase in emissions evaluation was then performed for NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, and GHGs. The net increase in emissions evaluation included the creditable contemporaneous reduction in emissions that will occur due to the shutdown of units PSGT 2-2, 3-1, and 3-2. The net increase in emissions evaluation demonstrated that there will not be a significant net increase in emissions of NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, and GHGs. Therefore, the project will not result in a significant emissions increase and a significant net emissions increase for any NSR regulated pollutant and therefore NSR permitting is not triggered.

DNER / EQB Construction Permit Process and Proposed Federally Enforceable Emissions

PREPA is submitting this application to obtain a permit to construct for the three proposed combustion turbines and BSGs. The Increase in Emissions and Net increase in Emissions tests provided above are based upon emission limitations for the proposed new combustion turbines and a limit on operating hours for the BSGs. PREPA is proposing to make these operating and emission limitations federally enforceable in the construction permit to satisfy the requirements of 40 CFR §52.21(b)(4).

As part of this permitting process, PREPA requests that the DNER / EQB impose annual mass-based emission limits for NO_x, CO, VOCs, SO_2, H_2SO_4, PM, PM_{10}, $PM_{2.5}$ on the three new peaking turbines in the permit. Table 4 summarizes the proposed annual emission limits for the peaking turbines.

Table 4: Proposed Emission Limits On Peaking Turbines

Pollutant	Combustion Turbine Potential (tpy)
NO_x	191.3
PM	19.57
PM_{10}	19.57
$PM_{2.5}$	19.57
CO	99.45
VOC	7.85
SO_2	55.8
H_2SO_4	8.55
GHGs	180,889

The operating hours for each BSG will be limited to no more than 500 hours per rolling 12-month period, which will limit their emissions to the level presented in Table 1. The proposed limits presented in Table 4 are for all three turbines combined and based upon fuel heat contents of 1,020 Btu per cubic foot of natural gas and 138,000 Btu per gallon of distillate oil.

Regulatory Applicability Analysis and Compliance Evaluation

In accordance with RCAP Rule 203(B)(1), the source shall be able to comply with all applicable rules and regulations. Following is a review of applicable EPA and EQB regulations that may be applicable to the proposed combustion turbines.

40 CFR 60 – New Source Performance Standard (NSPS) Subpart KKKK – Stationary Gas Turbines

NSPS Subpart KKKK is applicable to stationary gas turbines with a rated heat input greater than 10 MMBtu/hr that commenced construction, reconstruction, or modification after February 18, 2005. The proposed combustion turbines will be subject to NSPS Subpart KKKK.

NSPS Subpart KKKK imposes limits on emissions of NO_x and SO_2. The applicable emission limits for combustion turbines with a rated heat input between 50 and 850 MMBtu/hr is summarized in Table 5.

Table 5: Applicable Emissions Limits Under NSPS Subpart KKKK

Fuel	NO_x	SO_2
Natural Gas	25 parts per million at 15 percent O_2 (ppmvdc) or 1.2 pounds per megawatt-hour (lb/MWh) of useful output	6.2 lb/MWh gross output, or a fuel sulfur content with potential SO_2 emission not greater than 0.42 lb/MMBtu.
Distillate Oil	74 ppmvdc or 3.6 lb/MWh	

The combustion turbines will be equipped with water injection to control NO_x emissions below the applicable limits. For natural gas firing, it is expected that the proposed turbines will meet the alternate NO_x limit of 1.2 lb/MWh of useful output where useful output is defined under 40 CFR §60.4420 as "the gross useful work performed by the stationary combustion turbine system. For units using the mechanical energy directly or generating only electricity, the gross useful work performed is the gross electrical or mechanical output from the turbine/generator set." The turbines will meet the 74 ppmvdc limit for distillate oil firing. The turbines will be equipped with a continuous water to fuel ratio monitoring system meeting the requirements of 40 CFR §60.4335(a).

The natural gas will have a maximum sulfur content of 5 grains per 100 cubic feet, equivalent to a potential SO_2 emission rate of 0.014 lb/MMBtu. The distillate oil will have a maximum sulfur content of 0.05 percent by weight, equivalent to a potential SO_2 emission rate of 0.0505 lb/MMBtu. These potential SO_2 emission rates are well below the applicable fuel sulfur standard

40 CFR 60 – NSPS Subpart TTTT – Greenhouse Gas Emissions for Electric Generating Units

NSPS Subpart TTTT is applicable to CTGs with a fuel firing rate above 250 MMBtu/hr or a generating output above 25 MW that commences construction or reconstruction after January 8, 2014. The proposed combustion turbines will be subject to NSPS Subpart TTTT.

A natural gas-fired combustion turbine with an annual capacity factor (on a three-year rolling basis) below its "design efficiency," is not subject to the output based standards (lb CO_2/MWh) of NSPS Subpart TTTT. The "design efficiency" value for the proposed combustion turbines when firing natural gas at full load is 35.8% based upon a heat rate of 9,532 Btu per kilowatt-hour (gross lower heating value). PREPA proposes to limit the annual capacity factor of each combustion turbine to 35.8% on a rolling 3-year average. As multi-fuel units exempt from the output based standards, the combustion turbines can be operated up to a 50% capacity factor in any 12-month period as long as the three year rolling average is below 35.8%.

Under Subpart TTTT, multi-fuel combustion turbines that are not subject to the output based emission standards must comply with a mass-based standard, which is expressed in the units of lbs of CO_2 per MMBtu heat input (lb CO_2/MMBtu). For units that fire natural gas and distillate oil, compliance is demonstrated on a sliding scale standard based upon emissions of 120 lb CO_2/MMBtu for natural gas firing and 160 lb CO_2/MMBtu for distillate oil. In accordance with 40 CFR §60.5525(a)(2), Equation 1, the firing of natural gas and distillate oil will always be in compliance with these mass based emission standards.

40 CFR 63 – National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart YYYY – Stationary Combustion Turbines

NESHAP Subpart YYYY establishes emission limitations and operating limitations for HAP emissions from combustion turbines located at major sources of HAP emissions. The Facility is a major source of HAP emissions and therefore the proposed combustion turbines will be subject to NESHAP Subpart YYYY. The proposed combustion turbines will meet the definition of *diffusion flame oil-fired stationary combustion turbines* as they are capable of firing both natural gas and distillate oil and the existing and proposed combustion turbines fire oil more than an aggregate total of 1000 hours during the calendar year. NESHAP Subpart YYYY limits the concentration of formaldehyde in the combustion turbine exhaust to 91 parts per billion by volume dry at 15 percent oxygen. The combustion turbines will meet this limit through good combustion controls without the need for an oxidation catalyst. PREPA will operate the turbines in accordance with manufacturer recommendations to demonstrate continuous compliance in accordance with 40 CFR 63.6140(a).

RCAP Rule 403 – Visible Emissions

The CTGs will meet the Rule 403 visible emission limit of opacity no greater than 20 percent (6-minute average) except an opacity up to 60 percent for a period of no more than four minutes in any consecutive thirty (30) minute interval during the firing of distillate oil and natural gas.

RCAP Rule 405 – Particulate Matter Emissions

Rule 405 limits particulate matter (PM) emissions (filterable) to no greater than 0.30 pounds per million BTU when firing liquid fuel. The filterable PM emissions from the combustion turbines will be well below this limit.

RCAP Rule 410 – Fuel Sulfur Content

The fuel sulfur content of the fuels fired in the CTGs will be limited to 0.05 percent by weight for distillate oil and 5 grains per 100 standard cubic feet of natural gas (approximately 0.015 percent by weight) per the following equation.

$$Natural\ Gas\ Sulfur\ (wt\%) = \left(\frac{5\ grains\ S}{100\ standard\ ft^3}\right) X \left(\frac{385.3\ standard\ ft^3}{lb-mole\ gas}\right) + MW\ \left(\frac{1\ lb-mole}{17.5\ lbs\ gas}\right) X\ \left(\frac{1\ lb}{7{,}000\ grains}\right) X\ 100$$

RCAP Rule 412 – SO_2 Emissions

Rule 412 limits SO_2 emissions to no greater than 1,000 ppm by volume at 21% oxygen from any emission source. The SO_2 emissions from the CTGs when firing distillate oil, the fuel with the highest sulfur content, will have stack emissions of approximately 32 ppm by volume in the stack at 15% oxygen per the following equation from 40 CFR 60, Appendix B, Method 19.

$$SO2\ (ppmvd\ @21\%\ O2) = \left(\frac{0.0505\ lb}{MMBtu}\right) X\ Fd \left(\frac{1\ MMBtu}{9{,}190\ dscf}\right) X\ EPA\ Method\ 19, Table\ 19-1\ factor \left(\frac{1}{1.660\ x\ 10^{-7}}\right)$$

Respectfully, PREPA submits for DNER/EQB's evaluation this Application for a Permit to Construct the proposed dual fuel combustion turbines at Central Palo Seco. PREPA welcomes the opportunity to discuss and respond to any questions that you may have.

Cordially,

Luisette X. Ríos Castañer, Head
Environmental Protection and
Quality Assurance Division

THIS IS WATERMARK PAPER - DO NOT ACCEPT WITHOUT NOTING WATERMARK - HOLD TO LIGHT TO VERIFY WATERMARK

Puerto Rico Electric Power Authority

CITIBANK, N.A. –CSMG
GENERAL FUND

CHECK NO. **472218**
DATE 20–DEC–19

PAY One Thousand Fifty–Five And 85/100 Dollars **********$1,055.85

TO THE ORDER OF

SECRETARIO DE HACIENDA
JUNTA DE CALIDAD AMBIENTAL
PO BOX 11488
SAN JUAN, PR 00910-1488

NOT VALID AFTER THREE MONTHS FROM DATE OF ISSUE

MP

⑈00472218⑈ ⑆021502040⑆ 040001501 5⑈

Puerto Rico Electric Power Authority

CITIBANK CSMG – GENERAL FUND

Vendor Number	Date	Check No.
00498715	20–DEC–19	472218

Date	Invoice	Description	Gross	Withheld Amount	Discount	Net
13–DEC–19	19–12–CM–004	SOLICITUD DE PERMISO DE CONSTRUCCION PARA TUR	1,055.85	0.00	0.00	1,055.85

Appendices

Appendix A: Application Permit for the Construction or Operation of Sources of Emission in Puerto Rico

Appendix B: Supporting emission calculations documentation to support NSR Applicability Analysis, including Project Potential Emissions and Baseline Actual Emissions. Includes potential estimates for Hazardous Air Pollutants - HAP's

Appendix C: Copy of Approved Environmental Evaluations (Rule 141)

Appendix D: DNER Emergency Waiver for the Installation of (3) Combustion Turbines at Palo Seco

Appendix E: Black Start Generator Manufacturer's Emissions Certification

Appendix F: Site and Project Figures

Appendix A:

Application Permit for the Construction or Operation of Sources of Emission in Puerto Rico

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

DOCUMENTOS A SOMETERSE PARA PROYECTOS
POR LEY DE CERTIFICACIÓN O POR PROCESO ORDINARIO

FORMULARIO DE RADICACIÓN

San Juan P.R.
____ de _____ de 2019.

PFE_____

HOJA DE COTEJO

Para someter formularios de permiso de construcción u operación bajo el proceso ordinario y bajo las disposiciones del Reglamento para la Certificación de Planos y Documentos ante la Junta de Calidad Ambiental.

Ley de Certificación		**Ordinario**		
Ingeniero	Arquitecto	Químico	JCA	
✓	☐	☐	☐	Original y copia del permiso para Construir u Operar Fuente de Emisión en Puerto Rico, firmado y sellado por un Ingeniero, Arquitecto o Químico Licenciado practicando la profesión en Puerto Rico.
✓	☐	☐	☐	Evidencia de haber cumplido con el Artículo 4B(3) de la Ley 416 del 22 de septiembre de 2004, según enmendada (Ley de Política Pública Ambiental) para la fuente de emisión a construirse. (**Rule 141)**
N/A	☐	☐	☐	Certificación de remoción de asbesto y plomo para los proyectos que contengan demolición de estructura.
✓	☐	☐	☐	Dos (2) copias de planos de localización.
✓	☐	☐	☐	Especificaciones de la fuente de emisión y medidas de control.
✓	☐	☐	☐	Original y copia de los cálculos de emisiones. **(Appendix B)**
✓	☐	☐	☐	Evidencia de haber cumplido con la cuotas del Colegio correspondiente (CIAPR, CAAPPR, CQPR).
✓	☐	☐	☐	Cumplir con la Regla 501 del Reglamento para el Control de la Contaminación Atmosférica (cargos por radicación y permiso).
✓	☐	☐	☐	Dos (2) copias del estimado de costo de la obra a construirse, detallado y desglosado.
N/A	☐	☐	☐	Evidencia o presentación de comprobante y sellos para cancelar: 1- Sellos CIAPR por la cantidad de: _____. 2- Comprobante de Rentas Internas por la cantidad de: _____.
☐	☐	☐	✓	Evidenciar copia de los Permisos de las Agencias Gubernamentales que tienen jurisdicción con el caso **(Waiver (Dispensa), Rule 141)**

_____
(Representante autorizado JCA)

EFRAN PAREDES MAISONET
INGENIERO LICENCIADO
LIC. #17776
PUERTO RICO

Eng. Efran Paredes Maisonet
(Firma y sello Ingeniero, Químico o Arquitecto licenciado)

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

SOLICITUD DE PERMISO PARA LA CONSTRUCCIÓN U OPERACIÓN
DE FUENTES DE EMISIÓN EN PUERTO RICO

PARTE I - INFORMACION GENERAL

( ) Primero ( ) Revisión ( ) Renovación (X) Modificación ( )
Temporal Fecha: December 17, 2019

1. Solicitante:
   A. Nombre de la fuente de emisión: Autoridad de Energía Eléctrica de Puerto Rico (AEE o PREPA)
   B. Teléfono: 787-521-4960 SS Patronal: 66-043374
   C. Localización: PR-165 Km 30.8, Toa Baja, PR 00949
   D. Dirección Postal: PO Box 364267 San Juan. P.R. 00936-4267
   E. Oficial Responsable: Autoridad de Energia Electrica de Puerto Rico
   Daniel Hernández Morales Organización
   Ing. Daniel Hernández — Director de Generación — 787-521-6421
   Nombre del Oficial Responsable — Título — Teléfono
   Correo Electrónico:
   Dirección Postal: PO Box 364267, San Juan. P.R. 00936-4267
2. Propósito de la solicitud: (X) Construcción ( ) Operación (marque sólo una)
3. Naturaleza de la actividad: Installation of 3 PWPS Model FT8 MOBILPAC Peaking Combustion Turbines (Dual fuel Turbines, Gas Natural y Diesel) and 3 Caterpillar Model C13 black start generator engines
4. Número de empleos directos a crear: 147 Número de empleos indirectos a crear: 74
5. Número de empleos retenidos:
6. Costo de inversión capital: $58,093,016
7. Producción anual máxima (especifique unidad):
8. Horario máximo de operación: 24 Horas/día — 7 Días/semana — 12 Meses/año
9. Si es operación intermitente, frecuencia máxima: SIC: 4911 (Código de Clasificación Industrial)
10. Se deben incluir los siguientes documentos:
    A. Plano de localización (proyectado o existente) indicando colindancias adyacentes y estructuras.
    B. Plano de la facilidad (proyectado o existente) indicando todos los puntos de emisión.
    C. Certificación del solicitante autorizando al representante (si aplica).
11. Anote todos los permisos otorgados por alguna agencia federal, estatal o local para la estructura o construcción, permiso de uso o número requerido:

Tipo de Permiso	Agencia	No. de Identificación	Fecha
PFE Título V	DNER/EQB JCA	PFE-TV-4911-70-1196-0015	March 16, 2015
Rule 141	DNER/EQB	141-19-0538	November 04, 2019
Categorical exclusion	OGPe	2019-268588-DEC-077849	June 26, 2019

12. Esta instalación, existía o fue construida legalmente antes del 16 de septiembre de 1971?
    ( ) sí (X) no (marque sólo una)

CERTIFICACION

La presente solicitud se somete con el propósito de obtener autorización para la actividad aquí descrita. Certifico que, a mi mejor conocimiento y creencia, toda la información es correcta, completa y exacta.

Firma del Oficial Responsable

AFFIDAVIT

Affidavit No. 830

Jurado y suscrito ante mí por Daniel Hernández Morales oficial responsable de AEE mayor de edad, status civil Casado y residente de Bayamón, PR.
En San Juan, Puerto Rico, hoy día 18 de diciembre de 2019.

Notario Público

EXENTO PAGO ARANCEL LEY 17 DE JULIO 1982

VAZQUEZ RODRIGUEZ ABOGADA NOTARIO PUERTO RICO

SOLO PARA USO DE LA JUNTA DE CALIDAD AMBIENTAL

Permiso otorgado en Expira No. solicitud

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

SOLICITUD DE PERMISO PARA LA CONSTRUCCIÓN U OPERACIÓN
DE FUENTES DE EMISIÓN EN PUERTO RICO

PARTE II - PROCESO DE LA PLANTA Y DESCRIPCIÓN DE EMISIONES

I. EMISIONES INDUSTRIALES: (Movimiento de terreno, almacenaje en tanques, talleres de pintado, etc.)

1. Descripción del proceso u operación que emite contaminantes atmosféricos:
N/A

2. Materia prima usada o procesada: _____ (Tipo) _____ (Cantidad) _____ (unidad/unidad tiempo)

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.

5. Volumen de descarga de emisiones: _____ $Pies^3$/min.

6. Emisiones actuales: Estimado basado en: _____.

Tipo de contaminante	Cantidad (masa/tiempo)	Duración (tiempo/unidad tiempo)

7. Incluya un diagrama de flujo del proceso (tipo bloque) demostrando puntos, cantidades y tipos de emisiones.

II. EMISIONES POR COMBUSTIÓN: (Calderas, calentadores, plantas de emergencia, bombas de incendio, etc.)

1. Equipo de combustión: PWPS Model FT8® MOBILEPAC combustion turbines: 294.8 MMBtu/hr per Nat. Gas: 283.3 MMBtu/hr per Oil.

2. Combustible:

Tipo	Gal/hr ó BTU/hr	Lb/hr HP	% azufre
Natural Gas	289,029 scf/hr		5.0 gr/100 dscf
Distillate Oil	2,053 gal/hr		0.05 wt%

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso
Water Injection (gas)	85
Water Injection (oil)	85 seg.

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
33.9 pies	120.95" x 97.08" pulg.	794 °F	157.4 pies/
33.9 pies	120.95" x 97.08" pulg.	794 °F	155.4

III. EMISIONES POR INCINERACIÓN O DISPOCISIÓN DE DESPERDICIOS: (Sólidos, líquidos, gaseosos)

1. Método para disponer los desperdicios: N/A.
2. Tipo de desperdicios: _____ Cantidad: _____ Lb/día.
3. Incinerador: _____ (Tipo) _____ (Marca) _____ (Capacidad (Lb/día)).
4. Chimenea: _____ Pies (Altura) _____ Pies (Diámetro Salida) _____ °F (Temp. Salida) _____ Pies/seg. (Velocidad Salida)
5. Combustible auxiliar: Tipo _____ Gal/hr ó Lb/hr _____ % azufre _____
6. Equipo de control: _____ (Tipo) _____ % por peso. (Eficiencia)

IV. CUMPLIMIENTO: Incluya datos o información demostrando que las emisiones no exceden los límites establecidos.
V. EQUIPO DE CONTROL: Incluya esquema de la instalación del equipo de control de la fuente de emisión.

CERTIFICACIÓN DE UN INGENIERO, QUÍMICO O ARQUITECTO LICENCIADO

Certifico que estoy registrado y autorizado para practicar mi profesión en Puerto Rico; que el equipo y medidas para el control de emisiones son adecuadas y cumplen con las disposiciones del Reglamento de Control de Contaminantes Atmosféricos de la Junta de Calidad Ambiental de Puerto Rico y que, de acuerdo a mis mejores conocimientos y creencias, la información suministrada es veraz, completa y exacta.

17776 (Número de Licencia) — Efran Paredes (Nombre (Letra de molde)) — _____ (Firma)

EFRAN PAREDES MAISONET
INGENIERO LICENCIADO
LIC. #17776
PUERTO RICO

Fecha: _____. Número de solicitud: _____.

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

HOJA DE PAGO

Número de Solicitud: _____
Nombre del Oficial Responsable: Ing. Daniel Hernández
Título: Director de Generación
Nombre del Proyecto o Fuente de Emisión: _____
Dirección Postal: _____

I. Pago por Solicitud de Permiso:
1. Pago por Radicación ($100.00): (X) Construcción ( ) Operación
( ) Escuela de Adiestramiento de Asbesto
2. ( ) Pago por Permiso 3. ( ) Pago por Renovación 4. ( ) Pago por Modificación

$100.0

($10.00 por toneladas por Contaminante)

CONTAMINANTE	EMISIONES (Ton/año)	CARGO TOTAL
Material Particulado (PM_{10})		
Dióxido de Azufre (SO_x)		
Oxido de Nitrógeno (NO_x)		
Compuestos Orgánicos Volátiles (VOC) e Hidrocarburos (HC)	6.9	$69.12
Plomo (Pb)		
Otros (CO)	88.7	$886.73
TOTAL		$1,055.85

CERTIFICACIONES DE ASBESTO

1. Escuela de Adiestramiento de Asbesto	$600.00		N/A
2. Registro de Asbesto ($40.00 por categoría) ( ) Especialista en Muestreo de Aire ( ) Diseñador de proyecto ( ) Planificador de proyecto ( ) Inspector ( ) Supervisor ( ) Trabajador			

OTROS CARGOS

1. Cambio de dueño o localización	(50% del cargo por radicación)	N/A
2. Pago por Revisión	(50% del cargo por radicación)	N/A
3. Duplicados de Permisos	$10.00	N/A
4. Pago por Exceso de Emisiones:		
A. Dispensas	($25.00/ton/contaminante)	N/A
B. Pequeños Negocios	($12.50/ton/cantaminante)	N/A

PAGO TOTAL DE LA SOLICITUD:

II. Pago anual (pago por un año)	N/A
III. Pago por cuatro (4) años extras (pago por 4 años)	N/A
IV. TOTAL	$1,055.85

PARA COMPLETARSE EN LA OFICINA DEL ÁREA DE CALIDAD DE AIRE

Cantidad a pagar: _____ Fecha: _____ Recibido por: _____

Número de cheque: _____ Número de recibo: _____

_____ Firma del Representante autorizado JCA

_____ Firma División de Finanzas

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

PERMIT FEE CALCULATION

Pollutant	Tons Per Year			Difference	Fee
	PSGT Per Unit	PSGT 1-1, 1-2, and 2-1	Project		
PM10	15.85	47.54	19.70	-27.84	$0.00
SO2	666.89	2000.66	55.83	-1944.84	$0.00
NOx	1162.10	3486.30	196.27	-3290.04	$0.00
VOC	0.54	1.62	8.54	6.91	$69.12
CO	4.36	13.07	101.75	88.67	$886.73
TOTAL					$955.85



RENOVACIÓN APROBADA: 16 de noviembre, 2015

RENEWAL APPROVED ON: November 16, 2015

NÚM. EMP. 11964

Estado Libre Asociado de Puerto Rico
Commonwealth of Puerto Rico

DEPARTAMENTO DE ESTADO
Department of State

Secretaría Auxiliar de Juntas Examinadoras
Office of the Assistant Secretary of State for Examining Boards

La Junta Examinadora de Ingenieros y Agrimensores
The Examining Board of Engineers and Land Surveyors

por la presente certifica que
hereby certifies that

Efran Paredes Maisonet

habiendo cumplido todos los requisitos de Ley, se ha inscrito en el Registro de esta Junta como
having met all the requirements of law, has been registered as:

Ingeniero Licenciado
Licensed Engineer

16 FEB 16 AM 9:08

En testimonio de lo cual, se expide esta licencia para el ejercicio de dicha profesión, bajo el sello de la Junta Examinadora.
In testimony whereof, this license is issued to practice this profession, under the seal of the Board of Examiners.

En San Juan, Puerto Rico, efectivo 15 de diciembre de 2015
In San Juan, Puerto Rico, effective December 15, 2015.

Número de Licencia: 17776
License Number

Vencimiento: 15 de diciembre de 2020
Expires: December 15, 2020

JUNTA EXAMINADORA DE INGENIEROS Y AGRIMENSORES
ESTADO LIBRE ASOCIADO DE PUERTO RICO
DEPARTAMENTO DE ESTADO

Presidente

Secretario Auxiliar Lcdo. Francisco Rodríguez Bernier
Under Secretary

Certifico que es copia fiel y exacta del original.

Sonia Miranda Vega, Directora
Planificación y Protección Ambiental
Núm. Emp. 9218, Tel. 4884

COPY

#empleado 11964

SECC ARCHIVOS DE PERSONAL

Y CORREOS-NOV15'18 AM11:06



CERTIFICO QUE ESTE DOCUMENTO ES
COPIA FIEL Y EXACTA DEL ORIGINAL.

Mónica A. de Playa 14/nov/2018

FIRMA FECHA


G
EFRAN
PAREDES MAISONET
11964

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

18 de diciembre de 2018

Luisette X. Rios Castañer, Jefe
División de Protección Ambiental

Jaime A. Umpierre Montalvo, Jefe
División de Ingeniería y Servicios Técnicos

Desgloce de Costos para Solicitud Permiso de Construcción – Proyecto MegaGens Central Palo Seco

La Autoridad de Energía Eléctrica contrató mediante un proceso competitivo a la compañía ARG Precision Corp, para el diseño, compra, instalación y puesta en servicio de tres turbinas aeroderivadas, combustible dual (diésel y gas natural), móviles, de 27 MW, modelo Mobilepac FT8, manufacturado por PW Power Systems. El contrato fue por $58,093,016, cantidad que se distribuye en las siguientes partidas:

Major Equipments (Aeroderivative Turbines)	$50,501,543.04
Balance of Plant (BOP) Equipments	$3,485,580.96
Design	$180,000
Management & Administration	$700,000
Installation & Commissioning	$3,030,373.94
Taxes	$195,518.06

Para información adicional o aclaración de dudas favor de llamarnos a la extensión 6541.

JAIME A. UMPIERRE
INGENIERO
LICENCIADO
ABOGADO
RETIRADO

Lic. 12789

"Somos un patrono con igualdad de oportunidades en el empleo y no discriminamos por razón de raza, color, sexo, edad, origen social o nacional, condición social afiliación política, ideas políticas o religiosas; por ser víctima o ser percibida(o) como víctima de violencia doméstica, agresión sexual o acecho, sin importar estado civil, orientación sexual, identidad de género o estatus migratorio; por impedimento físico, mental o ambos por condición de veterano(a) o por información genética."

CN 078-04479
Rev. 11/17

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

18 de diciembre de 2018

Luisette X. Rios Castañer, Jefe
División de Protección Ambiental

Jaime A. Umpierre Montalvo, Jefe
División de Ingeniería y Servicios Técnicos

Desgloce de Costos para Solicitud Permiso de Construcción – Proyecto MegaGens Central Palo Seco

La Autoridad de Energía Eléctrica contrató mediante un proceso competitivo a la compañía ARG Precision Corp, para el diseño, compra, instalación y puesta en servicio de tres turbinas aeroderivadas, combustible dual (diésel y gas natural), móviles, de 27 MW, modelo Mobilepac FT8, manufacturado por PW Power Systems. El contrato fue por $58,093,016, cantidad que se distribuye en las siguientes partidas:

Major Equipments (Aeroderivative Turbines)	$50,501,543.04
Balance of Plant (BOP) Equipments	$3,485,580.96
Design	$180,000
Management & Administration	$700,000
Installation & Commissioning	$3,030,373.94
Taxes	$195,518.06

Para información adicional o aclaración de dudas favor de llamarnos a la extensión 6541.

JAIME A. UMPIERRE
INGENIERO LICENCIADO
ESTADO LIBRE ASOCIADO DE PUERTO RICO
Lic. 12789

"Somos un patrono con igualdad de oportunidades en el empleo y no discriminamos por razón de raza, color, sexo, edad, origen social o nacional, condición social afiliación política, ideas políticas o religiosas; por ser víctima o ser percibida(o) como víctima de violencia doméstica, agresión sexual o acecho, sin importar estado civil, orientación sexual, identidad de género o estatus migratorio; por impedimento físico, mental o ambos por condición de veterano(a) o por información genética."

Appendix B:

Supporting Emission Calculations

PREPA Palo Seco - Pratt & Whitney FT-8 Allowable Operation To Net Out of PSD

Pollutant	PSGT 2-2, 3-1, and 3-2 Baseline Emissions (tpy)	BSG Potential Emissions (tpy)	PSD Significance (tpy)	PW FT8 Allowable Emissions (tpy)	PW FT8 Emissions Gas (lb/MMBtu)	PW FT8 Allowable Gas (MMBtu/yr)	PW FT8 Emissions Oil (lb/MMBtu)	PW FT8 Allowable Oil (MMBtu/yr)
NOx	718.4	4.92	40	753.4	0.1100	13,698,316	0.1731	8,704,880
PM	9.8	0.131	25	34.6	0.010	6,793,487	0.0177	3,905,707
PM10	9.8	0.131	15	24.6	0.010	4,828,092	0.0177	2,775,763
PM2.5	9.8	0.131	10	19.6	0.010	3,845,394	0.0177	2,210,791
SO2	19.8	0.004	40	59.7	0.0140	8,532,314	0.0505	2,365,394
VOC	0.33	0.14	40	40.1	0.0051	15,620,658	0.0071	11,263,804
CO	2.69	2.29	100	99.4	0.0767	2,593,341	0.0343	5,796,061
H2SO4	3.04	0.001	7	9.99	0.0021	9,316,279	0.0077	2,582,731
GHGs	133,596	481	75,000	208,115	117.12	3,553,938	163.64	2,543,553

NOTES:

PW FT8 Allowable Emissions (tpy) are equal to baseline emissions for PSGT 2-2, 3-1, and 3-2 plus PSD Significance Threshold

PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F

PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant

PW FT8 Allowable (hr/yr) are total hours for all three proposed PW FT8 Turbines based on allowable MMBtu/yr and 294.8 MMBtu/hr gas firing and 283.3 MM Btu/hr oil firing

Natural gas sulfur content limited to 5 grains per 100 standard cubic feet of gas

Distillate oil sulfur content limited to 0.05 percent by weight

GHGs are based upon the global warming potentials and emission factors in 40 CFR §98, Subpart A, Table A-1 and 40 CFR §98, Subpart C, Tables C-1 and C-2.



12/16/2019

Palo Seco Combustion Turbine Project Potential Emissions Versus PSD Significance Thresholds

Pollutant	Combustion Turbine Potential (tpy)	BSGs Potential (tpy)	Natural Gas Handling Potential (tpy)	Project Total Potential (tpy)	PSD Significance Threshold (tpy)
NO_x	191.34	4.922	0	196.3	40
PM	19.57	0.109	0	19.7	25
PM_{10}	19.57	0.131	0	19.7	15
$PM_{2.5}$	19.57	0.131	0	19.7	10
CO	99.45	2.292	0	101.7	100
VOC	7.85	0.136	0.55	8.54	40
SO_2	55.82	0.004	0	55.8	40
H_2SO_4	8.55	0.001	0	8.55	7
GHGs (as CO2e)	180,889	481	124	181,494	75,000



Future Potential Emissions - Palo Seco Power Plant														
Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)
NOx		8.8E-01	3,486.3	1.73E-01	191.3	1.10E-01	142.6	191.34	4.92		0.2133	3,811.6	9.85	7,499.1
CO		3.3E-03	13.1	3.43E-02	37.9	7.67E-02	99.5	99.45	2.29		0.0333	595.6	3.06	711.2
VOC		4.1E-04	1.6	7.10E-03	7.85	5.13E-03	6.7	7.85	0.14		0.0051	90.5	0.55	100.6
PM		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0521	930.9	0.24	998.2
PM10		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0470	839.6	0.23	907.0
PM2.5		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0470	839.6	0.23	907.0
SO2		5.05E-01	2,000.7	5.05E-02	55.82	1.40E-03	1.8	55.82	0.004		0.5423	9,689.9	1.32	11,747.7
H2SO4		7.73E-02	306.4	7.73E-03	8.55	2.14E-04	0.3	8.55	0.001		8.30E-02	1,483.8	0.20	1,798.9
GHGs as CO2e		163.64	648,300	163.64	180,889	117.12	151,864	180,889	481.0		1.66E+02	2,968,700	584	3,798,472
1,1,1-Trichloroethane											1.57E-06	2.81E-02		2.81E-02
1,3-Butadiene		1.60E-05	6.34E-02	1.60E-05	1.77E-02	4.30E-07	5.58E-04	1.77E-02					3.77E-05	8.11E-02
Acenaphthene									1.38E-05		1.41E-07	2.51E-03	1.35E-05	2.53E-03
Acenaphthylene									2.71E-05		1.69E-09	3.01E-05	2.89E-05	5.91E-05
Acetaldehyde						4.00E-05	5.19E-02	5.19E-02	7.41E-05				8.13E-04	5.27E-02
Acrolein						6.40E-06	8.30E-03	8.30E-03	2.32E-05				1.10E-04	8.41E-03
Anthracene									3.62E-06		8.13E-09	1.45E-04	5.03E-06	1.50E-04
Benzo(a)anthracene									1.83E-06		2.67E-08	4.78E-04	3.26E-06	4.81E-04
Benzene		5.50E-05	2.18E-01	5.50E-05	6.08E-02	1.20E-05	1.56E-02	6.08E-02	2.28E-03		1.43E-06	2.55E-02	2.92E-03	3.07E-01
Benzo(a)pyrene									7.55E-07				6.69E-07	6.69E-07
Benzo(b)fluoranthene									3.26E-06				2.89E-06	2.89E-06
Benzo(b,k)fluoranthene											9.87E-09	1.76E-04	1.64E-07	1.76E-04
Benzo(g,h,i)perylene									1.63E-06		1.51E-08	2.69E-04	1.92E-06	2.71E-04
Benzo(k)fluoranthene									6.41E-07				5.67E-07	5.67E-07
Chrysene									4.50E-06		1.59E-08	2.83E-04	4.32E-06	2.88E-04
Dibenzo(a,h)anthracene									1.02E-06		1.11E-08	1.99E-04	1.46E-06	2.00E-04
Ethylbenzene						3.20E-05	4.15E-02	4.15E-02			4.24E-07	7.58E-03		4.91E-02
Fluoranthene									1.18E-05		3.23E-08	5.77E-04	1.78E-05	5.94E-04
Fluorene									3.76E-05		2.98E-08	5.32E-04	6.13E-05	5.94E-04
Formaldehyde		2.31E-04	9.15E-01	2.31E-04	2.55E-01	2.19E-04	2.84E-01	2.84E-01	2.32E-04		2.20E-04	3.93E+00	1.36E-03	5.13E+00
Indeno(1,2,3-cd)pyrene									1.22E-06		1.43E-08	2.55E-04	1.44E-06	2.56E-04
Naphtalene		3.50E-05	1.39E-01	3.50E-05	3.87E-02	1.30E-06	1.69E-03	3.87E-02						1.77E-01
Total PAHs		4.00E-05	1.58E-01	4.00E-05	4.42E-02	2.20E-06	2.85E-03	4.42E-02	3.82E-04		8.67E-06	1.55E-01	5.02E-04	3.58E-01
OCDD											2.07E-11	3.69E-07		3.69E-07
Phenanathrene									1.20E-04		7.00E-08	1.25E-03	1.34E-04	1.38E-03
Propylene														
Pyrene									1.09E-05		2.83E-08	5.06E-04	1.43E-05	5.21E-04
Toluene						1.30E-04	1.69E-01	1.69E-01	8.26E-04		4.13E-05	7.39E-01	1.13E-03	9.08E-01
Xylene						6.40E-05	8.30E-02	8.30E-02	5.67E-04		7.27E-07	1.30E-02	7.82E-04	9.68E-02
Arsenic	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01

A. PRADES LAO
INGENIERO
LICENCIADO
LIC. #17176
PUERTO RICO

12/12/2019

Future Potential Emissions - Palo Seco Power Plant														
Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)
Antimony	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Beryllium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Cadmium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Chromium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	4.00	2.15E-04	3.84E+00	8.80E-06	3.85E+00
Cobalt	0.10	4.93E-06	1.96E-02	4.93E-06	5.45E-03			5.45E-03	1.45E-05	0.30	1.61E-05	2.88E-01	1.76E-05	3.13E-01
Lead	0.20	9.87E-06	3.91E-02	9.87E-06	1.09E-02			1.09E-02	2.90E-05	5.00	2.69E-04	4.80E+00	3.52E-05	4.85E+00
Manganese	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Mercury	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Nickel	0.10	4.93E-06	1.96E-02	4.93E-06	5.45E-03			5.45E-03	1.45E-05	10.8	5.80E-04	1.04E+01	1.76E-05	1.04E+01
Selenium	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Total HAPs		**4.70E-04**	**1.86**	**4.70E-04**	**0.52**	**5.06E-04**	**0.66**	**0.66**	**0.66**		**1.47E-03**	**26.27**		**28.79**
Maximum Individual HAP												**Nickel**		**10.39**



Future Potential Emissions - Palo Seco Power Plant

Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)

Fuel Type	Heat Content		Density lb/gal	Annual Firing Rate			
Distillate Oil (New GTs)	138,000	Btu/gal	6.81	16,020,227	gal/yr	2,210,791	MMBtu/yr
Natural Gas (New GTs)	1,020	Btu/cf	N/A	2,542	MMCF/yr	2,593,341	MMBtu/yr
Distillate Oil (Existing GTs	138,000	Btu/gal	6.81	57,416,087	gal/yr	7,923,420	MMBtu/yr
No. 6 Fuel Oil (Boilers)	150,000	Btu/gal	8.06	238,227,149	gal/yr	35,734,072	MMBtu/yr
Fuel Sulfur (new GTs)		0.05	%				
Fuel Sulfur (existing GTs)		0.50	%				
Fuel Sulfur (Boilers)		0.50	%				

Notes:

1) If results of fuel oil testing indicated that the concentration of a particular metal is below detectable limits, the metal concentration was set to one-half the lowest detectable level.
2) The facility-wide HAP potential emissions is based upon the maximum result by individual HAP and total HAPs for fuel oil and natural gas.
3) For distillate oil firing, PTE based upon existing permit limits, rated firing rate, and 8,760 hr/yr, as applicable.
4) For natural gas firing, PTE based upon vendor emission guarantee rated firing rate, and 8,760 hr/yr, as applicable
5) For natural gas firing, VOC and PM/PM10/PM2.5 emissions based on AP-42, Section 3.1, Table 3.1-1.
6) For natural gas firing, formaldehyde (HCOH) PTE based on vendor guarantee (91 ppbvd).
7) SO2 emissions based upon fuel sulfur content limits
8) HAP PTE, except for HCOH on gas for new CTGs, based on AP-42 Section 3.1, Tables 3.1-1, 3.1-3, 3.1-4, and 3.1-5.
9) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
10) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2
11) Natural gas and distillate oil throughput limited to keep emissions below PSD signficance threshold.
12) Boilers 1 and 2 potential emissions based upon 8% annual capacity factor for limited use oil units under 40 CFR 63, Subpart UUUUU.

13) Fuel Oil F factor	9190	dsf/MMBtu	
14) Natural Gas F factor	8710	dsf/MMBtu	
15) From Method 19 - NOx	1.194E-07	lb/scf:ppm	
16) From Method 19 - CO	7.270E-08	lb/scf:ppm	

Rated Fuel Firing Rates FT8

Fuel Type	MMBtu/hr	
Distillate Oil	283.3	24-hr average
Natural Gas	294.8	24-hr average

1 lb = 7000 grains

EFRAN PAREDES MAISONET
INGENIERO
LICENCIADO
LIC. #17776
PUERTO RICO

12/12/2019

Potential Emissions - Palo Seco Power Plant Black Start Engines

Pollutant	Emissions From BSG-PS-1 609 hp		Emissions From BSG-PS-2 609 hp		Emissions From BSG-PS-3 609 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.675	1.641	1.675	1.641	1.675	1.641	4.922
CO	0.780	0.764	0.780	0.764	0.780	0.764	2.292
VOC	0.046	0.045	0.046	0.045	0.046	0.045	0.136
PM (filterable only)	0.0370	0.036	0.0370	0.036	0.0370	0.036	0.109
PM10	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
PM2.5	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
SO2	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.004
H2SO4	0.0002	0.000	0.0002	0.000	0.0002	0.000	0.001
CO2e	163.64	160.3	163.64	160.3	163.64	160.3	481.0
1,1,1-Trichloroethane							
1,1-Dichloroethane							
1,2-Dichloroethane							
1,1,2,2,-Tetrachloroethane							
1,1,2-Trichloroethane							
1,3-Butadiene							
1,3-Dichloropropene							
Trimethylbenzenes							
2,2,4-Trimethylpentane							
Acenaphthene	4.68E-06	4.59E-06	4.68E-06	4.59E-06	4.68E-06	4.59E-06	1.38E-05
Acenaphthylene	9.23E-06	9.04E-06	9.23E-06	9.04E-06	9.23E-06	9.04E-06	2.71E-05
Acetaldehyde	2.52E-05	2.47E-05	2.52E-05	2.47E-05	2.52E-05	2.47E-05	7.41E-05
Acrolein	7.88E-06	7.72E-06	7.88E-06	7.72E-06	7.88E-06	7.72E-06	2.32E-05
Anthracene	1.23E-06	1.21E-06	1.23E-06	1.21E-06	1.23E-06	1.21E-06	3.62E-06
Benzo(a)anthracene	6.22E-07	6.09E-07	6.22E-07	6.09E-07	6.22E-07	6.09E-07	1.83E-06
Benzene	7.76E-04	7.60E-04	7.76E-04	7.60E-04	7.76E-04	7.60E-04	2.28E-03
Benzo(a)pyrene	2.57E-07	2.52E-07	2.57E-07	2.52E-07	2.57E-07	2.52E-07	7.55E-07
Benzo(b)fluoranthene	1.11E-06	1.09E-06	1.11E-06	1.09E-06	1.11E-06	1.09E-06	3.26E-06
Benzo(b,k)fluoranthene							
Benzo(e)pyrene							
Benzo(g,h,i)perylene	5.56E-07	5.45E-07	5.56E-07	5.45E-07	5.56E-07	5.45E-07	1.63E-06
Benzo(k)fluoranthene	2.18E-07	2.14E-07	2.18E-07	2.14E-07	2.18E-07	2.14E-07	6.41E-07
Biphenyl							
Carbon Tetrachloride							
Chlorobenzene							
Chloroform							
Chrysene	1.53E-06	1.50E-06	1.53E-06	1.50E-06	1.53E-06	1.50E-06	4.50E-06
Cyclohexane							
Dibenzo(a,h)anthracene	3.46E-07	3.39E-07	3.46E-07	3.39E-07	3.46E-07	3.39E-07	1.02E-06
Ethylbenzene							
Fluoranthene	4.03E-06	3.95E-06	4.03E-06	3.95E-06	4.03E-06	3.95E-06	1.18E-05
Fluorene	1.28E-05	1.25E-05	1.28E-05	1.25E-05	1.28E-05	1.25E-05	3.76E-05
Formaldehyde	7.89E-05	7.73E-05	7.89E-05	7.73E-05	7.89E-05	7.73E-05	2.32E-04
Indeno(1,2,3-cd)pyrene	4.14E-07	4.06E-07	4.14E-07	4.06E-07	4.14E-07	4.06E-07	1.22E-06
Methanol							
Methyl chloride							
Total PAHs	1.30E-04	1.27E-04	1.30E-04	1.27E-04	1.30E-04	1.27E-04	3.82E-04
n-Hexane							

Potential Emissions - Palo Seco Power Plant Black Start Engines

Pollutant	Emissions From BSG-PS-1 609 hp		Emissions From BSG-PS-2 609 hp		Emissions From BSG-PS-3 609 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.675	1.641	1.675	1.641	1.675	1.641	4.922
CO	0.780	0.764	0.780	0.764	0.780	0.764	2.292
VOC	0.046	0.045	0.046	0.045	0.046	0.045	0.136
PM (filterable only)	0.0370	0.036	0.0370	0.036	0.0370	0.036	0.109
PM10	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
PM2.5	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
SO2	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.004
H2SO4	0.0002	0.000	0.0002	0.000	0.0002	0.000	0.001
CO2e	163.64	160.3	163.64	160.3	163.64	160.3	481.0
OCDD							
Perylene							
Phenanathrene	4.08E-05	4.00E-05	4.08E-05	4.00E-05	4.08E-05	4.00E-05	1.20E-04
Phenol							
Pyrene	3.71E-06	3.64E-06	3.71E-06	3.64E-06	3.71E-06	3.64E-06	1.09E-05
Styrene							
Toluene	2.81E-04	2.75E-04	2.81E-04	2.75E-04	2.81E-04	2.75E-04	8.26E-04
Vinyl Chloride							
Xylene	1.93E-04	1.89E-04	1.93E-04	1.89E-04	1.93E-04	1.89E-04	5.67E-04
Arsenic	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Antimony	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Beryllium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Cadmium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Chromium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Cobalt	4.93E-06	4.84E-06	4.93E-06	4.84E-06	4.93E-06	4.84E-06	1.45E-05
Lead	9.87E-06	9.67E-06	9.87E-06	9.67E-06	9.87E-06	9.67E-06	2.90E-05
Manganese	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Mercury	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Nickel	4.93E-06	4.84E-06	4.93E-06	4.84E-06	4.93E-06	4.84E-06	1.45E-05
Selenium	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Total HAPs	**1.70E-03**	**1.67E-03**	**1.70E-03**	**1.67E-03**	**1.70E-03**	**1.67E-03**	**5.00E-03**

Engine firing rate	**28.4**	**gal/hr**	**28.4**	**gal/hr**	**28.4**	**gal/hr**	
Engine firing rate	**3.92**	**MMBtu/hr**	**3.92**	**MMBtu/hr**	**3.92**	**MMBtu/hr**	
Engine operating hours	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**	
Engine annual heat input	**1,960**	**MMBtu/yr**	**1,960**	**MMBtu/yr**	**1,960**	**MMBtu/yr**	
Fuel Sulfur	**0.0015**	**%**	**0.0015**	**%**	**0.0015**	**%**	

Notes:
1) Organic HAP emissions from AP-42 Section 3.4, Tables 3.4-3 and 3.4-4. Metal HAP emissions from fuel samples
2) NOx, CO, PM (filterable), and VOC (as HC) emissions are from Caterpillar performance specifications
3) PM10/PM2.5 condensable from AP-42, Table 3.4-2
4) SO2 emissions from mass balance and fuel sulfur content
5) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
6) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2 and GWPs in 40 CFR 98, Subchapter A, Table 1



Potential Emissions - Palo Seco Power Plant Emergency Engines

Pollutant	Emissions From GE-GIS-PS-1 385 hp		Emissions From B1-PS-1 208 hp		Emissions From GE-PS-1 765 hp		Emissions From GE-PS-2 765 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.048	0.64	2.492	0.89	3.2	4.16	3.2	4.16	9.85E+00
CO	0.909	0.55	0.831	0.30	0.85	1.11	0.85	1.11	3.06E+00
VOC	0.35	0.21	0.35	0.13	0.0819	0.11	0.0819	0.11	5.51E-01
PM	0.0524	0.03	0.1278	0.05	0.062	0.08	0.062	0.08	2.39E-01
PM10	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
PM2.5	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
SO2	0.0015	0.00	0.0015	0.00	0.5050	0.66	0.5050	0.66	1.32E+00
H2SO4	2.30E-04	1.39E-04	2.30E-04	8.24E-05	7.73E-02	1.01E-01	7.73E-02	1.01E-01	2.01E-01
CO2e	1.64E+02	9.94E+01	1.64E+02	5.87E+01	1.64E+02	2.13E+02	1.64E+02	2.13E+02	5.84E+02
1,1,1-Trichloroethane									
1,1-Dichloroethane									
1,2-Dichloroethane									
1,1,2,2,-Tetrachloroethane									
1,1,2-Trichloroethane									
1,3-Butadiene	3.90E-05	2.37E-05	3.90E-05	1.40E-05					3.77E-05
1,3-Dichloropropene									
Trimethylbenzenes									
2,2,4-Trimethylpentane									
Acenaphthene	1.40E-06	8.50E-07	1.40E-06	5.02E-07	4.68E-06	6.09E-06	4.68E-06	6.09E-06	1.35E-05
Acenaphthylene	5.10E-06	3.10E-06	5.10E-06	1.83E-06	9.23E-06	1.20E-05	9.23E-06	1.20E-05	2.89E-05
Acetaldehyde	7.74E-04	4.70E-04	7.74E-04	2.78E-04	2.52E-05	3.28E-05	2.52E-05	3.28E-05	8.13E-04
Acrolein	9.30E-05	5.65E-05	9.30E-05	3.34E-05	7.88E-06	1.02E-05	7.88E-06	1.02E-05	1.10E-04
Anthracene	1.90E-06	1.15E-06	1.90E-06	6.82E-07	1.23E-06	1.60E-06	1.23E-06	1.60E-06	5.03E-06
Benzo(a)anthracene	1.70E-06	1.03E-06	1.70E-06	6.10E-07	6.22E-07	8.09E-07	6.22E-07	8.09E-07	3.26E-06
Benzene	9.30E-04	5.65E-04	9.30E-04	3.34E-04	7.76E-04	1.01E-03	7.76E-04	1.01E-03	2.92E-03
Benzo(a)pyrene					2.57E-07	3.34E-07	2.57E-07	3.34E-07	6.69E-07
Benzo(b)fluoranthene					1.11E-06	1.44E-06	1.11E-06	1.44E-06	2.89E-06
Benzo(b,k)fluoranthene	1.70E-07	1.03E-07	1.70E-07	6.10E-08					1.64E-07
Benzo(e)pyrene									
Benzo(g,h,i)perylene	4.90E-07	2.98E-07	4.90E-07	1.76E-07	5.56E-07	7.23E-07	5.56E-07	7.23E-07	1.92E-06
Benzo(k)fluoranthene					2.18E-07	2.84E-07	2.18E-07	2.84E-07	5.67E-07
Biphenyl									
Carbon Tetrachloride									
Chlorobenzene									
Chloroform									
Chrysene	3.50E-07	2.13E-07	3.50E-07	1.26E-07	1.53E-06	1.99E-06	1.53E-06	1.99E-06	4.32E-06
Cyclohexane									
Dibenzo(a,h)anthracene	5.80E-07	3.52E-07	5.80E-07	2.08E-07	3.46E-07	4.50E-07	3.46E-07	4.50E-07	1.46E-06
Ethylbenzene									
Fluoranthene	7.60E-06	4.61E-06	7.60E-06	2.73E-06	4.03E-06	5.24E-06	4.03E-06	5.24E-06	1.78E-05
Fluorene	2.90E-05	1.76E-05	2.90E-05	1.04E-05	1.28E-05	1.66E-05	1.28E-05	1.66E-05	6.13E-05
Formaldehyde	1.20E-03	7.29E-04	1.20E-03	4.31E-04	7.89E-05	1.03E-04	7.89E-05	1.03E-04	1.36E-03
Indeno(1,2,3-cd)pyrene	3.80E-07	2.31E-07	3.80E-07	1.36E-07	4.14E-07	5.38E-07	4.14E-07	5.38E-07	1.44E-06
Methanol									
Methyl chloride									
Total PAHs	1.70E-04	1.03E-04	1.70E-04	6.10E-05	1.30E-04	1.69E-04	1.30E-04	1.69E-04	5.02E-04
n-Hexane									
OCDD									
Perylene									
Phenanathrene	2.90E-05	1.76E-05	2.90E-05	1.04E-05	4.08E-05	5.31E-05	4.08E-05	5.31E-05	1.34E-04
Phenol									
Pyrene	4.80E-06	2.91E-06	4.80E-06	1.72E-06	3.71E-06	4.83E-06	3.71E-06	4.83E-06	1.43E-05
Styrene									
Toluene	4.10E-04	2.49E-04	4.10E-04	1.47E-04	2.81E-04	3.65E-04	2.81E-04	3.65E-04	1.13E-03
Vinyl Chloride									
Xylene	2.90E-04	1.76E-04	2.90E-04	1.04E-04	1.93E-04	2.51E-04	1.93E-04	2.51E-04	7.82E-04
Arsenic	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Antimony	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05

LUIS A. PAREDES MASSONI
INGENIERO
LICENCIADO
LIC. #17776
PUERTO RICO

Potential Emissions - Palo Seco Power Plant Emergency Engines

Pollutant	Emissions From GE-GIS-PS-1 385 hp		Emissions From B1-PS-1 208 hp		Emissions From GE-PS-1 765 hp		Emissions From GE-PS-2 765 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.048	0.64	2.492	0.89	3.2	4.16	3.2	4.16	9.85E+00
CO	0.909	0.55	0.831	0.30	0.85	1.11	0.85	1.11	3.06E+00
VOC	0.35	0.21	0.35	0.13	0.0819	0.11	0.0819	0.11	5.51E-01
PM	0.0524	0.03	0.1278	0.05	0.062	0.08	0.062	0.08	2.39E-01
PM10	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
PM2.5	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
SO2	0.0015	0.00	0.0015	0.00	0.5050	0.66	0.5050	0.66	1.32E+00
H2SO4	2.30E-04	1.39E-04	2.30E-04	8.24E-05	7.73E-02	1.01E-01	7.73E-02	1.01E-01	2.01E-01
CO2e	1.64E+02	9.94E+01	1.64E+02	5.87E+01	1.64E+02	2.13E+02	1.64E+02	2.13E+02	5.84E+02
Beryllium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Cadmium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Chromium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Cobalt	4.93E-06	3.00E-06	4.93E-06	1.77E-06	4.93E-06	6.42E-06	4.93E-06	6.42E-06	1.76E-05
Lead	9.87E-06	5.99E-06	9.87E-06	3.54E-06	9.87E-06	1.28E-05	9.87E-06	1.28E-05	3.52E-05
Manganese	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Mercury	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Nickel	4.93E-06	3.00E-06	4.93E-06	1.77E-06	4.93E-06	6.42E-06	4.93E-06	6.42E-06	1.76E-05
Selenium	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Total HAPs	**4.12E-03**	**2.50E-03**	**4.12E-03**	**1.48E-03**	**1.70E-03**	**2.21E-03**	**1.70E-03**	**2.21E-03**	**8.40E-03**

Engine firing rate	**17.6**	**gal/hr**	**10.4**	**gal/hr**	**37.7**	**gal/hr**	**37.7**	**gal/hr**
Engine operating hours	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**
Engine annual heat input	**1,214**	**MMBtu/yr**	**718**	**MMBtu/yr**	**2,601**	**MMBtu/yr**	**2,601**	**MMBtu/yr**
Fuel Sulfur	**0.0015**	**%**	**0.0015**	**%**	**0.50**	**%**	**0.50**	**%**

Notes:
1) Organic HAP emissions from diesel engines rated <600 hp from AP-42 Section 3.3, Table 3.3-2. Metal HAP emissions from fuel samples
2) Organic HAP emissions from diesel engines rated >600 hp from AP-42 Section 3.4, Tables 3.4-3 and 3.4-4. Metal HAP emissions from fuel samples
3) HAP emisisons from propane engine from AP-42 Section 3.2, Table 3.2-2.
4) NOx, CO, and PM (filterable) emissions are from 40 CFR 60 NSPS Subpart IIII for GE-GIS-PS-1 and B1-PS-1
5) VOC from AP-42 Tables 3.3-1 and 3.4-1
6) SO2 emissions from mass balance and fuel sulfur content
7) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
8) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2



Potential Emissions - Palo Seco Natural Gas Handling System Fugitive Emissions

Emission Factors	
Source Type	**Gas (kg/hr/source)**
Flanges (Vapor)	0.00039
Flanges (Liquid)	0.00011
Valves (Vapor)	0.0045
Others (compressors, drains, instruments, meters, PSVs, vents) (Vapor)	0.0088

Emission factors are from EPA's "Protocol for Equipment Leak Emissions Estimates" Table 2-4 (November 1995)

Potential Emissions					
Source Type	**Source Type Used**	**Count**	**All Gas (tpy)**	**VOC (tpy)**	**GHG (tpy)**
Flange (Vapor)	Flanges	38	0.143	0.014	3.2
Flange (Liquid)	Flanges	20	0.021	0.002	0.5
Valves (Vapor)	Valves	53	2.303	0.230	51.8
Vents, Drains, PIs, Lis, PSVs (Vapor)	Others	36	3.060	0.306	68.8
TOTALS			**5.53**	**0.55**	**124.4**
LNG estimated to have combined methane and ethane content >95% but emissions conservatively assume a VOC content of 10 percent.					
GHG emissions based upon all non-VOC emissions being methane with a global warmng potential of 25 (see 40 CFR 98, Subpart A, Table A-1)					

$$GHG\left(\frac{ton}{year}\right) = [All\ gas\left(\frac{ton}{year}\right) - VOC\left(\frac{ton}{year}\right)]\ X\ 25$$



PREPA Palo Seco

Proposed Compliance Emissions Tracking - Pratt & Whitney FT8 Combustion Turbine Project

The two limiting pollutants to net out of PSD are CO for gas firing and PM2.5 for oil firing to avoid PSD. A simple fuel cap can be assumed if only one fuel is fired in any year, however in a typical year will likely include firing of both fuels. To account for this, the following compliance mechanism will be implemented to ensure that the emissions of all pollutants remain below the proposed emission caps to ensure that the Project nets out of PSD.

PREPA shall track daily fuel usage and emissions.
The daily emissions shall be used to calculate rolling 365-day emissins

NOx:

$$NOx\left(\frac{ton}{day}\right) + NOx\ Total\ tons\ (364\ previous\ days) < 753.4\ tons\ 365\ days\ rolling$$

$$NOx\left(\frac{ton}{day}\right) = [NSPS\ Subpart\ KKKK\ Limit\left(\frac{1.2\ lb}{MW-hr}\right) X\ USNG\left(\frac{MW-hr}{day}\right) + NSPS\ Subpart\ KKKK\ Limit\left(\frac{3.6\ lb}{MW-hr}\right)\ X\ USdiesel\ \left(\frac{MW-hr}{day}\right)] \div 2.000\ lb/ton$$

CO:

$$CO\left(\frac{ton}{day}\right) + CO\ Total\ tons\ (364\ previous\ days) < 99.4\ tons\ 365\ days\ rolling$$

$$CO\left(\frac{ton}{day}\right) = [0.0767\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0343\left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$

PM:

$$PM\left(\frac{ton}{day}\right) + PM\ Total\ tons\ (364\ previous\ days) < 34.6\ tons\ 365\ days\ rolling$$

$$PM\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$

PM10:

$$PM10\left(\frac{ton}{day}\right) + PM10\ Total\ tons\ (364\ previous\ days) < 24.6\ tons\ 365\ days\ rolling$$

$$PM10\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$

PM2.5:

$$PM2.5\left(\frac{ton}{day}\right) + PM2.5\ Total\ tons\ (364\ previous\ days) < 19.6\ tons\ 365\ days\ rolling$$

$$PM2.5\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$



VOC:

$$VOC\ \left(\frac{ton}{day}\right) + VOC\ Total\ tons\ (364\ previous\ days) < 40.1\ tons\ 365\ days\ rolling$$

$$VOC\ \left(\frac{ton}{day}\right) = [0.0051\ \left(\frac{lb}{MMBtu}\right) X\ USNG\ \left(\frac{MMBtu}{day}\right) + 0.0071\ \left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$

SO2:

$$SO2\ \left(\frac{ton}{day}\right) + SO2\ Total\ tons\ (364\ previous\ days) < 59.7\ tons\ 365\ days\ rolling$$

$$SO2\ \left(\frac{ton}{day}\right) = [NG\ \left(\frac{gr\ S}{100\ dscf}\right) X\ \left(\frac{1\ lb}{7{,}000\ gr}\right) X\ \left(\frac{1\ dscf}{1{,}020\ Btu}\right) X\ \left(\frac{1x10^6\ Btu}{MMBtu}\right) X\ USNG\ \left(\frac{MMBtu}{day}\right) +$$

$$Diesel\ wt\%\ S\ X\ Diesel\ gals\ X\ \left(\frac{7.05\ lb}{gal}\right) X\ USDiesel\ \left(\frac{MMBtu}{day}\right)] X\ \left(\frac{2\ lb\ SO2}{lb\ S}\right) \div 2.000\ lb/ton$$

H2SO4:

$$H2SO4\ \left(\frac{ton}{day}\right) + H2SO4\ Total\ tons\ (364\ previous\ days) < 9.9\ tons\ 365\ days\ rolling$$

$$H2SO4\ \left(\frac{ton}{day}\right) = SO2\ \left(\frac{ton}{day}\right) x\ \frac{98\ lb\ H2SO4}{64\ lb\ SO2}\ x\ 10\%$$

GHGs:

$$GHG\ \left(\frac{ton}{day}\right) + GHG\ Total\ tons\ (364\ previous\ days) < 208{,}115\ tons\ 365\ days\ rolling$$

$$GHG\ \left(\frac{ton}{day}\right) = [117.12\ \left(\frac{lb}{MMBtu}\right) X\ USNG\ \left(\frac{MMBtu}{day}\right) + 163.64\ \left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$



PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
			(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
2009	**13,212.0**	**0.040**														
Jan	215.7	0.040	0.55		0.01		0.03		0.00		0.00		0.00		102.27	
Feb	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Mar	56.7	0.040	0.14		0.00		0.01		0.00		0.00		0.00		26.87	
Apr	113.8	0.040	0.29		0.00		0.01		0.00		0.00		0.00		53.98	
May	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jun	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jul	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Aug	2,813.5	0.025	7.17		0.10		0.21		0.03		0.03		0.00		1,334.23	
Sep	2,655.0	0.020	6.77		0.09		0.16		0.02		0.03		0.00		1,259.09	
Oct	7,357.4	0.018	18.76		0.26		0.39		0.06		0.07		0.01		3,489.12	
Nov	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Dec	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
2010	**12,979.4**	**0.024**														
Jan	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Feb	3,040.1	0.020	7.75		0.11		0.17		0.03		0.03		0.00		1,441.73	
Mar	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Apr	100.0	0.020	0.25		0.00		0.01		0.00		0.00		0.00		47.41	
May	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jun	2,580.2	0.024	6.58		0.09		0.18		0.03		0.02		0.00		1,223.63	
Jul	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Aug	4,069.6	0.024	10.38		0.14		0.28		0.04		0.04		0.00		1,929.93	
Sep	3,189.4	0.020	8.13		0.11		0.19		0.03		0.03		0.00		1,512.53	
Oct	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Nov	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Dec	0.0	0.000	0.00	33.40	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,210.40
2011	**7,956.4**	**0.020**														
Jan	0.0	0.000	0.00	33.12	0.00	0.45	0.00	0.80	0.00	0.12	0.00	0.12	0.00	0.02	0.00	6,159.27
Feb	0.0	0.000	0.00	33.12	0.00	0.45	0.00	0.80	0.00	0.12	0.00	0.12	0.00	0.02	0.00	6,159.27
Mar	476.9	0.020	1.22	33.66	0.02	0.46	0.03	0.81	0.00	0.12	0.00	0.13	0.00	0.02	226.18	6,258.92
Apr	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
May	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Jun	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Jul	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Aug	2,799.2	0.020	7.14	33.49	0.10	0.46	0.16	0.78	0.03	0.12	0.03	0.13	0.00	0.02	1,327.48	6,228.55
Sep	1,148.2	0.020	2.93	31.57	0.04	0.43	0.07	0.74	0.01	0.11	0.01	0.12	0.00	0.01	544.52	5,871.27
Oct	3,532.0	0.020	9.01	26.70	0.12	0.36	0.21	0.65	0.03	0.10	0.03	0.10	0.00	0.01	1,675.01	4,964.22
Nov	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
Dec	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
2012	**11,064.7**	**0.020**														
Jan	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
Feb	9,971.2	0.010	25.43	35.53	0.35	0.48	0.29	0.71	0.04	0.11	0.10	0.13	0.01	0.02	4,728.65	6,607.67
Mar	0.0	0.000	0.00	35.53	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,607.67
Apr	0.0	0.000	0.00	35.41	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,583.97
May	0.0	0.000	0.00	35.41	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,583.97
Jun	920.7	0.020	2.35	33.29	0.03	0.45	0.05	0.64	0.01	0.10	0.01	0.12	0.00	0.02	436.61	6,190.46
Jul	0.0	0.000	0.00	33.29	0.00	0.45	0.00	0.64	0.00	0.10	0.00	0.12	0.00	0.02	0.00	6,190.46
Aug	0.0	0.000	0.00	28.10	0.00	0.38	0.00	0.50	0.00	0.08	0.00	0.11	0.00	0.01	0.00	5,225.49
Sep	172.9	0.010	0.44	24.25	0.01	0.33	0.01	0.41	0.00	0.06	0.00	0.09	0.00	0.01	81.98	4,510.21
Oct	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
Nov	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21

AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
			(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
Dec	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
2013	**8,759.6**	**0.020**														
Jan	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
Feb	7,162.7	0.020	18.27	33.39	0.25	0.46	0.41	0.61	0.06	0.09	0.07	0.13	0.01	0.02	3,396.78	6,208.60
Mar	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Apr	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
May	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Jun	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Jul	139.2	0.020	0.36	32.96	0.00	0.45	0.01	0.60	0.00	0.09	0.00	0.12	0.00	0.02	66.02	6,128.52
Aug	0.0	0.000	0.00	29.39	0.00	0.40	0.00	0.52	0.00	0.08	0.00	0.11	0.00	0.01	0.00	5,464.78
Sep	1,457.7	0.020	3.72	29.78	0.05	0.41	0.09	0.53	0.01	0.08	0.01	0.11	0.00	0.01	691.30	5,538.17
Oct	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Nov	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Dec	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
2014	**119,480.3**	**0.020**														
Jan	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Feb	0.0	0.000	0.00	12.56	0.00	0.17	0.00	0.28	0.00	0.04	0.00	0.05	0.00	0.01	0.00	2,336.34
Mar	545.1	0.020	1.39	13.26	0.02	0.18	0.03	0.30	0.00	0.05	0.01	0.05	0.00	0.01	258.50	2,465.59
Apr	1,662.5	0.020	4.24	15.38	0.06	0.21	0.10	0.35	0.01	0.05	0.02	0.06	0.00	0.01	788.43	2,859.81
May	10,213.0	0.018	26.05	28.40	0.36	0.39	0.53	0.61	0.08	0.09	0.10	0.11	0.01	0.01	4,843.33	5,281.47
Jun	7,112.5	0.020	18.14	36.30	0.25	0.49	0.42	0.79	0.06	0.12	0.07	0.14	0.01	0.02	3,372.99	6,749.66
Jul	16,711.2	0.019	42.62	57.61	0.58	0.79	0.91	1.25	0.14	0.19	0.16	0.22	0.02	0.03	7,925.00	10,712.16
Aug	52,615.4	0.017	134.18	124.70	1.83	1.70	2.68	2.59	0.41	0.40	0.50	0.47	0.06	0.06	24,951.94	23,188.14
Sep	16,883.6	0.010	43.06	146.00	0.59	1.99	0.47	2.83	0.07	0.43	0.16	0.55	0.02	0.07	8,006.75	27,150.52
Oct	9,729.2	0.010	24.81	158.41	0.34	2.16	0.27	2.96	0.04	0.45	0.09	0.59	0.01	0.07	4,613.90	29,457.47
Nov	3,212.0	0.011	8.19	162.51	0.11	2.22	0.10	3.01	0.02	0.46	0.03	0.61	0.00	0.08	1,523.23	30,219.09
Dec	795.9	0.010	2.03	163.52	0.03	2.23	0.02	3.02	0.00	0.46	0.01	0.61	0.00	0.08	377.42	30,407.80
2015	**186,089.6**	**0.022**														
Jan	464.9	0.010	1.19	164.11	0.02	2.24	0.01	3.03	0.00	0.46	0.00	0.62	0.00	0.08	220.48	30,518.04
Feb	691.1	0.010	1.76	155.86	0.02	2.13	0.02	2.83	0.00	0.43	0.01	0.58	0.00	0.07	327.75	28,983.52
Mar	1,434.7	0.010	3.66	157.69	0.05	2.15	0.04	2.86	0.01	0.44	0.01	0.59	0.00	0.07	680.39	29,323.72
Apr	5,283.3	0.010	13.47	164.43	0.18	2.24	0.16	2.93	0.02	0.45	0.05	0.62	0.01	0.08	2,505.52	30,576.48
May	1,276.5	0.010	3.26	166.06	0.04	2.26	0.04	2.95	0.01	0.45	0.01	0.62	0.00	0.08	605.37	30,879.16
Jun	9,074.1	0.011	23.14	177.63	0.32	2.42	0.29	3.10	0.04	0.47	0.09	0.67	0.01	0.08	4,303.25	33,030.79
Jul	10,688.6	0.010	27.26	191.08	0.37	2.61	0.31	3.25	0.05	0.50	0.10	0.72	0.01	0.09	5,068.88	35,532.22
Aug	5,933.8	0.010	15.13	198.64	0.21	2.71	0.17	3.33	0.03	0.51	0.06	0.74	0.01	0.09	2,814.00	36,939.22
Sep	52,771.5	0.015	134.58	264.08	1.84	3.60	2.32	4.45	0.36	0.68	0.50	0.99	0.06	0.12	25,025.98	49,106.55
Oct	31,689.0	0.022	80.81	304.48	1.10	4.15	2.05	5.47	0.31	0.84	0.30	1.14	0.04	0.14	15,027.97	56,620.54
Nov	22,427.0	0.020	57.19	333.08	0.78	4.54	1.34	6.14	0.21	0.94	0.21	1.25	0.03	0.16	10,635.62	61,938.35
Dec	44,355.0	0.022	113.12	389.64	1.54	5.31	2.91	7.60	0.45	1.16	0.42	1.46	0.05	0.18	21,034.60	72,455.65
2016	**181,283.1**	**0.030**														
Jan	14,543.0	0.021	37.09	408.18	0.51	5.57	0.89	8.04	0.14	1.23	0.14	1.53	0.02	0.19	6,896.77	75,904.03
Feb	6,276.0	0.021	16.01	416.19	0.22	5.68	0.38	8.23	0.06	1.26	0.06	1.56	0.01	0.19	2,976.29	77,392.17
Mar	18,228.0	0.020	46.49	438.73	0.63	5.98	1.07	8.76	0.16	1.34	0.17	1.65	0.02	0.20	8,644.32	81,585.08
Apr	10,584.0	0.020	26.99	450.11	0.37	6.14	0.61	9.01	0.09	1.38	0.10	1.69	0.01	0.21	5,019.28	83,700.51
May	17,539.0	0.019	44.73	459.45	0.61	6.27	1.00	9.24	0.15	1.42	0.17	1.72	0.02	0.21	8,317.57	85,437.63
Jun	5,438.0	0.020	13.87	457.32	0.19	6.24	0.32	9.20	0.05	1.41	0.05	1.71	0.01	0.21	2,578.88	85,040.57
Jul	46,750.0	0.030	119.22	495.62	1.63	6.76	4.13	10.81	0.63	1.65	0.45	1.86	0.06	0.23	22,170.39	92,163.26
Aug	39,045.0	0.022	99.57	478.31	1.36	6.52	2.56	10.74	0.39	1.64	0.37	1.79	0.05	0.22	18,516.42	88,945.50
Sep	17,341.0	0.021	44.22	478.90	0.60	6.53	1.09	11.05	0.17	1.69	0.17	1.80	0.02	0.22	8,223.67	89,053.96
Oct	5,136.3	0.016	13.10	473.04	0.18	6.45	0.24	11.03	0.04	1.69	0.05	1.77	0.01	0.22	2,435.78	87,964.90

AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

			NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
Nov	159.6	0.016	0.41	469.15	0.01	6.40	0.01	10.99	0.00	1.68	0.00	1.76	0.00	0.22	75.70	87,241.14
Dec	243.2	0.016	0.62	468.44	0.01	6.39	0.01	10.98	0.00	1.68	0.00	1.76	0.00	0.22	115.35	87,110.10
2017	**300,672.4**	**0.045**														
Jan	3,072.0	0.016	7.83	471.77	0.11	6.43	0.14	11.05	0.02	1.69	0.03	1.77	0.00	0.22	1,456.86	87,728.29
Feb	4,567.4	0.016	11.65	476.71	0.16	6.50	0.21	11.14	0.03	1.71	0.04	1.79	0.01	0.22	2,166.01	88,647.43
Mar	1,700.4	0.013	4.34	477.05	0.06	6.51	0.07	11.15	0.01	1.71	0.02	1.79	0.00	0.22	806.40	88,710.43
Apr	6,686.6	0.013	17.05	478.84	0.23	6.53	0.26	11.21	0.04	1.72	0.06	1.80	0.01	0.22	3,171.02	89,043.18
May	12,826.8	0.010	32.71	493.57	0.45	6.73	0.38	11.38	0.06	1.74	0.12	1.85	0.02	0.23	6,082.90	91,781.95
Jun	20,716.7	0.006	52.83	508.41	0.72	6.93	0.37	11.42	0.06	1.75	0.20	1.91	0.02	0.24	9,824.55	94,542.60
Jul	27,821.3	0.004	70.95	530.26	0.97	7.23	0.34	11.43	0.05	1.75	0.27	1.99	0.03	0.25	13,193.78	98,605.05
Aug	54,325.2	0.007	138.54	591.96	1.89	8.07	1.10	11.90	0.17	1.82	0.52	2.22	0.06	0.28	25,762.78	110,079.44
Sep	30,986.9	0.027	79.02	564.19	1.08	7.69	2.43	11.95	0.37	1.83	0.30	2.12	0.04	0.26	14,694.99	104,913.95
Oct	44,144.4	0.034	112.58	580.07	1.54	7.91	4.39	13.13	0.67	2.01	0.42	2.18	0.05	0.27	20,934.73	107,867.33
Nov	48,381.8	0.045	123.39	613.16	1.68	8.36	6.38	15.64	0.98	2.40	0.46	2.30	0.06	0.29	22,944.22	114,021.63
Dec	45,442.8	0.036	115.89	614.55	1.58	8.38	4.84	16.61	0.74	2.54	0.43	2.30	0.05	0.29	21,550.47	114,279.57
2018	**163,433.8**	**0.032**														
Jan	46,933.0	0.032	119.69	655.85	1.63	8.94	4.39	18.36	0.67	2.81	0.45	2.46	0.06	0.31	22,257.15	121,959.76
Feb	41,449.7	0.019	105.71	700.70	1.44	9.56	2.31	19.33	0.35	2.96	0.40	2.63	0.05	0.33	19,656.80	130,300.01
Mar	24,675.0	0.024	62.93	708.92	0.86	9.67	1.76	19.67	0.27	3.01	0.24	2.66	0.03	0.33	11,701.68	131,828.69
Apr	18,039.1	0.018	46.00	718.43	0.63	9.80	0.93	19.83	0.14	3.04	0.17	2.69	0.02	0.33	8,554.75	133,596.43
May	6,210.3	0.014	15.84	703.98	0.22	9.60	0.25	19.46	0.04	2.98	0.06	2.64	0.01	0.33	2,945.12	130,910.21
Jun	2,091.9	0.022	5.33	699.72	0.07	9.54	0.14	19.37	0.02	2.97	0.02	2.62	0.00	0.33	992.06	130,116.80
Jul	4,691.7	0.027	11.96	646.09	0.16	8.81	0.38	17.49	0.06	2.68	0.04	2.42	0.01	0.30	2,224.95	120,144.08
Aug	8,599.4	0.029	21.93	607.27	0.30	8.28	0.73	16.58	0.11	2.54	0.08	2.28	0.01	0.28	4,078.11	112,924.93
Sep	290.6	0.028	0.74	585.53	0.01	7.98	0.02	16.05	0.00	2.46	0.00	2.20	0.00	0.27	137.82	108,882.00
Oct	1,224.1	0.028	3.12	580.54	0.04	7.92	0.10	15.98	0.02	2.45	0.01	2.18	0.00	0.27	580.53	107,954.38
Nov	5,820.9	0.024	14.84	587.76	0.20	8.01	0.41	16.18	0.06	2.48	0.06	2.20	0.01	0.27	2,760.46	109,296.76
Dec	3,408.1	0.018	8.69	591.79	0.12	8.07	0.18	16.26	0.03	2.49	0.03	2.22	0.00	0.28	1,616.21	110,047.19
2019	**2,606.1**	**0.018**														
Jan	0.0	0.000	0.00	587.87	0.00	8.02	0.00	16.19	0.00	2.48	0.00	2.20	0.00	0.27	0.00	109,318.76
Feb	78.2	0.018	0.20	582.15	0.00	7.94	0.00	16.09	0.00	2.46	0.00	2.18	0.00	0.27	37.09	108,254.30
Mar	767.4	0.018	1.96	580.96	0.03	7.92	0.04	16.07	0.01	2.46	0.01	2.18	0.00	0.27	363.94	108,033.07
Apr	1,760.5	0.017	4.49	574.68	0.06	7.84	0.09	15.99	0.01	2.45	0.02	2.16	0.00	0.27	834.89	106,865.00



AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

11/12/2019

PREPA Palo Seco - Pratt & Whitney FT-8 Allowable Operation To Net Out of PSD

Pollutant	PSGT 2-2, 3-1, and 3-2 Baseline Emissions (tpy)	BSG Potential Emissions (tpy)	PSD Significance (tpy)	PW FT8 Allowable Emissions (tpy)	PW FT8 Emissions Gas (lb/MMBtu)	PW FT8 Allowable Gas (MMBtu/yr)	PW FT8 Emissions Oil (lb/MMBtu)	PW FT8 Allowable Oil (MMBtu/yr)
NOx	718.4	4.92	40	753.4	0.1100	13,698,316	0.1731	8,704,880
PM	9.8	0.131	25	34.6	0.010	6,793,487	0.0177	3,905,707
PM10	9.8	0.131	15	24.6	0.010	4,828,092	0.0177	2,775,763
PM2.5	9.8	0.131	10	19.6	0.010	3,845,394	0.0177	2,210,791
SO2	19.8	0.004	40	59.7	0.0140	8,532,314	0.0505	2,365,394
VOC	0.33	0.14	40	40.1	0.0051	15,620,658	0.0071	11,263,804
CO	2.69	2.29	100	99.4	0.0767	2,593,341	0.0343	5,796,061
H2SO4	3.04	0.001	7	9.99	0.0021	9,316,279	0.0077	2,582,731
GHGs	133,596	481	75,000	208,115	117.12	3,553,938	163.64	2,543,553

NOTES:

PW FT8 Allowable Emissions (tpy) are equal to baseline emissions for PSGT 2-2, 3-1, and 3-2 plus PSD Significance Threshold

PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F

PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant

PW FT8 Allowable (hr/yr) are total hours for all three proposed PW FT8 Turbines based on allowable MMBtu/yr and 294.8 MMBtu/hr gas firing and 283.3 MM Btu/hr oil firing

Natural gas sulfur content limited to 5 grains per 100 standard cubic feet of gas

Distillate oil sulfur content limited to 0.05 percent by weight

GHGs are based upon the global warming potentials and emission factors in 40 CFR §98, Subpart A, Table A-1 and 40 CFR §98, Subpart C, Tables C-1 and C-2.



12/16/2019

Palo Seco Combustion Turbine Project Potential Emissions Versus PSD Significance Thresholds

Pollutant	Combustion Turbine Potential (tpy)	BSGs Potential (tpy)	Natural Gas Handling Potential (tpy)	Project Total Potential (tpy)	PSD Significance Threshold (tpy)
NO_x	191.34	4.922	0	196.3	40
PM	19.57	0.109	0	19.7	25
PM_{10}	19.57	0.131	0	19.7	15
$PM_{2.5}$	19.57	0.131	0	19.7	10
CO	99.45	2.292	0	101.7	100
VOC	7.85	0.136	0.55	8.54	40
SO_2	55.82	0.004	0	55.8	40
H_2SO_4	8.55	0.001	0	8.55	7
GHGs (as CO2e)	180,889	481	124	181,494	75,000



Future Potential Emissions - Palo Seco Power Plant														
Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)
NOx		8.8E-01	3,486.3	1.73E-01	191.3	1.10E-01	142.6	191.34	4.92		0.2133	3,811.6	9.85	7,499.1
CO		3.3E-03	13.1	3.43E-02	37.9	7.67E-02	99.5	99.45	2.29		0.0333	595.6	3.06	711.2
VOC		4.1E-04	1.6	7.10E-03	7.85	5.13E-03	6.7	7.85	0.14		0.0051	90.5	0.55	100.6
PM		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0521	930.9	0.24	998.2
PM10		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0470	839.6	0.23	907.0
PM2.5		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0470	839.6	0.23	907.0
SO2		5.05E-01	2,000.7	5.05E-02	55.82	1.40E-03	1.8	55.82	0.004		0.5423	9,689.9	1.32	11,747.7
H2SO4		7.73E-02	306.4	7.73E-03	8.55	2.14E-04	0.3	8.55	0.001		8.30E-02	1,483.8	0.20	1,798.9
GHGs as CO2e		163.64	648,300	163.64	180,889	117.12	151,864	180,889	481.0		1.66E+02	2,968,700	584	3,798,472
1,1,1-Trichloroethane											1.57E-06	2.81E-02		2.81E-02
1,3-Butadiene		1.60E-05	6.34E-02	1.60E-05	1.77E-02	4.30E-07	5.58E-04	1.77E-02					3.77E-05	8.11E-02
Acenaphthene									1.38E-05		1.41E-07	2.51E-03	1.35E-05	2.53E-03
Acenaphthylene									2.71E-05		1.69E-09	3.01E-05	2.89E-05	5.91E-05
Acetaldehyde						4.00E-05	5.19E-02	5.19E-02	7.41E-05				8.13E-04	5.27E-02
Acrolein						6.40E-06	8.30E-03	8.30E-03	2.32E-05				1.10E-04	8.41E-03
Anthracene									3.62E-06		8.13E-09	1.45E-04	5.03E-06	1.50E-04
Benzo(a)anthracene									1.83E-06		2.67E-08	4.78E-04	3.26E-06	4.81E-04
Benzene		5.50E-05	2.18E-01	5.50E-05	6.08E-02	1.20E-05	1.56E-02	6.08E-02	2.28E-03		1.43E-06	2.55E-02	2.92E-03	3.07E-01
Benzo(a)pyrene									7.55E-07				6.69E-07	6.69E-07
Benzo(b)fluoranthene									3.26E-06				2.89E-06	2.89E-06
Benzo(b,k)fluoranthene											9.87E-09	1.76E-04	1.64E-07	1.76E-04
Benzo(g,h,i)perylene									1.63E-06		1.51E-08	2.69E-04	1.92E-06	2.71E-04
Benzo(k)fluoranthene									6.41E-07				5.67E-07	5.67E-07
Chrysene									4.50E-06		1.59E-08	2.83E-04	4.32E-06	2.88E-04
Dibenzo(a,h)anthracene									1.02E-06		1.11E-08	1.99E-04	1.46E-06	2.00E-04
Ethylbenzene						3.20E-05	4.15E-02	4.15E-02			4.24E-07	7.58E-03		4.91E-02
Fluoranthene									1.18E-05		3.23E-08	5.77E-04	1.78E-05	5.94E-04
Fluorene									3.76E-05		2.98E-08	5.32E-04	6.13E-05	5.94E-04
Formaldehyde		2.31E-04	9.15E-01	2.31E-04	2.55E-01	2.19E-04	2.84E-01	2.84E-01	2.32E-04		2.20E-04	3.93E+00	1.36E-03	5.13E+00
Indeno(1,2,3-cd)pyrene									1.22E-06		1.43E-08	2.55E-04	1.44E-06	2.56E-04
Naphtalene		3.50E-05	1.39E-01	3.50E-05	3.87E-02	1.30E-06	1.69E-03	3.87E-02						1.77E-01
Total PAHs		4.00E-05	1.58E-01	4.00E-05	4.42E-02	2.20E-06	2.85E-03	4.42E-02	3.82E-04		8.67E-06	1.55E-01	5.02E-04	3.58E-01
OCDD											2.07E-11	3.69E-07		3.69E-07
Phenanathrene									1.20E-04		7.00E-08	1.25E-03	1.34E-04	1.38E-03
Propylene														
Pyrene									1.09E-05		2.83E-08	5.06E-04	1.43E-05	5.21E-04
Toluene						1.30E-04	1.69E-01	1.69E-01	8.26E-04		4.13E-05	7.38E-01	1.13E-03	9.08E-01
Xylene						6.40E-05	8.30E-02	8.30E-02	5.67E-04		7.27E-07	1.89E-02	7.82E-04	9.68E-02
Arsenic	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01

ING. JOSE A. PAREDES MUÑOZ
INGENIERO
LICENCIADO
LIC. #17776
PUERTO RICO

12/12/2019

Future Potential Emissions - Palo Seco Power Plant														
Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)
Antimony	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Beryllium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Cadmium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Chromium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	4.00	2.15E-04	3.84E+00	8.80E-06	3.85E+00
Cobalt	0.10	4.93E-06	1.96E-02	4.93E-06	5.45E-03			5.45E-03	1.45E-05	0.30	1.61E-05	2.88E-01	1.76E-05	3.13E-01
Lead	0.20	9.87E-06	3.91E-02	9.87E-06	1.09E-02			1.09E-02	2.90E-05	5.00	2.69E-04	4.80E+00	3.52E-05	4.85E+00
Manganese	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Mercury	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Nickel	0.10	4.93E-06	1.96E-02	4.93E-06	5.45E-03			5.45E-03	1.45E-05	10.8	5.80E-04	1.04E+01	1.76E-05	1.04E+01
Selenium	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Total HAPs		**4.70E-04**	**1.86**	**4.70E-04**	**0.52**	**5.06E-04**	**0.66**	**0.66**	**0.66**		**1.47E-03**	**26.27**		**28.79**
Maximum Individual HAP												**Nickel**		**10.39**



Future Potential Emissions - Palo Seco Power Plant

Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)

Fuel Type	Heat Content		Density lb/gal	Annual Firing Rate			
Distillate Oil (New GTs)	138,000	Btu/gal	6.81	16,020,227	gal/yr	2,210,791	MMBtu/yr
Natural Gas (New GTs)	1,020	Btu/cf	N/A	2,542	MMCF/yr	2,593,341	MMBtu/yr
Distillate Oil (Existing GTs	138,000	Btu/gal	6.81	57,416,087	gal/yr	7,923,420	MMBtu/yr
No. 6 Fuel Oil (Boilers)	150,000	Btu/gal	8.06	238,227,149	gal/yr	35,734,072	MMBtu/yr
Fuel Sulfur (new GTs)		0.05	%				
Fuel Sulfur (existing GTs)		0.50	%				
Fuel Sulfur (Boilers)		0.50	%				

Notes:

1) If results of fuel oil testing indicated that the concentration of a particular metal is below detectable limits, the metal concentration was set to one-half the lowest detectable level.
2) The facility-wide HAP potential emissions is based upon the maximum result by individual HAP and total HAPs for fuel oil and natural gas.
3) For distillate oil firing, PTE based upon existing permit limits, rated firing rate, and 8,760 hr/yr, as applicable.
4) For natural gas firing, PTE based upon vendor emission guarantee rated firing rate, and 8,760 hr/yr, as applicable
5) For natural gas firing, VOC and PM/PM10/PM2.5 emissions based on AP-42, Section 3.1, Table 3.1-1.
6) For natural gas firing, formaldehyde (HCOH) PTE based on vendor guarantee (91 ppbvd).
7) SO2 emissions based upon fuel sulfur content limits
8) HAP PTE, except for HCOH on gas for new CTGs, based on AP-42 Section 3.1, Tables 3.1-1, 3.1-3, 3.1-4, and 3.1-5.
9) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
10) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2
11) Natural gas and distillate oil throughput limited to keep emissions below PSD signficance threshold.
12) Boilers 1 and 2 potential emissions based upon 8% annual capacity factor for limited use oil units under 40 CFR 63, Subpart UUUUU.

13) Fuel Oil F factor	9190	dsf/MMBtu	
14) Natural Gas F factor	8710	dsf/MMBtu	
15) From Method 19 - NOx	1.194E-07	lb/scf:ppm	
16) From Method 19 - CO	7.270E-08	lb/scf:ppm	

Rated Fuel Firing Rates FT8

Fuel Type	MMBtu/hr	
Distillate Oil	283.3	24-hr average
Natural Gas	294.8	24-hr average

1 lb = 7000 grains



12/12/2019

Potential Emissions - Palo Seco Power Plant Black Start Engines

Pollutant	Emissions From BSG-PS-1 609 hp		Emissions From BSG-PS-2 609 hp		Emissions From BSG-PS-3 609 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.675	1.641	1.675	1.641	1.675	1.641	4.922
CO	0.780	0.764	0.780	0.764	0.780	0.764	2.292
VOC	0.046	0.045	0.046	0.045	0.046	0.045	0.136
PM (filterable only)	0.0370	0.036	0.0370	0.036	0.0370	0.036	0.109
PM10	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
PM2.5	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
SO2	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.004
H2SO4	0.0002	0.000	0.0002	0.000	0.0002	0.000	0.001
CO2e	163.64	160.3	163.64	160.3	163.64	160.3	481.0
1,1,1-Trichloroethane							
1,1-Dichloroethane							
1,2-Dichloroethane							
1,1,2,2,-Tetrachloroethane							
1,1,2-Trichloroethane							
1,3-Butadiene							
1,3-Dichloropropene							
Trimethylbenzenes							
2,2,4-Trimethylpentane							
Acenaphthene	4.68E-06	4.59E-06	4.68E-06	4.59E-06	4.68E-06	4.59E-06	1.38E-05
Acenaphthylene	9.23E-06	9.04E-06	9.23E-06	9.04E-06	9.23E-06	9.04E-06	2.71E-05
Acetaldehyde	2.52E-05	2.47E-05	2.52E-05	2.47E-05	2.52E-05	2.47E-05	7.41E-05
Acrolein	7.88E-06	7.72E-06	7.88E-06	7.72E-06	7.88E-06	7.72E-06	2.32E-05
Anthracene	1.23E-06	1.21E-06	1.23E-06	1.21E-06	1.23E-06	1.21E-06	3.62E-06
Benzo(a)anthracene	6.22E-07	6.09E-07	6.22E-07	6.09E-07	6.22E-07	6.09E-07	1.83E-06
Benzene	7.76E-04	7.60E-04	7.76E-04	7.60E-04	7.76E-04	7.60E-04	2.28E-03
Benzo(a)pyrene	2.57E-07	2.52E-07	2.57E-07	2.52E-07	2.57E-07	2.52E-07	7.55E-07
Benzo(b)fluoranthene	1.11E-06	1.09E-06	1.11E-06	1.09E-06	1.11E-06	1.09E-06	3.26E-06
Benzo(b,k)fluoranthene							
Benzo(e)pyrene							
Benzo(g,h,i)perylene	5.56E-07	5.45E-07	5.56E-07	5.45E-07	5.56E-07	5.45E-07	1.63E-06
Benzo(k)fluoranthene	2.18E-07	2.14E-07	2.18E-07	2.14E-07	2.18E-07	2.14E-07	6.41E-07
Biphenyl							
Carbon Tetrachloride							
Chlorobenzene							
Chloroform							
Chrysene	1.53E-06	1.50E-06	1.53E-06	1.50E-06	1.53E-06	1.50E-06	4.50E-06
Cyclohexane							
Dibenzo(a,h)anthracene	3.46E-07	3.39E-07	3.46E-07	3.39E-07	3.46E-07	3.39E-07	1.02E-06
Ethylbenzene							
Fluoranthene	4.03E-06	3.95E-06	4.03E-06	3.95E-06	4.03E-06	3.95E-06	1.18E-05
Fluorene	1.28E-05	1.25E-05	1.28E-05	1.25E-05	1.28E-05	1.25E-05	3.76E-05
Formaldehyde	7.89E-05	7.73E-05	7.89E-05	7.73E-05	7.89E-05	7.73E-05	2.32E-04
Indeno(1,2,3-cd)pyrene	4.14E-07	4.06E-07	4.14E-07	4.06E-07	4.14E-07	4.06E-07	1.22E-06
Methanol							
Methyl chloride							
Total PAHs	1.30E-04	1.27E-04	1.30E-04	1.27E-04	1.30E-04	1.27E-04	3.82E-04
n-Hexane							

Potential Emissions - Palo Seco Power Plant Black Start Engines

Pollutant	Emissions From BSG-PS-1 609 hp		Emissions From BSG-PS-2 609 hp		Emissions From BSG-PS-3 609 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.675	1.641	1.675	1.641	1.675	1.641	4.922
CO	0.780	0.764	0.780	0.764	0.780	0.764	2.292
VOC	0.046	0.045	0.046	0.045	0.046	0.045	0.136
PM (filterable only)	0.0370	0.036	0.0370	0.036	0.0370	0.036	0.109
PM10	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
PM2.5	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
SO2	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.004
H2SO4	0.0002	0.000	0.0002	0.000	0.0002	0.000	0.001
CO2e	163.64	160.3	163.64	160.3	163.64	160.3	481.0
OCDD							
Perylene							
Phenanathrene	4.08E-05	4.00E-05	4.08E-05	4.00E-05	4.08E-05	4.00E-05	1.20E-04
Phenol							
Pyrene	3.71E-06	3.64E-06	3.71E-06	3.64E-06	3.71E-06	3.64E-06	1.09E-05
Styrene							
Toluene	2.81E-04	2.75E-04	2.81E-04	2.75E-04	2.81E-04	2.75E-04	8.26E-04
Vinyl Chloride							
Xylene	1.93E-04	1.89E-04	1.93E-04	1.89E-04	1.93E-04	1.89E-04	5.67E-04
Arsenic	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Antimony	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Beryllium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Cadmium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Chromium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Cobalt	4.93E-06	4.84E-06	4.93E-06	4.84E-06	4.93E-06	4.84E-06	1.45E-05
Lead	9.87E-06	9.67E-06	9.87E-06	9.67E-06	9.87E-06	9.67E-06	2.90E-05
Manganese	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Mercury	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Nickel	4.93E-06	4.84E-06	4.93E-06	4.84E-06	4.93E-06	4.84E-06	1.45E-05
Selenium	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Total HAPs	**1.70E-03**	**1.67E-03**	**1.70E-03**	**1.67E-03**	**1.70E-03**	**1.67E-03**	**5.00E-03**

Engine firing rate	**28.4**	**gal/hr**	**28.4**	**gal/hr**	**28.4**	**gal/hr**
Engine firing rate	**3.92**	**MMBtu/hr**	**3.92**	**MMBtu/hr**	**3.92**	**MMBtu/hr**
Engine operating hours	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**
Engine annual heat input	**1,960**	**MMBtu/yr**	**1,960**	**MMBtu/yr**	**1,960**	**MMBtu/yr**
Fuel Sulfur	**0.0015**	**%**	**0.0015**	**%**	**0.0015**	**%**

Notes:

1) Organic HAP emissions from AP-42 Section 3.4, Tables 3.4-3 and 3.4-4. Metal HAP emissions from fuel samples

2) NOx, CO, PM (filterable), and VOC (as HC) emissions are from Caterpillar performance specifications

3) PM10/PM2.5 condensable from AP-42, Table 3.4-2

4) SO2 emissions from mass balance and fuel sulfur content

5) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4

6) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2 and GWPs in 40 CFR 98, Subchapter A, Table 1



Potential Emissions - Palo Seco Power Plant Emergency Engines

Pollutant	Emissions From GE-GIS-PS-1 385 hp		Emissions From B1-PS-1 208 hp		Emissions From GE-PS-1 765 hp		Emissions From GE-PS-2 765 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.048	0.64	2.492	0.89	3.2	4.16	3.2	4.16	9.85E+00
CO	0.909	0.55	0.831	0.30	0.85	1.11	0.85	1.11	3.06E+00
VOC	0.35	0.21	0.35	0.13	0.0819	0.11	0.0819	0.11	5.51E-01
PM	0.0524	0.03	0.1278	0.05	0.062	0.08	0.062	0.08	2.39E-01
PM10	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
PM2.5	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
SO2	0.0015	0.00	0.0015	0.00	0.5050	0.66	0.5050	0.66	1.32E+00
H2SO4	2.30E-04	1.39E-04	2.30E-04	8.24E-05	7.73E-02	1.01E-01	7.73E-02	1.01E-01	2.01E-01
CO2e	1.64E+02	9.94E+01	1.64E+02	5.87E+01	1.64E+02	2.13E+02	1.64E+02	2.13E+02	5.84E+02
1,1,1-Trichloroethane									
1,1-Dichloroethane									
1,2-Dichloroethane									
1,1,2,2,-Tetrachloroethane									
1,1,2-Trichloroethane									
1,3-Butadiene	3.90E-05	2.37E-05	3.90E-05	1.40E-05					3.77E-05
1,3-Dichloropropene									
Trimethylbenzenes									
2,2,4-Trimethylpentane									
Acenaphthene	1.40E-06	8.50E-07	1.40E-06	5.02E-07	4.68E-06	6.09E-06	4.68E-06	6.09E-06	1.35E-05
Acenaphthylene	5.10E-06	3.10E-06	5.10E-06	1.83E-06	9.23E-06	1.20E-05	9.23E-06	1.20E-05	2.89E-05
Acetaldehyde	7.74E-04	4.70E-04	7.74E-04	2.78E-04	2.52E-05	3.28E-05	2.52E-05	3.28E-05	8.13E-04
Acrolein	9.30E-05	5.65E-05	9.30E-05	3.34E-05	7.88E-06	1.02E-05	7.88E-06	1.02E-05	1.10E-04
Anthracene	1.90E-06	1.15E-06	1.90E-06	6.82E-07	1.23E-06	1.60E-06	1.23E-06	1.60E-06	5.03E-06
Benzo(a)anthracene	1.70E-06	1.03E-06	1.70E-06	6.10E-07	6.22E-07	8.09E-07	6.22E-07	8.09E-07	3.26E-06
Benzene	9.30E-04	5.65E-04	9.30E-04	3.34E-04	7.76E-04	1.01E-03	7.76E-04	1.01E-03	2.92E-03
Benzo(a)pyrene					2.57E-07	3.34E-07	2.57E-07	3.34E-07	6.69E-07
Benzo(b)fluoranthene					1.11E-06	1.44E-06	1.11E-06	1.44E-06	2.89E-06
Benzo(b,k)fluoranthene	1.70E-07	1.03E-07	1.70E-07	6.10E-08					1.64E-07
Benzo(e)pyrene									
Benzo(g,h,i)perylene	4.90E-07	2.98E-07	4.90E-07	1.76E-07	5.56E-07	7.23E-07	5.56E-07	7.23E-07	1.92E-06
Benzo(k)fluoranthene					2.18E-07	2.84E-07	2.18E-07	2.84E-07	5.67E-07
Biphenyl									
Carbon Tetrachloride									
Chlorobenzene									
Chloroform									
Chrysene	3.50E-07	2.13E-07	3.50E-07	1.26E-07	1.53E-06	1.99E-06	1.53E-06	1.99E-06	4.32E-06
Cyclohexane									
Dibenzo(a,h)anthracene	5.80E-07	3.52E-07	5.80E-07	2.08E-07	3.46E-07	4.50E-07	3.46E-07	4.50E-07	1.46E-06
Ethylbenzene									
Fluoranthene	7.60E-06	4.61E-06	7.60E-06	2.73E-06	4.03E-06	5.24E-06	4.03E-06	5.24E-06	1.78E-05
Fluorene	2.90E-05	1.76E-05	2.90E-05	1.04E-05	1.28E-05	1.66E-05	1.28E-05	1.66E-05	6.13E-05
Formaldehyde	1.20E-03	7.29E-04	1.20E-03	4.31E-04	7.89E-05	1.03E-04	7.89E-05	1.03E-04	1.36E-03
Indeno(1,2,3-cd)pyrene	3.80E-07	2.31E-07	3.80E-07	1.36E-07	4.14E-07	5.38E-07	4.14E-07	5.38E-07	1.44E-06
Methanol									
Methyl chloride									
Total PAHs	1.70E-04	1.03E-04	1.70E-04	6.10E-05	1.30E-04	1.69E-04	1.30E-04	1.69E-04	5.02E-04
n-Hexane									
OCDD									
Perylene									
Phenanathrene	2.90E-05	1.76E-05	2.90E-05	1.04E-05	4.08E-05	5.31E-05	4.08E-05	5.31E-05	1.34E-04
Phenol									
Pyrene	4.80E-06	2.91E-06	4.80E-06	1.72E-06	3.71E-06	4.83E-06	3.71E-06	4.83E-06	1.43E-05
Styrene									
Toluene	4.10E-04	2.49E-04	4.10E-04	1.47E-04	2.81E-04	3.65E-04	2.81E-04	3.65E-04	1.13E-03
Vinyl Chloride									
Xylene	2.90E-04	1.76E-04	2.90E-04	1.04E-04	1.93E-04	2.51E-04	1.93E-04	2.51E-04	7.82E-04
Arsenic	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Antimony	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05

FRANCISCO PAREDES MASSONI
INGENIERO
LICENCIADO
LIC. #17776
PUERTO RICO

12/16/2019

Potential Emissions - Palo Seco Power Plant Emergency Engines

Pollutant	Emissions From GE-GIS-PS-1 385 hp		Emissions From B1-PS-1 208 hp		Emissions From GE-PS-1 765 hp		Emissions From GE-PS-2 765 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.048	0.64	2.492	0.89	3.2	4.16	3.2	4.16	9.85E+00
CO	0.909	0.55	0.831	0.30	0.85	1.11	0.85	1.11	3.06E+00
VOC	0.35	0.21	0.35	0.13	0.0819	0.11	0.0819	0.11	5.51E-01
PM	0.0524	0.03	0.1278	0.05	0.062	0.08	0.062	0.08	2.39E-01
PM10	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
PM2.5	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
SO2	0.0015	0.00	0.0015	0.00	0.5050	0.66	0.5050	0.66	1.32E+00
H2SO4	2.30E-04	1.39E-04	2.30E-04	8.24E-05	7.73E-02	1.01E-01	7.73E-02	1.01E-01	2.01E-01
CO2e	1.64E+02	9.94E+01	1.64E+02	5.87E+01	1.64E+02	2.13E+02	1.64E+02	2.13E+02	5.84E+02
Beryllium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Cadmium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Chromium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Cobalt	4.93E-06	3.00E-06	4.93E-06	1.77E-06	4.93E-06	6.42E-06	4.93E-06	6.42E-06	1.76E-05
Lead	9.87E-06	5.99E-06	9.87E-06	3.54E-06	9.87E-06	1.28E-05	9.87E-06	1.28E-05	3.52E-05
Manganese	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Mercury	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Nickel	4.93E-06	3.00E-06	4.93E-06	1.77E-06	4.93E-06	6.42E-06	4.93E-06	6.42E-06	1.76E-05
Selenium	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Total HAPs	**4.12E-03**	**2.50E-03**	**4.12E-03**	**1.48E-03**	**1.70E-03**	**2.21E-03**	**1.70E-03**	**2.21E-03**	**8.40E-03**

Engine firing rate	**17.6**	**gal/hr**	**10.4**	**gal/hr**	**37.7**	**gal/hr**	**37.7**	**gal/hr**
Engine operating hours	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**
Engine annual heat input	**1,214**	**MMBtu/yr**	**718**	**MMBtu/yr**	**2,601**	**MMBtu/yr**	**2,601**	**MMBtu/yr**
Fuel Sulfur	**0.0015**	**%**	**0.0015**	**%**	**0.50**	**%**	**0.50**	**%**

Notes:
1) Organic HAP emissions from diesel engines rated <600 hp from AP-42 Section 3.3, Table 3.3-2. Metal HAP emissions from fuel samples
2) Organic HAP emissions from diesel engines rated >600 hp from AP-42 Section 3.4, Tables 3.4-3 and 3.4-4. Metal HAP emissions from fuel samples
3) HAP emisisons from propane engine from AP-42 Section 3.2, Table 3.2-2.
4) NOx, CO, and PM (filterable) emissions are from 40 CFR 60 NSPS Subpart IIII for GE-GIS-PS-1 and B1-PS-1
5) VOC from AP-42 Tables 3.3-1 and 3.4-1
6) SO2 emissions from mass balance and fuel sulfur content
7) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
8) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2



Potential Emissions - Palo Seco Natural Gas Handling System Fugitive Emissions

Emission Factors	
Source Type	**Gas (kg/hr/source)**
Flanges (Vapor)	0.00039
Flanges (Liquid)	0.00011
Valves (Vapor)	0.0045
Others (compressors, drains, instruments, meters, PSVs, vents) (Vapor)	0.0088

Emission factors are from EPA's "Protocol for Equipment Leak Emissions Estimates" Table 2-4 (November 1995)

Potential Emissions					
Source Type	**Source Type Used**	**Count**	**All Gas (tpy)**	**VOC (tpy)**	**GHG (tpy)**
Flange (Vapor)	Flanges	38	0.143	0.014	3.2
Flange (Liquid)	Flanges	20	0.021	0.002	0.5
Valves (Vapor)	Valves	53	2.303	0.230	51.8
Vents, Drains, PIs, Lis, PSVs (Vapor)	Others	36	3.060	0.306	68.8
TOTALS			**5.53**	**0.55**	**124.4**
LNG estimated to have combined methane and ethane content >95% but emissions conservatively assume a VOC content of 10 percent.					
GHG emissions based upon all non-VOC emissions being methane with a global warmng potential of 25 (see 40 CFR 98, Subpart A, Table A-1)					

$$GHG\left(\frac{ton}{year}\right) = [All\ gas\left(\frac{ton}{year}\right) - VOC\left(\frac{ton}{year}\right)]\ X\ 25$$

EFRAN PAREDES MAISONET
INGENIERO LICENCIADO
LIC. #17776
PUERTO RICO

PREPA Palo Seco

Proposed Compliance Emissions Tracking - Pratt & Whitney FT8 Combustion Turbine Project

The two limiting pollutants to net out of PSD are CO for gas firing and PM2.5 for oil firing to avoid PSD. A simple fuel cap can be assumed if only one fuel is fired in any year, however in a typical year will likely include firing of both fuels. To account for this, the following compliance mechanism will be implemented to ensure that the emissions of all pollutants remain below the proposed emission caps to ensure that the Project nets out of PSD.

PREPA shall track daily fuel usage and emissions.
The daily emissions shall be used to calculate rolling 365-day emissins

NOx:

$$NOx\left(\frac{ton}{day}\right) + NOx\ Total\ tons\ (364\ previous\ days) < 753.4\ tons\ 365\ days\ rolling$$

$$NOx\left(\frac{ton}{day}\right) = [NSPS\ Subpart\ KKKK\ Limit\left(\frac{1.2\ lb}{MW-hr}\right) X\ USNG\left(\frac{MW-hr}{day}\right) + NSPS\ Subpart\ KKKK\ Limit\left(\frac{3.6\ lb}{MW-hr}\right) X\ USdiesel\left(\frac{MW-hr}{day}\right)] \div 2{,}000\ lb/ton$$

CO:

$$CO\left(\frac{ton}{day}\right) + CO\ Total\ tons\ (364\ previous\ days) < 99.4\ tons\ 365\ days\ rolling$$

$$CO\left(\frac{ton}{day}\right) = [0.0767\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0343\left(\frac{lb}{MMBtu}\right) X\ USdiesel\left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$

PM:

$$PM\left(\frac{ton}{day}\right) + PM\ Total\ tons\ (364\ previous\ days) < 34.6\ tons\ 365\ days\ rolling$$

$$PM\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$

PM10:

$$PM10\left(\frac{ton}{day}\right) + PM10\ Total\ tons\ (364\ previous\ days) < 24.6\ tons\ 365\ days\ rolling$$

$$PM10\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$

PM2.5:

$$PM2.5\left(\frac{ton}{day}\right) + PM2.5\ Total\ tons\ (364\ previous\ days) < 19.6\ tons\ 365\ days\ rolling$$

$$PM2.5\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$



12/12/2019

VOC:

$$VOC\ \left(\frac{ton}{day}\right) + VOC\ Total\ tons\ (364\ previous\ days) < 40.1\ tons\ 365\ days\ rolling$$

$$VOC\ \left(\frac{ton}{day}\right) = [0.0051\ \left(\frac{lb}{MMBtu}\right) X\ USNG\ \left(\frac{MMBtu}{day}\right) + 0.0071\ \left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$

SO2:

$$SO2\ \left(\frac{ton}{day}\right) + SO2\ Total\ tons\ (364\ previous\ days) < 59.7\ tons\ 365\ days\ rolling$$

$$SO2\ \left(\frac{ton}{day}\right) = [NG\ \left(\frac{gr\ S}{100\ dscf}\right) X\ \left(\frac{1\ lb}{7{,}000\ gr}\right) X\ \left(\frac{1\ dscf}{1{,}020\ Btu}\right) X\ \left(\frac{1x10^6\ Btu}{MMBtu}\right) X\ USNG\ \left(\frac{MMBtu}{day}\right) +$$

$$Diesel\ wt\%\ S\ X\ Diesel\ gals\ X\ \left(\frac{7.05\ lb}{gal}\right) X\ USDiesel\ \left(\frac{MMBtu}{day}\right)] X\ \left(\frac{2\ lb\ SO2}{lb\ S}\right) \div 2{,}000\ lb/ton$$

H2SO4:

$$H2SO4\ \left(\frac{ton}{day}\right) + H2SO4\ Total\ tons\ (364\ previous\ days) < 9.9\ tons\ 365\ days\ rolling$$

$$H2SO4\ \left(\frac{ton}{day}\right) = SO2\ \left(\frac{ton}{day}\right) x\ \frac{98\ lb\ H2SO4}{64\ lb\ SO2}\ x\ 10\%$$

GHGs:

$$GHG\ \left(\frac{ton}{day}\right) + GHG\ Total\ tons\ (364\ previous\ days) < 208{,}115\ tons\ 365\ days\ rolling$$

$$GHG\ \left(\frac{ton}{day}\right) = [117.12\ \left(\frac{lb}{MMBtu}\right) X\ USNG\ \left(\frac{MMBtu}{day}\right) + 163.64\ \left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$



PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
			(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
2009	**13,212.0**	**0.040**														
Jan	215.7	0.040	0.55		0.01		0.03		0.00		0.00		0.00		102.27	
Feb	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Mar	56.7	0.040	0.14		0.00		0.01		0.00		0.00		0.00		26.87	
Apr	113.8	0.040	0.29		0.00		0.01		0.00		0.00		0.00		53.98	
May	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jun	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jul	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Aug	2,813.5	0.025	7.17		0.10		0.21		0.03		0.03		0.00		1,334.23	
Sep	2,655.0	0.020	6.77		0.09		0.16		0.02		0.03		0.00		1,259.09	
Oct	7,357.4	0.018	18.76		0.26		0.39		0.06		0.07		0.01		3,489.12	
Nov	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Dec	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
2010	**12,979.4**	**0.024**														
Jan	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Feb	3,040.1	0.020	7.75		0.11		0.17		0.03		0.03		0.00		1,441.73	
Mar	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Apr	100.0	0.020	0.25		0.00		0.01		0.00		0.00		0.00		47.41	
May	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jun	2,580.2	0.024	6.58		0.09		0.18		0.03		0.02		0.00		1,223.63	
Jul	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Aug	4,069.6	0.024	10.38		0.14		0.28		0.04		0.04		0.00		1,929.93	
Sep	3,189.4	0.020	8.13		0.11		0.19		0.03		0.03		0.00		1,512.53	
Oct	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Nov	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Dec	0.0	0.000	0.00	33.40	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,210.40
2011	**7,956.4**	**0.020**														
Jan	0.0	0.000	0.00	33.12	0.00	0.45	0.00	0.80	0.00	0.12	0.00	0.12	0.00	0.02	0.00	6,159.27
Feb	0.0	0.000	0.00	33.12	0.00	0.45	0.00	0.80	0.00	0.12	0.00	0.12	0.00	0.02	0.00	6,159.27
Mar	476.9	0.020	1.22	33.66	0.02	0.46	0.03	0.81	0.00	0.12	0.00	0.13	0.00	0.02	226.18	6,258.92
Apr	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
May	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Jun	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Jul	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Aug	2,799.2	0.020	7.14	33.49	0.10	0.46	0.16	0.78	0.03	0.12	0.03	0.13	0.00	0.02	1,327.48	6,228.55
Sep	1,148.2	0.020	2.93	31.57	0.04	0.43	0.07	0.74	0.01	0.11	0.01	0.12	0.00	0.01	544.52	5,871.27
Oct	3,532.0	0.020	9.01	26.70	0.12	0.36	0.21	0.65	0.03	0.10	0.03	0.10	0.00	0.01	1,675.01	4,964.22
Nov	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
Dec	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
2012	**11,064.7**	**0.020**														
Jan	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
Feb	9,971.2	0.010	25.43	35.53	0.35	0.48	0.29	0.71	0.04	0.11	0.10	0.13	0.01	0.02	4,728.65	6,607.67
Mar	0.0	0.000	0.00	35.53	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,607.67
Apr	0.0	0.000	0.00	35.41	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,583.97
May	0.0	0.000	0.00	35.41	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,583.97
Jun	920.7	0.020	2.35	33.29	0.03	0.45	0.05	0.64	0.01	0.10	0.01	0.12	0.00	0.02	436.61	6,190.46
Jul	0.0	0.000	0.00	33.29	0.00	0.45	0.00	0.64	0.00	0.10	0.00	0.12	0.00	0.02	0.00	6,190.46
Aug	0.0	0.000	0.00	28.10	0.00	0.38	0.00	0.50	0.00	0.08	0.00	0.11	0.00	0.01	0.00	5,225.49
Sep	172.9	0.010	0.44	24.25	0.01	0.33	0.01	0.41	0.00	0.06	0.00	0.09	0.00	0.01	81.98	4,510.21
Oct	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
Nov	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21

AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

11/12/2019

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

			NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
Dec	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
2013	**8,759.6**	**0.020**														
Jan	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
Feb	7,162.7	0.020	18.27	33.39	0.25	0.46	0.41	0.61	0.06	0.09	0.07	0.13	0.01	0.02	3,396.78	6,208.60
Mar	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Apr	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
May	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Jun	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Jul	139.2	0.020	0.36	32.96	0.00	0.45	0.01	0.60	0.00	0.09	0.00	0.12	0.00	0.02	66.02	6,128.52
Aug	0.0	0.000	0.00	29.39	0.00	0.40	0.00	0.52	0.00	0.08	0.00	0.11	0.00	0.01	0.00	5,464.78
Sep	1,457.7	0.020	3.72	29.78	0.05	0.41	0.09	0.53	0.01	0.08	0.01	0.11	0.00	0.01	691.30	5,538.17
Oct	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Nov	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Dec	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
2014	**119,480.3**	**0.020**														
Jan	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Feb	0.0	0.000	0.00	12.56	0.00	0.17	0.00	0.28	0.00	0.04	0.00	0.05	0.00	0.01	0.00	2,336.34
Mar	545.1	0.020	1.39	13.26	0.02	0.18	0.03	0.30	0.00	0.05	0.01	0.05	0.00	0.01	258.50	2,465.59
Apr	1,662.5	0.020	4.24	15.38	0.06	0.21	0.10	0.35	0.01	0.05	0.02	0.06	0.00	0.01	788.43	2,859.81
May	10,213.0	0.018	26.05	28.40	0.36	0.39	0.53	0.61	0.08	0.09	0.10	0.11	0.01	0.01	4,843.33	5,281.47
Jun	7,112.5	0.020	18.14	36.30	0.25	0.49	0.42	0.79	0.06	0.12	0.07	0.14	0.01	0.02	3,372.99	6,749.66
Jul	16,711.2	0.019	42.62	57.61	0.58	0.79	0.91	1.25	0.14	0.19	0.16	0.22	0.02	0.03	7,925.00	10,712.16
Aug	52,615.4	0.017	134.18	124.70	1.83	1.70	2.68	2.59	0.41	0.40	0.50	0.47	0.06	0.06	24,951.94	23,188.14
Sep	16,883.6	0.010	43.06	146.00	0.59	1.99	0.47	2.83	0.07	0.43	0.16	0.55	0.02	0.07	8,006.75	27,150.52
Oct	9,729.2	0.010	24.81	158.41	0.34	2.16	0.27	2.96	0.04	0.45	0.09	0.59	0.01	0.07	4,613.90	29,457.47
Nov	3,212.0	0.011	8.19	162.51	0.11	2.22	0.10	3.01	0.02	0.46	0.03	0.61	0.00	0.08	1,523.23	30,219.09
Dec	795.9	0.010	2.03	163.52	0.03	2.23	0.02	3.02	0.00	0.46	0.01	0.61	0.00	0.08	377.42	30,407.80
2015	**186,089.6**	**0.022**														
Jan	464.9	0.010	1.19	164.11	0.02	2.24	0.01	3.03	0.00	0.46	0.00	0.62	0.00	0.08	220.48	30,518.04
Feb	691.1	0.010	1.76	155.86	0.02	2.13	0.02	2.83	0.00	0.43	0.01	0.58	0.00	0.07	327.75	28,983.52
Mar	1,434.7	0.010	3.66	157.69	0.05	2.15	0.04	2.86	0.01	0.44	0.01	0.59	0.00	0.07	680.39	29,323.72
Apr	5,283.3	0.010	13.47	164.43	0.18	2.24	0.16	2.93	0.02	0.45	0.05	0.62	0.01	0.08	2,505.52	30,576.48
May	1,276.5	0.010	3.26	166.06	0.04	2.26	0.04	2.95	0.01	0.45	0.01	0.62	0.00	0.08	605.37	30,879.16
Jun	9,074.1	0.011	23.14	177.63	0.32	2.42	0.29	3.10	0.04	0.47	0.09	0.67	0.01	0.08	4,303.25	33,030.79
Jul	10,688.6	0.010	27.26	191.08	0.37	2.61	0.31	3.25	0.05	0.50	0.10	0.72	0.01	0.09	5,068.88	35,532.22
Aug	5,933.8	0.010	15.13	198.64	0.21	2.71	0.17	3.33	0.03	0.51	0.06	0.74	0.01	0.09	2,814.00	36,939.22
Sep	52,771.5	0.015	134.58	264.08	1.84	3.60	2.32	4.45	0.36	0.68	0.50	0.99	0.06	0.12	25,025.98	49,106.55
Oct	31,689.0	0.022	80.81	304.48	1.10	4.15	2.05	5.47	0.31	0.84	0.30	1.14	0.04	0.14	15,027.97	56,620.54
Nov	22,427.0	0.020	57.19	333.08	0.78	4.54	1.34	6.14	0.21	0.94	0.21	1.25	0.03	0.16	10,635.62	61,938.35
Dec	44,355.0	0.022	113.12	389.64	1.54	5.31	2.91	7.60	0.45	1.16	0.42	1.46	0.05	0.18	21,034.60	72,455.65
2016	**181,283.1**	**0.030**														
Jan	14,543.0	0.021	37.09	408.18	0.51	5.57	0.89	8.04	0.14	1.23	0.14	1.53	0.02	0.19	6,896.77	75,904.03
Feb	6,276.0	0.021	16.01	416.19	0.22	5.68	0.38	8.23	0.06	1.26	0.06	1.56	0.01	0.19	2,976.29	77,392.17
Mar	18,228.0	0.020	46.49	438.73	0.63	5.98	1.07	8.76	0.16	1.34	0.17	1.65	0.02	0.20	8,644.32	81,585.08
Apr	10,584.0	0.020	26.99	450.11	0.37	6.14	0.61	9.01	0.09	1.38	0.10	1.69	0.01	0.21	5,019.28	83,700.51
May	17,539.0	0.019	44.73	459.45	0.61	6.27	1.00	9.24	0.15	1.42	0.17	1.72	0.02	0.21	8,317.57	85,437.63
Jun	5,438.0	0.020	13.87	457.32	0.19	6.24	0.32	9.20	0.05	1.41	0.05	1.71	0.01	0.21	2,578.88	85,040.57
Jul	46,750.0	0.030	119.22	495.62	1.63	6.76	4.13	10.81	0.63	1.65	0.45	1.86	0.06	0.23	22,170.39	92,163.26
Aug	39,045.0	0.022	99.57	478.31	1.36	6.52	2.56	10.74	0.39	1.64	0.37	1.79	0.05	0.22	18,516.42	88,945.50
Sep	17,341.0	0.021	44.22	478.90	0.60	6.53	1.09	11.05	0.17	1.69	0.17	1.80	0.02	0.22	8,223.67	89,053.96
Oct	5,136.3	0.016	13.10	473.04	0.18	6.45	0.24	11.03	0.04	1.69	0.05	1.77	0.01	0.22	2,435.78	87,964.90

AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
			(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
Nov	159.6	0.016	0.41	469.15	0.01	6.40	0.01	10.99	0.00	1.68	0.00	1.76	0.00	0.22	75.70	87,241.14
Dec	243.2	0.016	0.62	468.44	0.01	6.39	0.01	10.98	0.00	1.68	0.00	1.76	0.00	0.22	115.35	87,110.10
2017	**300,672.4**	**0.045**														
Jan	3,072.0	0.016	7.83	471.77	0.11	6.43	0.14	11.05	0.02	1.69	0.03	1.77	0.00	0.22	1,456.86	87,728.29
Feb	4,567.4	0.016	11.65	476.71	0.16	6.50	0.21	11.14	0.03	1.71	0.04	1.79	0.01	0.22	2,166.01	88,647.43
Mar	1,700.4	0.013	4.34	477.05	0.06	6.51	0.07	11.15	0.01	1.71	0.02	1.79	0.00	0.22	806.40	88,710.43
Apr	6,686.6	0.013	17.05	478.84	0.23	6.53	0.26	11.21	0.04	1.72	0.06	1.80	0.01	0.22	3,171.02	89,043.18
May	12,826.8	0.010	32.71	493.57	0.45	6.73	0.38	11.38	0.06	1.74	0.12	1.85	0.02	0.23	6,082.90	91,781.95
Jun	20,716.7	0.006	52.83	508.41	0.72	6.93	0.37	11.42	0.06	1.75	0.20	1.91	0.02	0.24	9,824.55	94,542.60
Jul	27,821.3	0.004	70.95	530.26	0.97	7.23	0.34	11.43	0.05	1.75	0.27	1.99	0.03	0.25	13,193.78	98,605.05
Aug	54,325.2	0.007	138.54	591.96	1.89	8.07	1.10	11.90	0.17	1.82	0.52	2.22	0.06	0.28	25,762.78	110,079.44
Sep	30,986.9	0.027	79.02	564.19	1.08	7.69	2.43	11.95	0.37	1.83	0.30	2.12	0.04	0.26	14,694.99	104,913.95
Oct	44,144.4	0.034	112.58	580.07	1.54	7.91	4.39	13.13	0.67	2.01	0.42	2.18	0.05	0.27	20,934.73	107,867.33
Nov	48,381.8	0.045	123.39	613.16	1.68	8.36	6.38	15.64	0.98	2.40	0.46	2.30	0.06	0.29	22,944.22	114,021.63
Dec	45,442.8	0.036	115.89	614.55	1.58	8.38	4.84	16.61	0.74	2.54	0.43	2.30	0.05	0.29	21,550.47	114,279.57
2018	**163,433.8**	**0.032**														
Jan	46,933.0	0.032	119.69	655.85	1.63	8.94	4.39	18.36	0.67	2.81	0.45	2.46	0.06	0.31	22,257.15	121,959.76
Feb	41,449.7	0.019	105.71	700.70	1.44	9.56	2.31	19.33	0.35	2.96	0.40	2.63	0.05	0.33	19,656.80	130,300.01
Mar	24,675.0	0.024	62.93	708.92	0.86	9.67	1.76	19.67	0.27	3.01	0.24	2.66	0.03	0.33	11,701.68	131,828.69
Apr	18,039.1	0.018	46.00	718.43	0.63	9.80	0.93	19.83	0.14	3.04	0.17	2.69	0.02	0.33	8,554.75	133,596.43
May	6,210.3	0.014	15.84	703.98	0.22	9.60	0.25	19.46	0.04	2.98	0.06	2.64	0.01	0.33	2,945.12	130,910.21
Jun	2,091.9	0.022	5.33	699.72	0.07	9.54	0.14	19.37	0.02	2.97	0.02	2.62	0.00	0.33	992.06	130,116.80
Jul	4,691.7	0.027	11.96	646.09	0.16	8.81	0.38	17.49	0.06	2.68	0.04	2.42	0.01	0.30	2,224.95	120,144.08
Aug	8,599.4	0.029	21.93	607.27	0.30	8.28	0.73	16.58	0.11	2.54	0.08	2.28	0.01	0.28	4,078.11	112,924.93
Sep	290.6	0.028	0.74	585.53	0.01	7.98	0.02	16.05	0.00	2.46	0.00	2.20	0.00	0.27	137.82	108,882.00
Oct	1,224.1	0.028	3.12	580.54	0.04	7.92	0.10	15.98	0.02	2.45	0.01	2.18	0.00	0.27	580.53	107,954.38
Nov	5,820.9	0.024	14.84	587.76	0.20	8.01	0.41	16.18	0.06	2.48	0.06	2.20	0.01	0.27	2,760.46	109,296.76
Dec	3,408.1	0.018	8.69	591.79	0.12	8.07	0.18	16.26	0.03	2.49	0.03	2.22	0.00	0.28	1,616.21	110,047.19
2019	**2,606.1**	**0.018**														
Jan	0.0	0.000	0.00	587.87	0.00	8.02	0.00	16.19	0.00	2.48	0.00	2.20	0.00	0.27	0.00	109,318.76
Feb	78.2	0.018	0.20	582.15	0.00	7.94	0.00	16.09	0.00	2.46	0.00	2.18	0.00	0.27	37.09	108,254.30
Mar	767.4	0.018	1.96	580.96	0.03	7.92	0.04	16.07	0.01	2.46	0.01	2.18	0.00	0.27	363.94	108,033.07
Apr	1,760.5	0.017	4.49	574.68	0.06	7.84	0.09	15.99	0.01	2.45	0.02	2.16	0.00	0.27	834.89	106,865.00



AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

11/12/2019

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT2-2	Jan-09	0.00	0.0000
Palo Seco	PSGT3-1	Jan-09	82.10	0.0400
Palo Seco	PSGT3-2	Jan-09	133.55	0.0400
Palo Seco	PSGT2-2	Feb-09	0.00	0.0000
Palo Seco	PSGT3-1	Feb-09	0.00	0.0000
Palo Seco	PSGT3-2	Feb-09	0.00	0.0000
Palo Seco	PSGT2-2	Mar-09	56.67	0.0400
Palo Seco	PSGT3-1	Mar-09	0.00	0.0000
Palo Seco	PSGT3-2	Mar-09	0.00	0.0000
Palo Seco	PSGT2-2	Apr-09	0.00	0.0000
Palo Seco	PSGT3-1	Apr-09	113.83	0.0000
Palo Seco	PSGT3-2	Apr-09	0.00	0.0400
Palo Seco	PSGT2-2	May-09	0.00	0.0000
Palo Seco	PSGT3-1	May-09	0.00	0.0000
Palo Seco	PSGT3-2	May-09	0.00	0.0000
Palo Seco	PSGT2-2	Jun-09	0.00	0.0000
Palo Seco	PSGT3-1	Jun-09	0.00	0.0000
Palo Seco	PSGT3-2	Jun-09	0.00	0.0000
Palo Seco	PSGT2-2	Jul-09	0.00	0.0000
Palo Seco	PSGT3-1	Jul-09	0.00	0.0000
Palo Seco	PSGT3-2	Jul-09	0.00	0.0000
Palo Seco	PSGT2-2	Aug-09	1,793.90	0.0250
Palo Seco	PSGT3-1	Aug-09	1,019.55	0.0250
Palo Seco	PSGT3-2	Aug-09	0.00	0.0250
Palo Seco	PSGT2-2	Sep-09	1,048.52	0.0200
Palo Seco	PSGT3-1	Sep-09	387.29	0.0200
Palo Seco	PSGT3-2	Sep-09	1,219.19	0.0200
Palo Seco	PSGT2-2	Oct-09	2,634.81	0.0180
Palo Seco	PSGT3-1	Oct-09	2,608.07	0.0180
Palo Seco	PSGT3-2	Oct-09	2,114.52	0.0180
Palo Seco	PSGT2-2	Nov-09	0.00	0.0000
Palo Seco	PSGT3-1	Nov-09	0.00	0.0000
Palo Seco	PSGT3-2	Nov-09	0.00	0.0000
Palo Seco	PSGT2-2	Dec-09	0.00	0.0000
Palo Seco	PSGT3-1	Dec-09	0.00	0.0000
Palo Seco	PSGT3-2	Dec-09	0.00	0.0000
Palo Seco	PSGT2-2	Jan-10	0.00	0.0000
Palo Seco	PSGT3-1	Jan-10	0.00	0.0000
Palo Seco	PSGT3-2	Jan-10	0.00	0.0000
Palo Seco	PSGT2-2	Feb-10	701.90	0.0196
Palo Seco	PSGT3-1	Feb-10	1,131.12	0.0195

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-2	Feb-10	1,207.12	0.0194
Palo Seco	PSGT2-2	Mar-10	0.00	0.0000
Palo Seco	PSGT3-1	Mar-10	0.00	0.0000
Palo Seco	PSGT3-2	Mar-10	0.00	0.0000
Palo Seco	PSGT2-2	Apr-10	99.98	0.0200
Palo Seco	PSGT3-1	Apr-10	0.00	0.0000
Palo Seco	PSGT3-2	Apr-10	0.00	0.0000
Palo Seco	PSGT2-2	May-10	0.00	0.0000
Palo Seco	PSGT3-1	May-10	0.00	0.0000
Palo Seco	PSGT3-2	May-10	0.00	0.0000
Palo Seco	PSGT2-2	Jun-10	817.31	0.0243
Palo Seco	PSGT3-1	Jun-10	621.05	0.0243
Palo Seco	PSGT3-2	Jun-10	1,141.86	0.0243
Palo Seco	PSGT2-2	Jul-10	0.00	0.0000
Palo Seco	PSGT3-1	Jul-10	0.00	0.0000
Palo Seco	PSGT3-2	Jul-10	0.00	0.0000
Palo Seco	PSGT2-2	Aug-10	1,015.50	0.0238
Palo Seco	PSGT3-1	Aug-10	1,465.95	0.0238
Palo Seco	PSGT3-2	Aug-10	1,588.14	0.0238
Palo Seco	PSGT2-2	Sep-10	708.86	0.0200
Palo Seco	PSGT3-1	Sep-10	1,121.50	0.0192
Palo Seco	PSGT3-2	Sep-10	1,359.07	0.0192
Palo Seco	PSGT2-2	Oct-10	0.00	0.0000
Palo Seco	PSGT3-1	Oct-10	0.00	0.0000
Palo Seco	PSGT3-2	Oct-10	0.00	0.0000
Palo Seco	PSGT2-2	Nov-10	0.00	0.0000
Palo Seco	PSGT3-1	Nov-10	0.00	0.0000
Palo Seco	PSGT3-2	Nov-10	0.00	0.0000
Palo Seco	PSGT2-2	Dec-10	0.00	0.0000
Palo Seco	PSGT3-1	Dec-10	0.00	0.0000
Palo Seco	PSGT3-2	Dec-10	0.00	0.0000
Palo Seco	PSGT2-2	Jan-11	0.00	0.0000
Palo Seco	PSGT3-1	Jan-11	0.00	0.0000
Palo Seco	PSGT3-2	Jan-11	0.00	0.0000
Palo Seco	PSGT2-2	Feb-11	0.00	0.0000
Palo Seco	PSGT3-1	Feb-11	0.00	0.0000
Palo Seco	PSGT3-2	Feb-11	0.00	0.0000
Palo Seco	PSGT2-2	Mar-11	102.40	0.0200
Palo Seco	PSGT3-1	Mar-11	0.00	0.0000
Palo Seco	PSGT3-2	Mar-11	374.52	0.0200
Palo Seco	PSGT2-2	Apr-11	0.00	0.0000

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-1	Apr-11	0.00	0.0000
Palo Seco	PSGT3-2	Apr-11	0.00	0.0000
Palo Seco	PSGT2-2	May-11	0.00	0.0000
Palo Seco	PSGT3-1	May-11	0.00	0.0000
Palo Seco	PSGT3-2	May-11	0.00	0.0000
Palo Seco	PSGT2-2	Jun-11	0.00	0.0000
Palo Seco	PSGT3-1	Jun-11	0.00	0.0000
Palo Seco	PSGT3-2	Jun-11	0.00	0.0000
Palo Seco	PSGT2-2	Jul-11	0.00	0.0000
Palo Seco	PSGT3-1	Jul-11	0.00	0.0000
Palo Seco	PSGT3-2	Jul-11	0.00	0.0000
Palo Seco	PSGT2-2	Aug-11	1,160.21	0.0200
Palo Seco	PSGT3-1	Aug-11	773.93	0.0200
Palo Seco	PSGT3-2	Aug-11	865.08	0.0200
Palo Seco	PSGT2-2	Sep-11	382.74	0.0200
Palo Seco	PSGT3-1	Sep-11	425.27	0.0200
Palo Seco	PSGT3-2	Sep-11	340.21	0.0200
Palo Seco	PSGT2-2	Oct-11	1,152.31	0.0200
Palo Seco	PSGT3-1	Oct-11	1,218.74	0.0200
Palo Seco	PSGT3-2	Oct-11	1,161.00	0.0200
Palo Seco	PSGT2-2	Nov-11	0.00	0.0000
Palo Seco	PSGT3-1	Nov-11	0.00	0.0000
Palo Seco	PSGT3-2	Nov-11	0.00	0.0000
Palo Seco	PSGT2-2	Dec-11	0.00	0.0000
Palo Seco	PSGT3-1	Dec-11	0.00	0.0000
Palo Seco	PSGT3-2	Dec-11	0.00	0.0000
Palo Seco	PSGT2-2	Jan-12	0.00	0.0000
Palo Seco	PSGT3-1	Jan-12	0.00	0.0000
Palo Seco	PSGT3-2	Jan-12	0.00	0.0000
Palo Seco	PSGT2-2	Feb-12	3,578.46	0.0100
Palo Seco	PSGT3-1	Feb-12	3,177.34	0.0100
Palo Seco	PSGT3-2	Feb-12	3,215.35	0.0100
Palo Seco	PSGT2-2	Mar-12	0.00	0.0000
Palo Seco	PSGT3-1	Mar-12	0.00	0.0000
Palo Seco	PSGT3-2	Mar-12	0.00	0.0000
Palo Seco	PSGT2-2	Apr-12	0.00	0.0000
Palo Seco	PSGT3-1	Apr-12	0.00	0.0000
Palo Seco	PSGT3-2	Apr-12	0.00	0.0000
Palo Seco	PSGT2-2	May-12	0.00	0.0000
Palo Seco	PSGT3-1	May-12	0.00	0.0000
Palo Seco	PSGT3-2	May-12	0.00	0.0000

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT2-2	Jun-12	482.25	0.0200
Palo Seco	PSGT3-1	Jun-12	438.41	0.0200
Palo Seco	PSGT3-2	Jun-12	0.00	0.0000
Palo Seco	PSGT2-2	Jul-12	0.00	0.0000
Palo Seco	PSGT3-1	Jul-12	0.00	0.0000
Palo Seco	PSGT3-2	Jul-12	0.00	0.0000
Palo Seco	PSGT2-2	Aug-12	0.00	0.0000
Palo Seco	PSGT3-1	Aug-12	0.00	0.0000
Palo Seco	PSGT3-2	Aug-12	0.00	0.0000
Palo Seco	PSGT2-2	Sep-12	0.00	0.0000
Palo Seco	PSGT3-1	Sep-12	0.00	0.0100
Palo Seco	PSGT3-2	Sep-12	172.86	0.0000
Palo Seco	PSGT2-2	Oct-12	0.00	0.0000
Palo Seco	PSGT3-1	Oct-12	0.00	0.0000
Palo Seco	PSGT3-2	Oct-12	0.00	0.0000
Palo Seco	PSGT2-2	Nov-12	0.00	0.0000
Palo Seco	PSGT3-1	Nov-12	0.00	0.0000
Palo Seco	PSGT3-2	Nov-12	0.00	0.0000
Palo Seco	PSGT2-2	Dec-12	0.00	0.0000
Palo Seco	PSGT3-1	Dec-12	0.00	0.0000
Palo Seco	PSGT3-2	Dec-12	0.00	0.0000
Palo Seco	PSGT2-2	Jan-13	0.00	0.0000
Palo Seco	PSGT3-1	Jan-13	0.00	0.0000
Palo Seco	PSGT3-2	Jan-13	0.00	0.0000
Palo Seco	PSGT2-2	Feb-13	2,560.58	0.0194
Palo Seco	PSGT3-1	Feb-13	2,138.19	0.0194
Palo Seco	PSGT3-2	Feb-13	2,463.91	0.0196
Palo Seco	PSGT2-2	Mar-13	0.00	0.0000
Palo Seco	PSGT3-1	Mar-13	0.00	0.0000
Palo Seco	PSGT3-2	Mar-13	0.00	0.0000
Palo Seco	PSGT2-2	Apr-13	0.00	0.0000
Palo Seco	PSGT3-1	Apr-13	0.00	0.0000
Palo Seco	PSGT3-2	Apr-13	0.00	0.0000
Palo Seco	PSGT2-2	May-13	0.00	0.0000
Palo Seco	PSGT3-1	May-13	0.00	0.0000
Palo Seco	PSGT3-2	May-13	0.00	0.0000
Palo Seco	PSGT2-2	Jun-13	0.00	0.0000
Palo Seco	PSGT3-1	Jun-13	0.00	0.0000
Palo Seco	PSGT3-2	Jun-13	0.00	0.0000
Palo Seco	PSGT2-2	Jul-13	30.90	0.0200
Palo Seco	PSGT3-1	Jul-13	0.00	0.0000

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-2	Jul-13	108.31	0.0200
Palo Seco	PSGT2-2	Aug-13	0.00	0.0000
Palo Seco	PSGT3-1	Aug-13	0.00	0.0000
Palo Seco	PSGT3-2	Aug-13	0.00	0.0000
Palo Seco	PSGT2-2	Sep-13	629.07	0.0200
Palo Seco	PSGT3-1	Sep-13	557.14	0.0200
Palo Seco	PSGT3-2	Sep-13	271.52	0.0200
Palo Seco	PSGT2-2	Oct-13	0.00	0.0000
Palo Seco	PSGT3-1	Oct-13	0.00	0.0000
Palo Seco	PSGT3-2	Oct-13	0.00	0.0000
Palo Seco	PSGT2-2	Nov-13	0.00	0.0000
Palo Seco	PSGT3-1	Nov-13	0.00	0.0000
Palo Seco	PSGT3-2	Nov-13	0.00	0.0000
Palo Seco	PSGT2-2	Dec-13	0.00	0.0000
Palo Seco	PSGT3-1	Dec-13	0.00	0.0000
Palo Seco	PSGT3-2	Dec-13	0.00	0.0000
Palo Seco	PSGT2-2	Jan-14	0.00	0.0000
Palo Seco	PSGT3-1	Jan-14	0.00	0.0000
Palo Seco	PSGT3-2	Jan-14	0.00	0.0000
Palo Seco	PSGT2-2	Feb-14	0.00	0.0000
Palo Seco	PSGT3-1	Feb-14	0.00	0.0000
Palo Seco	PSGT3-2	Feb-14	0.00	0.0000
Palo Seco	PSGT2-2	Mar-14	146.35	0.0200
Palo Seco	PSGT3-1	Mar-14	162.75	0.0200
Palo Seco	PSGT3-2	Mar-14	236.00	0.0200
Palo Seco	PSGT2-2	Apr-14	803.14	0.0200
Palo Seco	PSGT3-1	Apr-14	566.37	0.0200
Palo Seco	PSGT3-2	Apr-14	293.02	0.0200
Palo Seco	PSGT2-2	May-14	3,473.26	0.0178
Palo Seco	PSGT3-1	May-14	3,581.14	0.0178
Palo Seco	PSGT3-2	May-14	3,158.57	0.0178
Palo Seco	PSGT2-2	Jun-14	1,971.02	0.0200
Palo Seco	PSGT3-1	Jun-14	2,568.86	0.0200
Palo Seco	PSGT3-2	Jun-14	2,572.64	0.0200
Palo Seco	PSGT2-2	Jul-14	6,390.57	0.0186
Palo Seco	PSGT3-1	Jul-14	5,156.93	0.0184
Palo Seco	PSGT3-2	Jul-14	5,163.71	0.0183
Palo Seco	PSGT2-2	Aug-14	20,128.97	0.0169
Palo Seco	PSGT3-1	Aug-14	18,422.47	0.0169
Palo Seco	PSGT3-2	Aug-14	14,063.94	0.0174
Palo Seco	PSGT2-2	Sep-14	5,877.76	0.0096

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-1	Sep-14	5,325.95	0.0096
Palo Seco	PSGT3-2	Sep-14	5,679.88	0.0096
Palo Seco	PSGT2-2	Oct-14	3,205.98	0.0095
Palo Seco	PSGT3-1	Oct-14	3,522.04	0.0095
Palo Seco	PSGT3-2	Oct-14	3,001.17	0.0095
Palo Seco	PSGT2-2	Nov-14	1,020.23	0.0103
Palo Seco	PSGT3-1	Nov-14	815.03	0.0106
Palo Seco	PSGT3-2	Nov-14	1,376.72	0.0106
Palo Seco	PSGT2-2	Dec-14	282.55	0.0100
Palo Seco	PSGT3-1	Dec-14	282.60	0.0100
Palo Seco	PSGT3-2	Dec-14	230.70	0.0100
Palo Seco	PSGT2-2	Jan-15	189.24	0.0100
Palo Seco	PSGT3-1	Jan-15	159.45	0.0100
Palo Seco	PSGT3-2	Jan-15	116.23	0.0100
Palo Seco	PSGT2-2	Feb-15	494.69	0.0100
Palo Seco	PSGT3-1	Feb-15	145.26	0.0100
Palo Seco	PSGT3-2	Feb-15	51.16	0.0100
Palo Seco	PSGT2-2	Mar-15	538.98	0.0100
Palo Seco	PSGT3-1	Mar-15	484.71	0.0100
Palo Seco	PSGT3-2	Mar-15	411.03	0.0100
Palo Seco	PSGT2-2	Apr-15	2082.95	0.0101
Palo Seco	PSGT3-1	Apr-15	1561.26	0.0101
Palo Seco	PSGT3-2	Apr-15	1639.11	0.0101
Palo Seco	PSGT2-2	May-15	671	0.0100
Palo Seco	PSGT3-1	May-15	605.52	0.0100
Palo Seco	PSGT3-2	May-15	0	0.0000
Palo Seco	PSGT2-2	Jun-15	3877.98	0.0108
Palo Seco	PSGT3-1	Jun-15	2735.98	0.0108
Palo Seco	PSGT3-2	Jun-15	2460.16	0.0109
Palo Seco	PSGT2-2	Jul-15	4718.4	0.0098
Palo Seco	PSGT3-1	Jul-15	2419.79	0.0098
Palo Seco	PSGT3-2	Jul-15	3550.4	0.0098
Palo Seco	PSGT2-2	Aug-15	2157.1	0.0100
Palo Seco	PSGT3-1	Aug-15	1888.31	0.0100
Palo Seco	PSGT3-2	Aug-15	1888.38	0.0100
Palo Seco	PSGT2-2	Sep-15	19798.69	0.0150
Palo Seco	PSGT3-1	Sep-15	17757.38	0.0150
Palo Seco	PSGT3-2	Sep-15	15215.43	0.0147
Palo Seco	PSGT2-2	Oct-15	16538	0.0221
Palo Seco	PSGT3-1	Oct-15	14279	0.0221
Palo Seco	PSGT3-2	Oct-15	872	0.0211

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT2-2	Nov-15	11058	0.0204
Palo Seco	PSGT3-1	Nov-15	10371	0.0204
Palo Seco	PSGT3-2	Nov-15	998	0.0204
Palo Seco	PSGT2-2	Dec-15	18659	0.0224
Palo Seco	PSGT3-1	Dec-15	17363	0.0224
Palo Seco	PSGT3-2	Dec-15	8333	0.0223
Palo Seco	PSGT2-2	Jan-16	5697	0.0209
Palo Seco	PSGT3-1	Jan-16	5392	0.0209
Palo Seco	PSGT3-2	Jan-16	3454	0.0209
Palo Seco	PSGT2-2	Feb-16	2306	0.0208
Palo Seco	PSGT3-1	Feb-16	2176	0.0208
Palo Seco	PSGT3-2	Feb-16	1794	0.0208
Palo Seco	PSGT2-2	Mar-16	7237	0.0201
Palo Seco	PSGT3-1	Mar-16	5384	0.0201
Palo Seco	PSGT3-2	Mar-16	5607	0.0201
Palo Seco	PSGT2-2	Apr-16	3452	0.0198
Palo Seco	PSGT3-1	Apr-16	3638	0.0197
Palo Seco	PSGT3-2	Apr-16	3494	0.0198
Palo Seco	PSGT2-2	May-16	6094	0.0194
Palo Seco	PSGT3-1	May-16	5962	0.0194
Palo Seco	PSGT3-2	May-16	5483	0.0194
Palo Seco	PSGT2-2	Jun-16	2116	0.0200
Palo Seco	PSGT3-1	Jun-16	1525	0.0200
Palo Seco	PSGT3-2	Jun-16	1797	0.0200
Palo Seco	PSGT2-2	Jul-16	16733	0.0302
Palo Seco	PSGT3-1	Jul-16	16375	0.0299
Palo Seco	PSGT3-2	Jul-16	13642	0.0302
Palo Seco	PSGT2-2	Aug-16	13538	0.0224
Palo Seco	PSGT3-1	Aug-16	13663	0.0221
Palo Seco	PSGT3-2	Aug-16	11844	0.0224
Palo Seco	PSGT2-2	Sep-16	7646	0.0214
Palo Seco	PSGT3-1	Sep-16	7885	0.0214
Palo Seco	PSGT3-2	Sep-16	1810	0.0212
Palo Seco	PSGT2-2	Oct-16	2509.67	0.0160
Palo Seco	PSGT3-1	Oct-16	2563.48	0.0160
Palo Seco	PSGT3-2	Oct-16	63.1	0.0160
Palo Seco	PSGT2-2	Nov-16	0	0.0000
Palo Seco	PSGT3-1	Nov-16	159.62	0.0160
Palo Seco	PSGT3-2	Nov-16	0	0.0000
Palo Seco	PSGT2-2	Dec-16	0	0.0000
Palo Seco	PSGT3-1	Dec-16	243.24	0.0160

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-2	Dec-16	0	0.0000
Palo Seco	PSGT2-2	Jan-17	1535.83	0.0160
Palo Seco	PSGT3-1	Jan-17	1536.21	0.0160
Palo Seco	PSGT3-2	Jan-17	0	0.0000
Palo Seco	PSGT2-2	Feb-17	2343.28	0.0156
Palo Seco	PSGT3-1	Feb-17	2224.12	0.0155
Palo Seco	PSGT3-2	Feb-17	0	0.0000
Palo Seco	PSGT2-2	Mar-17	804.78	0.0133
Palo Seco	PSGT3-1	Mar-17	895.64	0.0133
Palo Seco	PSGT3-2	Mar-17	0	0.0000
Palo Seco	PSGT2-2	Apr-17	3456.09	0.0133
Palo Seco	PSGT3-1	Apr-17	3230.55	0.0133
Palo Seco	PSGT3-2	Apr-17	0	0.0133
Palo Seco	PSGT2-2	May-17	6760.31	0.0102
Palo Seco	PSGT3-1	May-17	6066.52	0.0102
Palo Seco	PSGT3-2	May-17	0	0.0000
Palo Seco	PSGT2-2	Jun-17	8236.43	0.0060
Palo Seco	PSGT3-1	Jun-17	12480.3	0.0060
Palo Seco	PSGT3-2	Jun-17	0	0.0000
Palo Seco	PSGT2-2	Jul-17	14722.08	0.0042
Palo Seco	PSGT3-1	Jul-17	13099.23	0.0042
Palo Seco	PSGT3-2	Jul-17	0	0.0000
Palo Seco	PSGT2-2	Aug-17	30638.6	0.0066
Palo Seco	PSGT3-1	Aug-17	23686.57	0.0069
Palo Seco	PSGT3-2	Aug-17	0	0.0000
Palo Seco	PSGT2-2	Sep-17	11217.16	0.0255
Palo Seco	PSGT3-1	Sep-17	19769.71	0.0268
Palo Seco	PSGT3-2	Sep-17	0	0.0000
Palo Seco	PSGT2-2	Oct-17	29990.11	0.0339
Palo Seco	PSGT3-1	Oct-17	14154.29	0.0340
Palo Seco	PSGT3-2	Oct-17	0	0.0000
Palo Seco	PSGT2-2	Nov-17	31816.05	0.0451
Palo Seco	PSGT3-1	Nov-17	16565.71	0.0450
Palo Seco	PSGT3-2	Nov-17	0	0.0000
Palo Seco	PSGT2-2	Dec-17	24213.97	0.0352
Palo Seco	PSGT3-1	Dec-17	21228.84	0.0364
Palo Seco	PSGT3-2	Dec-17	0	0.0000
Palo Seco	PSGT2-2	Jan-18	19015.35	0.0320
Palo Seco	PSGT3-1	Jan-18	27917.61	0.0291
Palo Seco	PSGT3-2	Jan-18	0	0.0000
Palo Seco	PSGT2-2	Feb-18	14030.3	0.0188

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-1	Feb-18	27419.37	0.0190
Palo Seco	PSGT3-2	Feb-18	0	0.0000
Palo Seco	PSGT2-2	Mar-18	13186.57	0.0243
Palo Seco	PSGT3-1	Mar-18	11488.4	0.0244
Palo Seco	PSGT3-2	Mar-18	0	0.0000
Palo Seco	PSGT2-2	Apr-18	10972.54	0.0175
Palo Seco	PSGT3-1	Apr-18	7066.59	0.0177
Palo Seco	PSGT3-2	Apr-18	0	0.0000
Palo Seco	PSGT2-2	May-18	6064.97	0.0136
Palo Seco	PSGT3-1	May-18	145.32	0.0140
Palo Seco	PSGT3-2	May-18	0	0.0000
Palo Seco	PSGT2-2	Jun-18	472.68	0.0204
Palo Seco	PSGT3-1	Jun-18	1619.25	0.0223
Palo Seco	PSGT3-2	Jun-18	0	0.0000
Palo Seco	PSGT2-2	Jul-18	0	0.0000
Palo Seco	PSGT3-1	Jul-18	4691.69	0.0274
Palo Seco	PSGT3-2	Jul-18	0	0.0000
Palo Seco	PSGT2-2	Aug-18	0.6	0.0291
Palo Seco	PSGT3-1	Aug-18	8598.79	0.0286
Palo Seco	PSGT3-2	Aug-18	0	0.0000
Palo Seco	PSGT2-2	Sep-18	13.12	0.0283
Palo Seco	PSGT3-1	Sep-18	277.5	0.0283
Palo Seco	PSGT3-2	Sep-18	0	0.0000
Palo Seco	PSGT2-2	Oct-18	0	0.0000
Palo Seco	PSGT3-1	Oct-18	1224.14	0.0283
Palo Seco	PSGT3-2	Oct-18	0	0.0000
Palo Seco	PSGT2-2	Nov-18	0	0.0000
Palo Seco	PSGT3-1	Nov-18	5820.9	0.0239
Palo Seco	PSGT3-2	Nov-18	0	0.0000
Palo Seco	PSGT2-2	Dec-18	0	0.0000
Palo Seco	PSGT3-1	Dec-18	3408.06	0.0176
Palo Seco	PSGT3-2	Dec-18	0	0.0000
Palo Seco	PSGT2-2	Jan-19	0	0.0000
Palo Seco	PSGT3-1	Jan-19	0	0.0000
Palo Seco	PSGT3-2	Jan-19	0	0.0000
Palo Seco	PSGT2-2	Jan-19	0	0.0000
Palo Seco	PSGT3-1	Jan-19	0	0.0000
Palo Seco	PSGT3-2	Jan-19	0	0.0000
Palo Seco	PSGT2-2	Feb-19	0	0.0000
Palo Seco	PSGT3-1	Feb-19	78.21	0.0176
Palo Seco	PSGT3-2	Feb-19	0	0.0000

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT2-2	Mar-19	0	0.0000
Palo Seco	PSGT3-1	Mar-19	767.43	0.0175
Palo Seco	PSGT3-2	Mar-19	0	0.0000
Palo Seco	PSGT2-2	Apr-19	0	0.0000
Palo Seco	PSGT3-1	Apr-19	1760.5	0.0170
Palo Seco	PSGT3-2	Apr-19	0	0.0000

FT8® GAS TURBINE MOBILEPAC® (Water Injected)
Estimated Performance and Emissions

Performance Data			
Fuel Type		Nat Gas	Liquid
Percent of Unit Rating	%	100	100
Ambient Temperature	Deg F	85.0	85.0
Ambient Pressure	psia	14.696	14.696
Burner Water Injection In-Service		Yes	Yes
Fuel HHV	Btu/lb	23,748	19,858
Gross Power Output per GT	MW	27.888	27.226
Gross Heat Rate, HHV	Btu/kW-hr	10,571	10,404
Fuel Flow, per GT	lbs/hr	12,414	14,264
Heat Input, HHV, per GT	MMBtu/hr	294.8	283.3
Emissions & Exhaust Conditions at Stack Exit			
NOx	ppmvd @ 15% O2	30	45
	lb/MMBtu	0.1100	0.1731
	lb/hr	32.4	49.0
	lb/MW-hr	1.16	1.80
CO	ppmvd @ 15% O2	34.2	14.5
	lb/MMBtu	0.0767	0.0343
	lb/hr	22.6	9.7
VOC	ppmvd @ 15% O2	4.0	5.3
	lb/MMBtu	0.0051	0.0071
	lb/hr	1.51	2.02
SO2 (5.0 gr/100 cf gas, 0.05% oil)	lb/hr	4.13	14.30
	lb/MMBtu	0.0140	0.0505
TSP/PM10/PM2.5, Filt and Cond	lb/hr	3.00	5.00
	lb/MMBtu	0.0102	0.0177

EAR Export Classification: ECCN EAR99

FT8® GAS TURBINE MOBILEPAC® (Estimated Only, Water Injected)
Estimated Performance and Emissions
PREPA - ARG

Configuration: Gas Fuel WI-31 ppmvd NOx @ 15% O2, 0 m Alt., 70% RH, 60Hz PT, 60 Hz, 13.8 kV, 0.9 pf, Simple-Cycle

Performance Data																
Fuel Type		Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas
Percent of Unit Rating	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of GT's in Operation	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ambient Relative Humidity	%	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Ambient Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	30.0	43.0	48.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0
Ambient Pressure	Psia	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696
Plenum Inlet Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	30.0	43.0	48.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0
Burner Water Injection In-Service	Yes / No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inlet Loss	Inch H2O	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Exhaust Loss	Inch H2O	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fuel LHV	Btu/lb	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414
Ratio of HHV to LHV		1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109
Gross Power Output per MP, ref Gen Term	MWe	29.919	30.619	30.875	31.252	31.247	31.268	31.283	31.217	31.081	30.288	29.358	28.373	27.888	27.218	26.149
Gross Heat Rate, LHV, ref Gen Term	Btu/kWhr	8,864	8,956	8,995	9,064	9,092	9,191	9,256	9,279	9,285	9,325	9,404	9,487	9,532	9,603	9,732
Power Isle and BOP Aux Load, per MP	kW	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327
Net Power Output, per MP	MWe	29.592	30.292	30.548	30.925	30.920	30.941	30.956	30.890	30.754	29.961	29.031	28.046	27.561	26.891	25.822
Net Heat Rate, LHV	Btu/kWhr	8,962	9,052	9,091	9,159	9,188	9,288	9,354	9,378	9,384	9,427	9,509	9,598	9,703	9,720	9,855
Fuel Flow, per GT	lbs/hr	12,385	12,805	12,969	13,227	13,267	13,420	13,522	13,527	13,477	13,189	12,892	12,570	12,414	12,206	11,884
Gaseous Fuel Flow, per GT	SCF/hr	283,945	293,592	297,333	303,269	304,180	307,688	310,014	310,143	308,987	302,396	295,580	288,199	284,612	279,859	272,457
Calc Heat Input, HHV, per GT	MMBtu/hr	294	304	308	314	315	319	321	321	320	313	306	299	295	290	282
Burner Water Injection Flow, per GT	gal/min	20.1	22.2	23.0	24.3	24.7	26.0	26.9	27.1	27.0	26.4	26.0	25.4	25.1	24.8	24.2
Emissions & Exhaust Conditions at Stack Exit, After Addition of Secondary (Enclosure) Cooling Air *																
NOx	ppmvd	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
NOx, as NO2, per GT	lbs/hr	32	33	34	34	34	35	35	35	35	34	33	33	32	31	31
CO	ppmvd	77.3	70.5	62.9	47.9	43.6	41.3	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1
CO, per GT	lbs/hr	54.3	51.2	46.3	36.0	32.8	31.5	24.7	24.7	24.6	24.0	23.5	22.9	22.6	22.1	21.5
VOC as C1	ppmvd	8.2	6.9	5.9	4.0	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
VOC as C1, per GT	lbs/hr	3.28	2.87	2.47	1.74	1.55	1.52	1.54	1.54	1.53	1.50	1.46	1.42	1.41	1.38	1.34
SO2	ppmvd	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
SO2, per GT	lbs/hr	0.81	0.84	0.85	0.87	0.87	0.88	0.89	0.89	0.88	0.86	0.84	0.82	0.81	0.80	0.78
TSP/PM10, Filterable and Cond, per MP	lbs/hr	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Exhaust Gas Mass Flow, per GT **	lbs/sec	293.4	285.1	282.0	277.0	274.7	267.2	262.6	260.7	259.8	255.7	249.5	243.8	240.7	237.8	230.6
Exhaust Gas Temperature **	Deg F	561	615	636	671	683	725	752	760	762	768	780	790	794	799	810
Exhaust Gas Molecular Weight, Wet		28.54	28.50	28.48	28.45	28.44	28.38	28.34	28.32	28.31	28.28	28.22	28.16	28.11	28.07	27.94
Exhaust Gas Vol Flow Rate, per GT **	ACFS	7,659	7,846	7,919	8,035	8,058	8,142	8,196	8,202	8,186	8,107	8,003	7,896	7,840	7,787	7,653
Stack Exhaust Exit Velocity **	ft/sec	153.8	157.6	159.0	161.3	161.8	163.5	164.6	164.7	164.4	162.8	160.7	158.6	157.4	156.4	153.7
H2O **	% Vol wet	5.60	6.08	6.28	6.64	6.77	7.33	7.80	8.00	8.05	8.32	8.85	9.47	9.87	10.27	11.42
O2 **	% Vol wet	16.11	15.78	15.65	15.43	15.36	15.08	14.88	14.81	14.80	14.78	14.67	14.57	14.49	14.45	14.21
CO2 **	% Vol wet	2.11	2.24	2.29	2.37	2.40	2.49	2.55	2.56	2.56	2.54	2.54	2.53	2.53	2.51	2.51
A **	% Vol wet	0.90	0.89	0.89	0.89	0.89	0.88	0.88	0.88	0.88	0.87	0.87	0.86	0.86	0.86	0.84
N2 **	% Vol wet	75.28	75.00	74.88	74.66	74.58	74.21	73.89	73.75	73.70	73.48	73.06	72.56	72.25	71.90	71.01

* All concentrations corrected to 15% O2

** Secondary (Enclosure) Cooling Air Mixed with Primary Exhaust

All data subject to sum of Notes on Sheet - 1

All data are estimates.

CONFIDENTIAL TO THE PARTIES AND PROPRIETARY TO PWPS

EAR Export Classification: ECCN EAR99

FT8® GAS TURBINE MOBILEPAC® (Estimated Only, Water Injected)
Estimated Performance and Emissions
PREPA - ARG

Configuration: Liquid Fuel WI-42 ppmvd NOx @ 15% O2, 0 m Alt., 70% RH, 60Hz PT, 60 Hz, 13.8 kV, 0.9 pf, Simple-Cycle

Performance Data																	
Fuel Type		Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
Percent of Unit Rating	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of GT's in Operation	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ambient Relative Humidity	%	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Ambient Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	30.0	43.0	50.0	59.0	70.0	77.0	80.0	85.0	90.0	100.0	110.0
Ambient Pressure	Psia	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696
Plenum Inlet Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	30.0	43.0	50.0	59.0	70.0	77.0	80.0	85.0	90.0	100.0	110.0
Burner Water Injection In-Service	Yes / No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inlet Loss	Inch H2O	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Exhaust Loss	Inch H2O	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fuel LHV	Btu/lb	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646
Ratio of HHV to LHV		1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065
Gross Power Output per MP, ref Gen Term	MWe	27.486	28.114	28.113	28.126	28.122	28.164	28.172	28.179	28.198	28.196	28.207	27.911	27.226	26.647	25.577	24.479
Gross Heat Rate, LHV, ref Gen Term	Btu/kWhr	9,030	9,119	9,161	9,233	9,265	9,376	9,453	9,495	9,549	9,619	9,665	9,696	9,769	9,834	9,965	10,111
Power Isle and BOP Aux Load, per MP	kW	352	352	352	352	352	352	352	352	352	352	352	352	352	352	352	352
Net Power Output, per MP	MWe	27.134	27.762	27.761	27.774	27.770	27.812	27.820	27.827	27.846	27.844	27.855	27.559	26.874	26.295	25.225	24.127
Net Heat Rate, LHV	Btu/kWhr	9,147	9,235	9,277	9,350	9,382	9,495	9,572	9,615	9,670	9,741	9,787	9,819	9,956	9,966	10,104	10,259
Fuel Flow, per GT	lbs/hr	13,311	13,749	13,812	13,927	13,973	14,162	14,282	14,349	14,441	14,546	14,621	14,513	14,264	14,054	13,669	13,275
Liquid Fuel Flow, per GT	gal/min	31	32	32	33	33	33	34	34	34	34	34	34	34	33	32	31
Calc Heat Input, HHV, per GT	MMBtu/hr	264	273	274	277	277	281	284	285	287	289	290	288	283	279	271	264
Burner Water Injection Flow, per GT	gal/min	23.9	26.4	27.1	28.3	28.8	30.5	31.6	32.1	32.9	33.8	34.4	34.2	33.7	33.2	32.4	31.5
Emissions & Exhaust Conditions at Stack Exit, After Addition of Secondary (Enclosure) Cooling Air *																	
NOx	ppmvd	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
NOx, as NO2, per GT	lbs/hr	46	47	48	48	48	49	49	49	50	50	50	50	49	48	47	45
CO	ppmvd	46.8	35.8	32.9	28.2	26.7	22.0	19.0	17.8	16.3	14.8	13.9	13.8	13.7	13.6	13.3	13.2
CO, per GT	lbs/hr	31.0	24.5	22.7	19.6	18.6	15.5	13.5	12.7	11.8	10.7	10.1	10.0	9.7	9.5	9.0	8.7
VOC as C1	ppmvd	12.4	6.8	5.6	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
VOC as C1, per GT	lbs/hr	4.71	2.68	2.20	1.98	1.99	2.02	2.03	2.04	2.06	2.07	2.08	2.06	2.02	1.99	1.94	1.88
SO2	ppmvd	9.08	9.07	9.06	9.06	9.06	9.07	9.08	9.07	9.07	9.07	9.07	9.08	9.16	9.12	9.12	9.14
SO2, per GT	lbs/hr	12.51	12.92	12.98	13.09	13.13	13.31	13.43	13.49	13.57	13.67	13.74	13.64	13.41	13.21	12.85	12.48
TSP/PM10, Filterable and Cond, per MP	lbs/hr	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Exhaust Gas Mass Flow, per GT **	lbs/sec	289.9	281.7	278.0	272.2	269.8	262.1	257.4	254.9	251.8	248.0	245.7	243.8	239.9	236.4	229.8	223.1
Exhaust Gas Temperature **	Deg F	534	586	603	633	645	688	715	730	749	771	786	789	794	799	810	819
Exhaust Gas Molecular Weight, Wet		28.79	28.77	28.75	28.73	28.72	28.68	28.64	28.61	28.56	28.50	28.44	28.42	28.38	28.32	28.20	28.04
Exhaust Gas Vol Flow Rate, per GT **	ACFS	7,308	7,475	7,505	7,557	7,577	7,657	7,709	7,737	7,776	7,822	7,854	7,821	7,739	7,673	7,552	7,428
Stack Exhaust Exit Velocity **	ft/sec	146.7	150.1	150.7	151.8	152.2	153.8	154.8	155.4	156.2	157.1	157.7	157.1	155.4	154.1	151.7	149.2
H2O **	% Vol wet	4.17	4.59	4.74	5.00	5.13	5.67	6.13	6.43	6.89	7.59	8.13	8.35	8.70	9.17	10.30	11.74
O2 **	% Vol wet	16.54	16.23	16.13	15.96	15.89	15.62	15.42	15.30	15.13	14.89	14.72	14.69	14.66	14.55	14.33	14.07
CO2 **	% Vol wet	2.69	2.86	2.91	2.99	3.03	3.15	3.23	3.27	3.33	3.39	3.44	3.43	3.41	3.41	3.40	3.38
A **	% Vol wet	0.90	0.90	0.90	0.89	0.89	0.89	0.88	0.88	0.88	0.87	0.87	0.86	0.86	0.86	0.85	0.83
N2 **	% Vol wet	75.70	75.42	75.33	75.14	75.06	74.67	74.34	74.11	73.77	73.25	72.83	72.67	72.36	72.00	71.12	69.98

* All concentrations corrected to 15% O2

** Secondary (Enclosure) Cooling Air Mixed with Primary Exhaust

All data subject to sum of Notes on Sheet - 1

All data are estimates.

CONFIDENTIAL TO THE PARTIES AND PROPRIETARY TO PWPS

FT8® GAS TURBINE MOBILEPAC® (Estimated Only, Water Injected)
Notes Applicable to Performance and Emissions Data
PREPA - ARG

PrfCustCopy_PREPA-ARG_FT8-MP-WI_60Hz_138_AD_R0_10042019.xlsx

WARNING -- This document contains technical data the export of which is or may be restricted by the Export Administration Act and the Export Administration Regulations (EAR), 15 C.F.R. parts 730-774. Diversion contrary to U.S. law is prohibited. The export, reexport, transfer or re-transfer of this technical data to any other company, entity, person, or destination, or for any use or purpose other than that for which the technical data was originally provided by PW Power Systems (PWPS), is prohibited without prior written approval from PWPS and authorization under applicable export control laws.
EAR Export Classification: ECCN EAR99

Notes:

1. All Performance/Emissions Data submitted are subject to the sum of the following notes, and the most recent version of PWPS "Factory and Field Tests" at the time of the proposal offering.
   All data is presented on an estimated basis.
2. The MOBILEPAC® (MP) consists of one turbine (1-GT) driving one generator. Rates are shown as per GT, and per MOBILEPAC® (MP), which are equivalent for this configuration.
3. Gaseous fuel supplied to gas turbines must meet PWPS fuel specification FR-2, liquid fuel supplied to gas turbines must meet PWPS fuel specification FR-1. Water used for burner injection must meet PWPS specification AR-1 (demin water).
4. Water injected performance requires water injection to the stated NOx concentrations, at 15% O2 on a dry basis.
   DRY performance data is based on the standard combustor without water injection.
5. All data supplied based on 0m/0ft Alt. and 70% relative humidity.
6. Inlet loss estimated at 63.5mm/2.5in W.C. with 2-stage inlet filter. No correction of test results for inlet loss.
7. Exhaust loss for all cases estimated at 25.4mm/1in W.C. for standard exhaust stack. There will be no correction of test results for exhaust loss in simple-cycle.
8. Stack exhaust velocity is based on exhaust gas vol flow rate and exhaust exit area (4.63sq m/49.8sq ft).
9. Secondary (enclosure) cooling air is mixed with primary exhaust flow, before stack exit.
10. Data designated as "primary exhaust" is referenced to the GT exhaust and does not include secondary (enclosure) cooling air.
11. All data submitted is based upon a generator operating at 60Hz, 0.9 power factor @ 13.8kV.
12. Net Power = Power measured at the generator terminals, minus auxiliary load for power island and 200 kW BOP.
13. GSU losses and gas compression loads are not included in Net Power output or Net Heat Rate determinations.
14. Performance Acceptance Test for GT Net Power Output and GT Net Heat Rates to be conducted per PWPS test procedures, instrumentation, and calculations; all being in general accordance with ASME PTC-22 (2005) and PTC-19.1.
15. Performance acceptance testing for GT Net Power Output and GT Net Heat Rate shall be furnished by PWPS through third party contractor.
16. Test boundary shall be Ambient Temperature as defined by the average dry bulb temperature at the inlet filter face.
17. Site performance to be corrected for changes in ambient temperature, pressure, relative/specific humidity and power factor.
18. Thermal performance tests must be conducted in "New & Clean" condition, with less than 100 fired-hours. If Units are dispatched for Commercial Operation, or operated by Purchaser for more than 100 fired-hours, then thermal performance will have been deemed to have been met, and any thermal performance testing would be conducted and reported as "Information Only".
19. Approximately 30 days prior to performance testing of the units, Purchaser will be provided with correction curves for the GT power and heat rate, as well as draft performance acceptance test procedures. Curves and procedures will not be issued with RFQ responses.
20. Emission data is representative of steady-state operation, and may not be indicative of emissions during transient operation. Demonstration of emission concentrations for NOx, CO and VOC's are based on 1-hour averages, after operation under steady-state conditions for 1-hour. "Steady state" shall be defined as less than +/-1.3% variation from the average for power output, which is in alignment for the PTC-22 (2005) gas turbine code for steady state conditions. Compliance with shall be based on the average of stack traverse's.
21. Applications that utilize CEM systems, must use a multi-point, multiple probe system to read emissions concentrations in the backpass. This averaging system is required to prevent emission compliance issues related to diluent stratification associated with the addition of secondary (enclosure) cooling air, and the use of noise attenuation baffles in the stack.
22. Performance and emissions are based upon assumed fuel compositions shown on Sheet - 2, and significant changes from these assumed characteristics can change the quoted performance and emissions.
23. SO2 data is estimated from Sulfur contents stated on Sheet - 2, which PWPS does not control and therefore can't guarantee.
24. All emission measurements to be by US EPA methods. All emissions measurements for engine tuning, demonstration of emissions levels and/or Air Permit compliance (and related procedures), to be furnished by Purchaser, and shall conform to PWPS Quality Assurance procedure: "McHale PWPS EmissionsTuningQAProcedure 0001ETQAR3.pdf"
25. Volatile Organic Compounds (VOC) are defined as non methane, non ethane, with > 85% of the composition being ethene. Values shown are based upon PWPS experience and measurement using EPA Method 25A (total UHC) on liquid fuel, and/or Method 18 (w/Tedlar bag samples) if UHC exceeds VOC levels on gaseous fuel.
26. Testing for PM10 shall conform to PWPS Quality Assurance documentation in addition to EPA Reference Method 5 (filterable) and R/M 202 (condensable/back half) fractions. Volumetric flow rate for determination of PM10 to be per EPA Method 19, which utilized fuel flow, O2%, and F-factors.
27. Particulate samples shall be drawn isokinetically, with a minimum of 3-hour sample duration and are to consist of 3-tests. sample results are outside of specification, any suspect PM10 test shall be rejected and retested at the expense of the customer.
28. In the event that the customer does not provide emissions measurements for tuning of water injection systems which meet the requirements of the PWPS Emissions Quality Assurance document, then PWPS reserves the right to tune water/fuel ratios in accordance with our default levels.
29. In the event that the customer does not conduct emissions testing for the verification of compliance with PWPS emissions levels, or if such testing is not in accordance with PWPS Emissions Quality Assurance document, the achievement of substantial completion of the project by PWPS shall not be delayed.
30. If future emissions tuning or testing are required after the initial commissioning period when staffed by PWPS personnel and/or contractors, the additional mobilizations/demobilizations and provision of technical teams for the tuning and/or testing shall be at the customers expense.
31. Tested NOx concentrations shall be corrected lower for liquid fuel bound nitrogen (FBN) in excess of 0.015% by weight.

CONFIDENTIAL TO THE PARTIES AND PROPRIETARY TO PWPS

PWPS MDR APR-2018

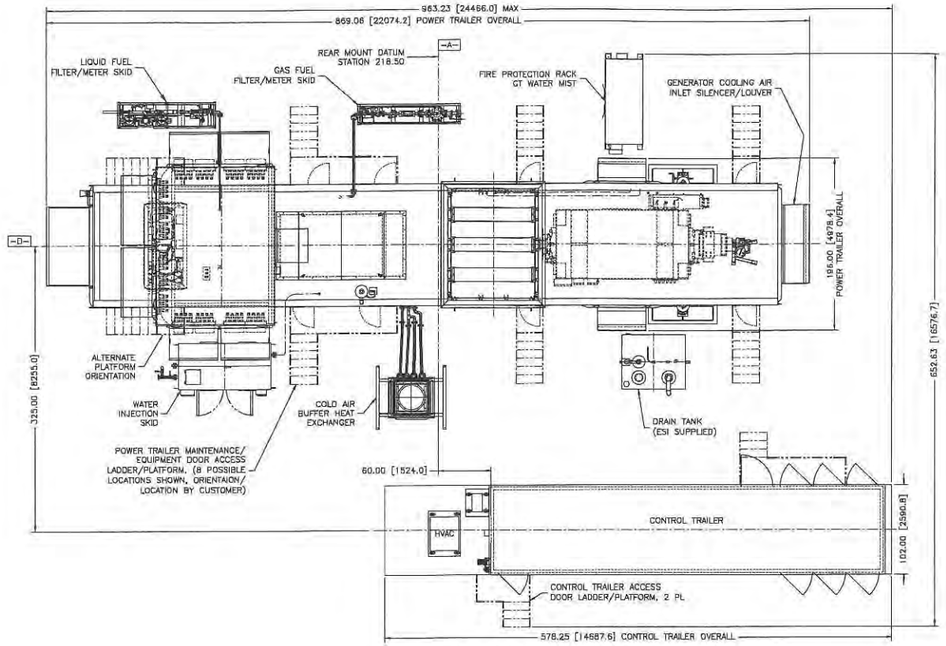
THIS DOCUMENT IS THE PROPERTY OF PW POWER SYSTEMS LLC. YOU MAY NOT POSSESS, USE, COPY OR DISCLOSE THIS DOCUMENT OR ANY INFORMATION CONTAINED HEREIN FOR ANY PURPOSE WITHOUT THE EXPRESS WRITTEN PERMISSION OF PW POWER SYSTEMS LLC. WITHOUT LIMITING THE FOREGOING, POSSESSION, USE, COPYING OR DISCLOSURE BY ANYONE WITHOUT THE EXPRESS WRITTEN PERMISSION OF PW POWER SYSTEMS LLC IS NOT AUTHORIZED AND MAY RESULT IN CRIMINAL AND/OR CIVIL LIABILITY.

WARNING — THIS DOCUMENT CONTAINS TECHNICAL DATA THE EXPORT OF WHICH IS OR MAY BE RESTRICTED BY U.S. EXPORT CONTROL LAWS. EXPORT OR RE-EXPORT TO ANY FOREIGN PERSON OR FOREIGN DESTINATION BY ANY MEANS WHATSOEVER, INCLUDING WITHIN THE U.S. OR ANY FOREIGN COUNTRY WITHOUT RESPECT TO ANY INTENTION TO RE-TRANSFER, OR ANY RE-TRANSFER OF THIS TECHNICAL DATA BY ANY FOREIGN PERSON, MAY REQUIRE AN EXPORT LICENSE OR OTHER APPROVAL FROM THE U.S. GOVERNMENT AGENCY HAVING JURISDICTION OVER SUCH EXPORT OR RE-EXPORT. DIVERSION CONTRARY TO U.S. LAW PROHIBITED. PRODUCTS, SOFTWARE, AND TECHNICAL DATA/TECHNOLOGY EXPORTED FROM THE U.S. OR RE-EXPORTED FROM ANY FOREIGN DESTINATION ARE SUBJECT TO U.S. EXPORT REGULATIONS INCLUDING, BUT NOT LIMITED TO, THE INTERNATIONAL TRAFFIC IN ARMS REGULATIONS (ITAR) AND THE EXPORT ADMINISTRATION REGULATIONS (EAR). THE PRODUCTS, SOFTWARE AND TECHNOLOGY MAY NOT BE TRANSFERRED TO PROHIBITED COUNTRIES OR PERSONS WITHOUT AUTHORIZATION FROM THE U.S. GOVERNMENT AND AUTHORIZATION UNDER APPLICABLE EXPORT CONTROL LAWS, SUCH AS EXPORT CLASSIFICATION.

DWG NO 1410-100-S000D REV -

REVISION HISTORY

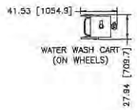
EC NO.	REV	ECN	DESCRIPTION	REVISED BY DATE	APPROVED BY DATE
38421	-		INITIAL RELEASE	CDH 09Jan19	ROT 11JAN19

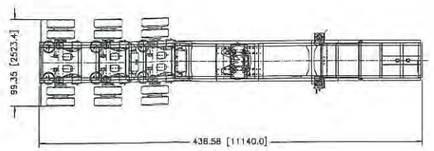


PLAN VIEW

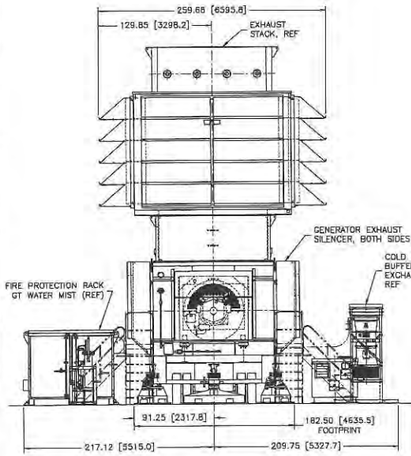


OPTIONAL LIQUID FUEL FORWARDING SKID LOCATION BY CUSTOMER (NEAR FUEL TANK)

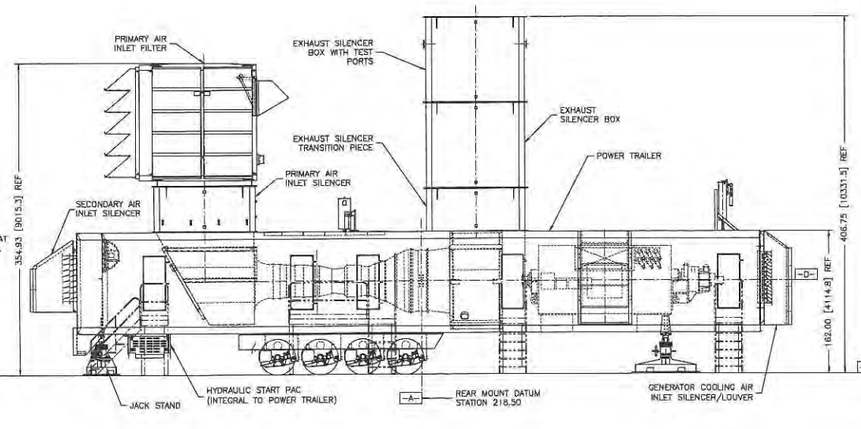




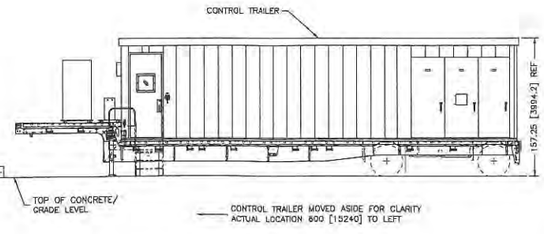
OPTIONAL JEEP DOLLY



END VIEW
(CONTROL TRAILER & VARIOUS ANCILLARY SKIDS OMITTED FOR CLARITY)



ELEVATION VIEW
(ANCILLARY SKIDS OMITTED FOR CLARITY)



SHEET	SHEET DESCRIPTION
2	GENERAL ARRANGEMENT – SIDE-BY-SIDE CONFIGURATION

PROJECT	1410	PW Power Systems
REFERENCE	1428-100-S000D-02-revA	
DRAWN	ALSP 08Jan19	TITLE: GENERAL ARRANGEMENT MOBILE PAC
ENGINEER	ROT 11JAN19	
CHECK	ROT 11JAN19	SIZE E / DWG CODE / DWG NO. 1410-100-S000D / REV -
GENERAL DESIGN	RELEASED	SCALE 1:50 / WT / SHEET 2 OF

1410-100-S000D-02.dwg 14/Feb/19 14:01 p00082da

Appendix C:

Copy of Approved Environmental Evaluations (Rule 141)

18 de junio de 2019

RE: Solicitud de Determinación ambiental bajo exclusión categórica.

Luego del paso del Huracán María y la susceptibilidad del Sistema Eléctrico de PR, la AEE ha identificado la necesidad de fortalecer la generación eléctrica en el Área Norte del País, a su vez contemplo el uso de Unidades Generatrices de mayor eficiencia a las existentes y con la opción de mover estás de acuerdo a las necesidades del sistema en términos de operación, mantenimiento y en emergencias.

Por este medio la PREPA (Palo Seco) solicita una determinación de cumplimiento ambiental bajo exclusión categórica. Se identifica la actividad de excavación no profundas (trincheras) y la instalación de sistemas de alta eficiencia energética. Exclusiones número 21 y 26.

El Proyecto consiste en la compra e instalación de tres Unidades Móviles Generatrices de 30 MW cada una. El Proyecto requiere la conexión de esas al Sistema Eléctrico de la AEE (Central Palo Seco) y la instalación al Sistema de combustible de los tanques de la AEE. No habrá excavaciones profundas, construcción permanente, otras. Las estructuras ya vienen construidas en tráiler, y se ensamblan o unen en el sitio.

Exclusiones Categóricas solicitadas para la actividad.

B. Modificar usos existentes o acciones aprobadas

21. Relocalización o reemplazo de líneas eléctricas aéreas y soterradas en áreas previamente impactadas o urbanizadas. Incluye la instalación de tuberías, trincheras, registros y postes con un máximo de ciento cinco pulgadas (105") de profundidad para

excavación de trincheras, y de doce pies (12') máximos de profundidad para fosas de postes.

26. Acciones para conservar energía tales como la instalación y reemplazo de equipos o sistemas de alta eficiencia energética para mejorar la eficiencia en el control de la calidad ambiental en una instalación existente.

GOBIERNO DE PUERTO RICO

Departamento de Recursos Naturales y Ambientales

NOV 0 4 2019

Sr. Victor V. De Castro Carlo
Autoridad de Energía Eléctrica
PO Box 364267
San Juan, PR 00936

141-19-0538
Generadores de Electricidad para Emergencias
"Palo Seco Power Plant", PR-870
Toa Baja, Puerto Rico

Estimado señor De Castro:

El Departamento de Recursos Naturales y Ambientales (DRNA) ha recibido la documentación sometida para la instalación y operación de tres (3) generadores de electricidad para emergencias en la facilidad de referencia.

Los tres generadores (1, 2 y 3) son idénticos: marca Caterpillar modelo LC6 con capacidad generación nominal de 400 kW, motor marca Caterpillar, modelo C-13, con capacidad o potencia de 609 HP, operación máxima de 500 horas/año, y razón de consumo de combustible diésel de 28.4 gal/hr. La chimenea (tubo de escape): muflers de 10" de diámetro y altura de 8'-0".

Las tres unidades poseen tanques de combustible diésel de acero doble pared, integrados a los generadores, y con capacidad de 1041 galones cada uno.

La Secretaria Auxiliar de Cumplimiento Ambiental del DRNA (anterior Junta de Calidad Ambiental), amparado en la Regla 141 del Reglamento Núm. 8858 del 23 de noviembre de 2016, conocido como el "Reglamento Para el Proceso de Evaluación Ambiental" ha determinado que la acción propuesta no ocasionará impactos significativos al ambiente. El documento sometido para la acción propuesta cumple con lo requerido en el Artículo 4-B (3) de la Ley sobre Política Pública Ambiental, Ley 416-2004, según enmendada.

No obstante, se le requiere que cumpla con todas las disposiciones de las leyes y reglamentos estatales y federales aplicables, incluyendo las siguientes:

1. Solicitar a través de la Oficina de Gerencia de Permisos (OGPe) los correspondientes permisos conforme al Reglamento Núm. 7308 del 1 de marzo de 2007, conocido como el "Reglamento para el Trámite de Permisos Generales".

NOV 04 2019

2. Controlar los olores objetables que puedan afectar la atmósfera comunal.

3. Cumplir con el Reglamento Núm. 8019 del 9 de mayo de 2011, conocido como el "Reglamento para el Control de la Contaminación por Ruido" en lo relacionado al nivel de sonido máximo permitido.

4. Revisar el Plan de Emergencia de la facilidad de referencia de manera que este incluya los tanques sobre tierra para suplir combustible diésel a los generadores, y todos los tanques sobre tierra que se utilicen para almacenar combustible diésel o sustancias químicas; y presentar el mismo ante el Área de Calidad de Agua, reflejando las acciones a tomar para evitar, controlar y remediar derrames de diésel o cualquier otra sustancia química, a tenor con la Regla 1306.5 del Reglamento Núm. 9079 del 26 de abril de 2019, conocido como el "Reglamento de Estándares de Calidad de Agua de Puerto Rico".

Las recomendaciones presentadas en esta comunicación, no eximen de cumplir con cualquier otro requerimiento o permiso del DRNA o de cualquier otra agencia estatal o federal, que sean aplicables a la acción propuesta.

Cordialmente,

PNR
Tania Vázquez Rivera
Secretaria

ADL/adl

Certificación de Cumplimiento Ambiental por Exclusión Categórica

Puerto Rico Electric Power Authority (PREPA) Palo Seco

Fecha de Expedición:

26/JUN/2019

Datos de Localización

De conformidad con las disposiciones contenidas en las leyes y los reglamentos vigentes, se expide la presente Certificación de Exclusión Categórica para la acción(es) antes descrita(s):

Dirección Física:

Dirección: PALO SECO POWER PLANT
PR-870,
PUERTO RICO, 00949
Municipio: Toa Baja
Estado: Puerto Rico
Código Postal: 00949

Dueño:

Autoridad Energia Electrica

Sometido por:

Autoridad Energia Electrica

Calificación

Distrito(s) de Calificación: I-P (50%), CR (49%), DT-G (1%)

Distrito en el Mapa de Inundabilidad: X (57.5%), 0.2 PCT (33.2%), AE (9.1%), VE (0.2%)
Tipo de Suelo: Ud (82.6%), Hy (13.3%), W (4.0%), Sm (0.1%)

Número(s) de Catastro:

039-000-008-04

Datos de determinación

Exclusión Categórica

Números de exclusión categórica aplicables de acuerdo a la R-11-17 de la JCA*:

21,26

Fecha de Expedición:

26/JUN/2019

Condiciones Generales

De acuerdo con la solicitud de esta Determinación, se certificó cumplimiento con los siguientes requisitos, cuyo incumplimiento podrá repercutir en la revocación de esta Determinación:

1. Las actividades de uso o de construcciones livianas de nuevas estructuras no están ubicadas o desarrolladas en:

a. Areas especiales de riesgo de inundaciones, derrumbes o marejadas.

b. Areas en las que la Junta de Calidad Ambiental (JCA) u otras agencias gubernamentales estatales o federales hayan determinado que existe un grado de contaminación que excede el permitido por los reglamentos vigentes.

c. Areas ecológicamente sensitivas o protegidas, según establecido por el Departamento de Recursos Naturales y Ambientales (DRNA), en las que existan especies únicas de fauna o flora o que estén en peligro de extinción o en las que puedan afectarse ecológicamente sistemas naturales o artificiales, ya sea en forma directa o indirecta.

d. Areas en las que existan problemas de infraestructura o de deficiencias en los sistemas de servicios de suministro de agua potable, disposición de las aguas sanitarias, suministro de energía eléctrica o capacidad vial para el manejo adecuado del tránsito de vehículos de motor.

e. Areas que constituyan yacimientos minerales, conocidos o potenciales.

f. Areas en las que existen yacimientos arqueológicos o de valor cultural, según determinado por el Instituto

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Certificación de Cumplimiento Ambiental por Exclusión Categórica

de Cultura Puertorriqueña (ICP).

g. Areas de topografía escarpada, en cuencas hidrográficas donde se puedan afectar fuentes de abasto de agua potable.

h. Cualquier otra acción que la JCA haya establecido mediante Resolución.

2. No descargarán contaminantes a cuerpos de agua, ni generará desperdicios peligrosos o emisiones al aire que excedan dos (2) toneladas al año de contaminantes de aire criterio, o cinco (5) toneladas de cualquier combinación de contaminantes criterios, ni emitirá al aire contaminantes peligrosos o tóxicos u olores objetables.

3. La disposición o descarga de las aguas usadas se realizará mediante acometidas a un sistema sanitario existente, lo cual requerirá la obtención del endoso de la AAA previo a la solicitud de permisos de construcción.

4. Que existe la infraestructura necesaria (agua potable y alcantarillado sanitario suministrado por la AAA, energía eléctrica, alcantarillado pluvial, vías de acceso) para servir a la operación del proyecto o actividad propuesta, con excepción de los proyectos agrícolas que se ubican por regla general en las áreas rurales, así como las residencias unifamiliares asociadas en las que las instalaciones de esa naturaleza son limitadas.

5. La operación de la actividad no afectará áreas residenciales o zonas de tranquilidad por contaminación sónica según establecido por el Reglamento para el Control de la Contaminación por Ruido.

6. Que el desarrollo de la instalación comercial, industrial, de servicio, institucional y de desarrollo de terrenos para uso turístico y proyectos recreativos no excede de cinco mil (5,000) pies cuadrados de conStrucción en área total de ocupación y área bruta de piso y que cumple con las condiciones de ubicación y operación establecidas por la OGPe u otra agencia con jurisdicción, según sean aplicables.

7. El uso de edificios o estructuras existentes para facilidades comerciales, almacenes y usos industriales o de servicios no excederán de cien mil (100,000) pies cuadrados en área total de ocupación y área bruta de piso. Dicha operación deberá cumplir con las condiciones de ubicación y operación establecidas por la OGPe u otra agencia con jurisdicción, según sean aplicables, y las establecidas para las exclusiones categóricas en este Reglamento.

8. Para la ejecución o desarrollo de las acciones aprobadas como exclusiones categóricas, se requerirá la obtención de los permisos aplicables de las agencias gubernamentales para las etapas de construcción y operación.

9. La acción no ha sido fragmentada o segmentada para fines de la evaluación y será determinación de la agencia proponente si la misma satisface o no los requisitos para ser considerada y ejecutada bajo una exclusión categórica.

10. Que ha cumplido con el requisito de publicación de un Aviso Público de conformidad con la Regla 122 del Reglamento de Evaluación y Trámite de Documentos Ambientales de la JCA, en el caso que la acción propuesta esté relacionada al uso u otorgamiento de fondos federales que requieran un proceso de evaluación parecido al de NEPA (NEPA-Like Process).

Aviso

Si luego de haberse aquí dado cumplimiento con el Artículo 4(B) de la Ley Núm. 416 surgieran variaciones sustanciales en la acción propuesta que requieran la evaluación a los impactos ambientales, habrá que presentar el correspondiente documento ambiental, de conformidad con la Ley sobre Política Pública Ambiental.

Condiciones Especiales

NINGUNA

Firma / Sellos

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Certificación de Cumplimiento Ambiental por Exclusión Categórica

Fecha de Expedición:
26/JUN/2019

Arq. María R. Cintrón Flores
Secretaria Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Arq. María R. Cintrón Flores

Secretaria Auxiliar de la OGPe, DDEC

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Appendix D:

DNER Emergency Waiver for the Installation of (3) Combustion Turbines at Palo Seco

GOBIERNO DE PUERTO RICO
DEPARTAMENTO DE RECURSOS NATURALES Y AMBIENTALES

24 OCT. 2019

ING. JOSÉ ORTIZ
Director Ejecutivo
Autoridad de Energía Eléctrica de Puerto Rico
Apartado 364267
San Juan, PR 00936-4267

Att: Efran Paredes Maisonet
Director Planificación y Protección Ambiental

Estimado ingeniero Ortiz,

Re: Solicitud de Dispensa de Emergencia
Autoridad de Energía Eléctrica de Puerto Rico.
Central Palo Seco
TV-4911-70-1196-0015

En carta con fecha del 11 de octubre de 2019 el Sr. Efran Paredes Maisonet, Director Planificación y Protección Ambiental de la Autoridad de Energía Eléctrica de Puerto Rico (en adelante AEE) presentó una solicitud de dispensa de emergencia para la instalación y operación de tres turbinas de gas con una capacidad de generación de aproximadamente 23 MW. La solicitud se presenta para asegurar la confiabilidad y resiliencia del sistema eléctrico. Esta solicitud se presenta conforme las disposiciones de la Regla 302 del Reglamento para el Control de la Contaminación Atmosférica (RCCA), Reglamento Núm. 5300, según enmendado. El inciso A de la Regla 302 del RCCA establece que:

A) La Junta podrá conceder dispensas de emergencia solo bajo circunstancias muy especiales, como por ejemplo, para evitar una amenaza inminente a la salud.
...

Según establece la AEE en su solicitud de dispensa, actualmente tiene varias unidades de carga base que están fuera de servicios debido a mantenimientos o reparaciones, o están limitadas a parte de su capacidad de generación de electricidad. Esta situación afecta la resiliencia del sistema eléctrico del país. Razón por la cual presentaron la solicitud de dispensa.

Conforme a lo anterior, se aprueba la solicitud de dispensa por un periodo que no podrá exceder de 90 días a partir de la fecha de esta notificación. Durante el periodo de dispensa deberá cumplir con todas las condiciones incluidas en el anejo. La información y condiciones sometidas en su solicitud de permiso forman parte de esta autorización.

24 OCT. 2019

De conformidad con la Sección 5.4 de la Ley Núm. 38-2017, conocida como, Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico, se le apercibe que: "Toda persona a la que la agencia deniegue la concesión de una licencia, franquicia, permiso, endoso, autorización o gestión similar, tendrá derecho a impugnar la determinación de la agencia por medio de un procedimiento adjudicativo, según se establezca en la ley especial de que se trate y en el Capítulo III de dicha Ley." Para esto, se concede un término de veinte (20) días a partir de la notificación del mismo.

La agencia podrá revocar esta autorización en cualquier momento si se violan las condiciones del mismo o reglamentos y/o regulaciones aplicables. La agencia, además, podrá emitir una Orden de Cese y Desistimiento y Mostrar Causa.

Cualquier duda o pregunta, puede comunicarse con el Ing. Luis Sierra, Gerente Interino del Área de Calidad de Aire, al 787-767-8181, extensión 2300, o a través del correo electrónico luissierra@jca.pr.gov.

Cordialmente,

Tania Vázquez Rivera
Secretaria

TVR/lst

24 OCT. 2019

ANEJO: CONDICIONES DE DISPENSA

1. Por este medio se autoriza una dispensa por emergencia la instalación y operación de tres turbinas de gas en la Central Palo Seco, con una capacidad de generación de aproximadamente 23 MW cada una. Esta dispensa tendrá una duración que no excederá de 90 días a partir de la aprobación de la misma.
2. Deberá mantener copia de esta dispensa en la instalación en todo momento. La misma estará disponible para inspección por el personal técnico del Departamento de Recursos Naturales y Ambientales (en adelante DRNA) o la Agencia Federal de Protección Ambiental (EPA, en inglés).
3. Una vez culmine la dispensa, las unidades deberán ser desconectadas, a menos que un permiso para la construcción para las unidades, según las disposiciones de la Regla 203 del Reglamento 5300, según enmendado, haya sido emitido por esta agencia.
4. Esta dispensa no exime de acciones de cumplimiento y/o legales por la construcción/instalación de las unidades previo a la otorgación de esta dispensa de emergencia.
5. Para la operación de los generadores, el contenido máximo de azufre en el combustible No. 2 no excederá de 0.5 porciento por peso y en el gas natural no excederá de 5 gr/100 sft^3.
6. Deberá tener un registro de operación y consumo de combustible con contenido de azufre y horas de operación para cada turbina.
7. Deberá enviar un informe de aplicabilidad, y/o notificación inicial de ser necesario, con respecto a las disposiciones del 40 CFR, Parte 60, Subparte GG, Subparte KKKK o cualquier otra regulación que sea aplicable a las turbinas. Deberán indicar en el informe todos los requisitos aplicables a la unidad de emisión. De existir regulaciones que sean potencialmente aplicables, deberá indicar en el informe las razones por las cuales no le aplica.
8. Deberá cumplir con todos los requisitos aplicables en el informe enviado a la agencia. El no identificar adecuadamente la regulación aplicable, no les exime de incumplimiento con la regulación federal y/o estatal.
9. Estas unidades fueron clasificadas en su solicitud de dispensa como unidades estacionarias de emisión. Deberá llevar a cabo las pruebas de funcionamiento requeridas por la regulación federal para fuentes estacionarias, en los términos establecidos en el estándar de emisión aplicable.
10. Deberá someter un informe mensual indicando en una base diaria el contenido de azufre (porciento por peso) en los combustibles quemados o consumidos en la unidad durante cada mes. Este informe será enviado a la Junta a la atención de la Jefa de la División de Validación de Datos Modelaje Matemático del Área de Calidad de Aire, la Sra. Lula Lucia Fernández Fontán. Todos los informes mensuales deberán ser enviados en o antes de los treinta (30) días siguientes al final de cada mes natural.
11. La tonalidad de los gases emitidos durante la operación de cada motor incluido en este permiso no excederá del 20% de opacidad. Se permitirá una tonalidad de hasta 60% de opacidad sólo en un periodo no mayor de 4 minutos dentro de cualquier periodo de 30 minutos consecutivos.

CN 078-04479
Rev.

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

11 de octubre de 2019

Ing. Luis R. Sierra Torres
Gerente Área de Calidad de Aire
Junta de Calidad Ambiental
PO Box 11488
San Juan, Puerto Rico 00910

Estimado ingeniero Sierra Torres:

Dispensa Emergencia para Instalación de Turbinas de Gas en la Central Palo Seco para Proporcionar Energía de Respaldo de Emergencia

La Autoridad de Energía Eléctrica (Autoridad) interesa instalar tres turbinas de gas de aproximadamente 23 MW cada una en la Central Palo Seco. Estas turbinas estarán disponibles para proveer generación de emergencia (*backup*) como parte del plan de contingencia que desarrolló la Autoridad durante la temporada de huracanes y que, a su vez, nos permitirá asegurar el mantenimiento de un servicio de energía eléctrica confiable en la Isla y que servirá para reforzar la resistencia del sistema de la Autoridad, que se requiere en este momento. Dado que nos encontramos en la temporada de huracanes, la Autoridad pretende comenzar la instalación y condicionamiento de estas tres unidades inmediatamente. Por consiguiente, la Autoridad solicita que se otorgue una dispensa conforme lo dispone la Regla 302 del Reglamento para el Control de la Contaminación Atmosférica de la Junta de Calidad Ambiental, vigente. De esta manera estas unidades estarán disponibles para su uso desde octubre de 2019.

Necesidad inmediata de energía para asegurar confiabilidad y resiliencia del sistema eléctrico

Actualmente, la Autoridad tiene varias unidades de carga base que están fuera de servicio por mantenimiento o reparación, o se limitan a solo una parte de su capacidad. Como ejemplo de lo anterior podemos mencionar; que la Unidad 2 de Aguirre se encuentra fuera de servicio (probablemente hasta febrero del 2020) debido a una falla del transformador principal de la unidad. En la Central San Juan, la Unidad 10 está fuera de servicio desde el 2016, la unidad de Ciclo Combinado San Juan 5 saldrá de servicio para la conversión a quema dual de combustible y la Unidad 6 tiene limitaciones de carga por alta presión del condensador.

"Somos un patrono con igualdad de oportunidades en el empleo y no discriminamos por razón de raza, color, sexo, edad, origen social o nacional, condición social afiliación política, ideas políticas o religiosas; por ser víctima o ser percibida(o) como víctima de violencia doméstica, agresión sexual o acecho, sin importar estado civil, orientación sexual, identidad de género o estatus migratorio; por impedimento físico, mental o ambos por condición de veterano(a) o por información genética."

En Palo Seco la Unidad 2 se encuentra fuera de servicio, y las Unidades 3 y 4 tienen limitada su capacidad.

Al mismo tiempo, otras unidades base deben someterse a mantenimientos o salidas ambientales obligatorias. Otras unidades están limitadas en cuanto a sus operaciones porque son unidades de uso limitado bajo el *Mercury and Air Toxic Standard* (MATS, por sus siglas en inglés) aprobado por la Agencia Federal de Protección Ambiental (EPA, por sus siglas en ingles). De otra parte, en San Juan la unidad 6 tiene salida programada en noviembre de 2019, la Unidad 8 estará fuera de servicio hasta comienzos de noviembre, además de ser una unidad de uso limitado por MATS. La Unidad 1 de Palo Seco se someterá a su salida ambiental y estará fuera de servicio hasta comienzos de noviembre, además de ser una unidad de uso limitado bajo la regulación MATS. En Costa Sur la unidad 6 tiene una salida programada desde finales de octubre hasta principio de diciembre. Por lo que, la falta de unidades podría resultar en una incapacidad para proveer la demanda de energía necesaria, lo que podría ocasionar interrupciones del servicio.

Por las razones antes expuestas y ante la necesidad de poder satisfacer de manera confiable la demanda eléctrica y como parte del plan de contingencia que establecimos para cubrir incidencias que puedan ocurrir, la Autoridad propone instalar estas tres turbinas de gas en Palo Seco. La disponibilidad de estas tres nuevas turbinas de gas ayudará a restaurar la energía de forma rápida en caso de emergencia y a asegurar la estabilidad y la resiliencia del sistema de la Autoridad. Estas nuevas turbinas se ubicarán estratégicamente en Palo Seco, en el área metropolitana de San Juan, donde la demanda de energía eléctrica es mayor. Además, el lugar se encuentra preparado ya que se ubicarán las mismas en el área donde se instalaron los generadores de emergencia que proveyó el Cuerpo de Ingenieros luego de los huracanes Irma y María, los cuales proporcionaron la estabilidad que requería el sistema de electricidad en ese momento. La destrucción por los huracanes Irma y María de las líneas de transmisión más importantes de la Autoridad creó restricciones de transmisión grave que retrasó la capacidad de la Autoridad para restaurar completamente la energía en la Isla.

Descripción de la Central Palo Seco

La Central Palo Seco se encuentra en 56.3 hectáreas en una zona industrial en la carretera PR-165 km 30.8 en el municipio de Toa Baja. Palo Seco consiste de diez unidades generadoras existentes distribuidas en dos áreas de la central: la termoeléctrica que consiste en cuatro calderas de vapor con una capacidad de generación combinada de 602 MW y la porción del bloque de alimentación de la planta (*powerblock*) que consiste en seis turbinas de gas con una capacidad de generación combinada de 126 MW. Cada turbina de gas existente es de 21 MW cada una. También en Palo Seco se encuentran tres generadores de electricidad de emergencia y una bomba de contra incendio con motor diésel. Palo Seco es una fuente mayor bajo un permiso Título V. Palo Seco no tiene un permiso de prevención del deterioro significativo ("PSD" por sus siglas en ingles).

Descripción de las Turbinas de Gas a ser instaladas en Palo Seco

La Autoridad propone instalar tres paquetes de turbinas de gas MOBILEPAC® con motores FT8® con una capacidad de aproximadamente 23 MW cada una. El MOBILEPAC® ofrece 22.5 MW (Diésel) / 23.8 MW (Gas Natural) de energía. Utilizando la probada tecnología de turbina de gas SWIFTPAC®, este paquete está diseñado para proporcionar energía rápida, confiable y es especialmente útil en situaciones de emergencia. Cada MOBILEPAC® comprende de dos vagones de arrastre. El primero contiene la turbina de gas, generador eléctrico, motor, colector de escape y difusor de sistema de aceite lubricación. El segundo vagón lleva el sistema de control, panel de operación, relés de protección, baterías y cargador, centro control de motores y el paquete de arranque hidráulico.

Se estima que la instalación de estas unidades no conlleva un aumento significativo en la capacidad de generación de la Central. Estas nuevas unidades tienen la capacidad de usar diésel o gas natural como combustible (*dual fuel*). La instalación de estas unidades tiene el potencial de facilitar un cambio en el perfil del combustible de la Autoridad a gas natural de una combustión más limpia. Sin embargo, en estos momentos se utilizará diésel de bajo contenido de azufre. Para la operación del equipo propuesto, se utilizarán los tanques existentes en la planta para almacenar combustible y que están provistos de un dique para control de derrames de combustible.

Las turbinas de gas ya se encuentran en las facilidades de la Central Palo Seco y se instalarán en la parte sur de la Central, al sureste de donde está situado el *powerblock* actual. Para asegurar la disponibilidad durante la temporada de huracanes, la Autoridad interesa completar la instalación durante el mes de octubre de 2019. No se prevén mayores trabajos de construcción que no sean aquellos requeridos para la estabilización de las bases de los equipos, las debidas conexiones eléctricas y a los tanques de combustible.

La Autoridad identificó los fondos necesarios para la instalación de un sistema de inyección de agua desmineralizada para el control de emisiones de las turbinas. Actualmente, estamos en un proceso competitivo para seleccionar al contratista que completará dicha instalación, se espera que en las próximas dos semanas se concrete la selección. El sistema debe estar en servicio antes de 4 meses.

Durante el proceso de instalación y condicionamiento parcial de las turbinas se requiere la operación de las mismas. Como parte de su instalación y condicionamiento se realizarán pruebas para verificar el encendido de la turbina, condiciones del generador y sus protecciones eléctricas, ajustes de control y pruebas de sincronización eléctrica entre otros. El consumo de combustible No.2 (.05 % azufre por peso) para las pruebas será de aproximadamente 135,000 galones.

La puesta en marcha de las unidades se espera que sea entre mediados o cerca de finales de octubre de 2019. Las operaciones continuas de las unidades deben comenzar durante las primeras semanas de noviembre de 2019.

En la Tabla 1 y 2, a continuación, la Autoridad proporciona los factores de emisiones esperados para las turbinas de gas y el estimado de emisiones durante la operación de las unidades en el período cubierto por la dispensa. Información de respaldo se incluye en los Apéndices A, B, C y D que acompañan esta solicitud:

Tabla 1: Factores de Emisión para las Turbinas PW FT8 Mobilepac:

PALO SECO TURBINAS FT-8 MOBILEPAC [1]					
OPERACION EN DIESEL - DRY			OPERACION EN GAS NATURAL - DRY		
CONTAMINANTE	FACTOR DE EMISION	UNIDADES	CONTAMINANTE	FACTOR DE EMISION	UNIDADES
PM	0.0773	Lbs/MMBtu	PM	0.0233	Lbs/MMBtu
PM10	0.0773	Lbs/MMBtu	PM10	0.0233	Lbs/MMBtu
PM2.5	0.0773	Lbs/MMBtu	PM2.5	0.0233	Lbs/MMBtu
SOx	0.0554	Lbs/MMBtu	SOx (Mass Bal.)	0.0152	Lbs/MMBtu
NOx	2.2060	Lbs/MMBtu	NOx	0.8373	Lbs/MMBtu
VOC	0.0072	Lbs/MMBtu	VOC	0.0013	Lbs/MMBtu
CO	0.0352	Lbs/MMBtu	CO	0.0210	Lbs/MMBtu
HEAT INPUT	233	MMBtu/Hr	HEAT INPUT	252	MMBtu/Hr

[1] NOTES:

1) PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F
2) PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant
3) Natural Gas Sulfur Content 5.0 gr/100 dscf
4) Fuel Oil Sulfur Content .05 % per wt
5) SO2 emissions based upon fuel sulfur content limits
6) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
7) Heating Value Fuel Oil .138 MMBtu/Gal
8) Heating Value Natural Gas .00102 MMBtu/SCF
9) NOx PSD Limiting Pollutant

Tabla 2: Estimado de Emisiones - Turbinas PW FT8 Mobilepac, período de dispensa:

PALO SECO TURBINAS FT-8 MOBILEPAC (3 UNIDADES) - DRY - BAJO LIMITE SIGNIFICATIVO DE PSD[1]			
CONTAMINANTE	PW FT8 EMISIONES PERMISIBLES (tons) PSD	PW FT8 COMBUSTIBLE PERMISIBLE - GAS (SCF)	PW FT8 COMBUSTIBLE PERMISIBLE - DIESEL (GAL)
NOx	**39**	**91,329,802**	**256,217**
PM	24	2,016,806,723	4,502,415
PM10	14	1,176,470,588	2,626,409
PM2.5	9	756,302,521	1,688,406
SO2	39	5,044,656,606	10,201,057
VOC	39	56,678,200,692	78,390,269
CO	99	9,229,744,728	40,768,823

Aunque la necesidad inmediata de las tres turbinas de gas es servir como fuente de energía durante la temporada de huracanes, o absorber cualquier tipo de incidencia que se pueda registrar ante la falta de capacidad de generación por la que atravesamos, eventualmente la Autoridad interesa mantener estas unidades para sus operaciones regulares. Para ello considera comenzar con el proceso de los trámites correspondientes para licenciar las mismas y de esta forma proceder con el reemplazo de tres de las unidades existentes de 21 MW GE 5000 en la Central Palo Seco, toda vez que resultan más eficientes. La Autoridad espera que el gas natural esté disponible en la Central Palo Seco en un futuro cercano.

La Autoridad no puede precisar cuándo exactamente las tres unidades existentes puedan ser retiradas, pero se espera que esto ocurra después de la actual temporada de huracanes. La razón de esto es que la Autoridad tiene que mantener cierta redundancia en sus activos de generación durante la temporada de huracanes para promover la resiliencia y para garantizar la suficiente energía en el caso de otro desastre. Como señalamos anteriormente, esto es especialmente cierto para la generación de unidades ubicadas en la parte norte de la Isla, que se encuentran cerca de la demanda y no son tan vulnerables a las posibles restricciones de transmisión que pueden resultar de las condiciones del tiempo.

Conclusión

Dada la necesidad de mayor resiliencia frente a la actual temporada de huracanes, y tomando en consideración la necesidad de absorber la demanda de energía que se requiere la Autoridad solicita que basado en las disposiciones de la Regla 302 del RCCA se nos permita la instalación de las tres turbinas de gas en octubre de 2019 en la Central

Palo Seco. Esto le permite a la Autoridad tener estas unidades disponibles para su uso a principios de noviembre de 2019. De igual forma le permite determinar los pasos a seguir para que estas unidades puedan utilizarse a mayor capacidad para reemplazar unidades existentes.

De necesitar información adicional, puede comunicarse con la señora Luisette X. Ríos, Jefa de la División Protección Ambiental y Confiabilidad de Calidad, por el (787) 521-4960.

Cordialmente,

Efran Paredes Maisonet, Director
Planificación y Protección Ambiental

LXRC/MVM/JAS/yba

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

SOLICITUD DE PERMISO PARA LA CONSTRUCCIÓN U OPERACIÓN
DE FUENTES DE EMISIÓN EN PUERTO RICO

PARTE II - PROCESO DE LA PLANTA Y DESCRIPCIÓN DE EMISIONES

I. EMISIONES INDUSTRIALES: (Movimiento de terreno, almacenaje en tanques, talleres de pintado, etc.)

1. Descripción del proceso u operación que emite contaminantes atmosféricos:
N/A

2. Materia prima usada o procesada: _____ (Tipo) _____ (Cantidad) _____ (unidad/unidad tiempo)

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.

5. Volumen de descarga de emisiones: _____ $Pies^3/min.$

6. Emisiones actuales: Estimado basado en: _____

Tipo de contaminante	Cantidad (masa/tiempo)	Duración (tiempo/unidad tiempo)

7. Incluya un diagrama de flujo del proceso (tipo bloque) demostrando puntos, cantidades y tipos de emisiones.

II. EMISIONES POR COMBUSTIÓN: (Calderas, calentadores, plantas de emergencia, bombas de incendio, etc.)

1. Equipo de combustión: 3 Turbinas de Combustión PWPS FT-8 Mobilepac (DRY): 252 MMBtu/Hr per Unit Nat.Gas: 233 MMBtu/Hr per Unit Fuel Oil ó _____ (Tipo) _____ (BTU/hr) _____ (HP)

2. Combustible:

Tipo	Gal/hr ó Lb/hr	% azufre
Diesel	1,680	.05
Gas Natural	242,932 Scf/Hr	5.0 gr/100 dscf

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso
N/A Diesel	
N/A Gas Natural	

4. Chimeneas:

Tipo	Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
N/A Diesel	33.89 pies	120.95" x 97.08" pulg.	793 °F	142.8 pies/seg.
N/A Gas Natural	33.89 pies	120.95" x 97.08" pulg.	790 °F	146.6 pies/seg.

III. EMISIONES POR INCINERACIÓN O DISPOCISIÓN DE DESPERDICIOS: (Sólidos, líquidos, gaseosos)

1. Método para disponer los desperdicios: N/A
2. Tipo de desperdicios: _____ Cantidad: _____ Lb/día.
3. Incinerador: _____ (Tipo) _____ (Marca) _____ (Capacidad (Lb/día))
4. Chimenea: _____ Pies (Altura) _____ Pies (Diámetro Salida) _____ °F (Temp. Salida) _____ Pies/seg. (Velocidad Salida)
5. Combustible auxiliar: Tipo _____ Gal/hr ó Lb/hr _____ % azufre _____
6. Equipo de control: _____ (Tipo) _____ % por peso. (Eficiencia)

IV. CUMPLIMIENTO: Incluya datos o información demostrando que las emisiones no exceden los límites establecidos.

V. EQUIPO DE CONTROL: Incluya esquema de la instalación del equipo de control de la fuente de emisión.

CERTIFICACIÓN DE UN INGENIERO, QUÍMICO O ARQUITECTO LICENCIADO

Certifico que estoy registrado y autorizado para practicar mi profesión en Puerto Rico; que el equipo y medidas para el control de emisiones son adecuadas y cumplen con las disposiciones del Reglamento de Control de Contaminantes Atmosféricos de la Junta de Calidad Ambiental de Puerto Rico y que, de acuerdo a mis mejores conocimientos y creencias, la información suministrada es veraz, completa y exacta.

17776-PE (Número de Licencia) — Ing. Efran Paredes Maisonet (Nombre (Letra de molde)) — _____ (Firma)

EFRAN PAREDES MAISONET INGENIERO LICENCIADO LIC. #17776 PUERTO RICO

Fecha: _____ Número de solicitud: _____

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

HOJA DE PAGO

Número de Solicitud: _____
Nombre del Oficial Responsable: Ing. Daniel Hernández
Título: Director de Generación
Nombre del Proyecto o Fuente de Emisión: Turbinas Palo Seco FT8 Mobilepac
Dirección Postal: _____

I. Pago por Solicitud de Permiso:
1. Pago por Radicación ($100.00): (X) Construcción ( ) Operación
( ) Escuela de Adiestramiento de Asbesto $100.00
2. (X) Pago por Permiso 3. ( ) Pago por Renovación 4. ( ) Pago por Modificación

($25.00 por toneladas por Contaminante - Dispensa)

CONTAMINANTE	EMISIONES (Ton/año)	CARGO TOTAL
Material Particulado (PM, PM_{10}, $PM_{2.5}$)	50	$1,250
Dióxido de Azufre (SO_x)	40	$1,000
Oxido de Nitrógeno (NO_x)	40	$1,000
Compuestos Orgánicos Volátiles (VOC) e Hidrocarburos (HC)	40	$1,000
Plomo (Pb)		
Otros (Favor de identificar) CO	100	$2,500
TOTAL		$6,850

CERTIFICACIONES DE ASBESTO

1. Escuela de Adiestramiento de Asbesto $600.00		N/A
2. Registro de Asbesto ($40.00 por categoría) ( ) Especialista en Muestreo de Aire ( ) Diseñador de proyecto ( ) Planificador de proyecto ( ) Inspector ( ) Supervisor ( ) Trabajador		

OTROS CARGOS

1. Cambio de dueño o localización	(50% del cargo por radicación)	N/A
2. Pago por Revisión	(50% del cargo por radicación)	N/A
3. Duplicados de Permisos	$10.00	N/A
4. Pago por Exceso de Emisiones:		
A. Dispensas	($25.00/ton/contaminante)	$6,750
B. Pequeños Negocios	($12.50/ton/cantaminante)	N/A

PAGO TOTAL DE LA SOLICITUD:

II. Pago anual (pago por un año)	N/A
III. Pago por cuatro (4) años extras (pago por 4 años)	N/A
IV. TOTAL (cheque # 470934)	$6,850

PARA COMPLETARSE EN LA OFICINA DEL ÁREA DE CALIDAD DE AIRE

Cantidad a pagar: _____ Fecha: _____ Recibido por: _____

Número de cheque: _____ Número de recibo: _____

_____ _____
Firma del Representante autorizado JCA Firma División de Finanzas

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

THIS IS WATERMARK PAPER - DO NOT ACCEPT WITHOUT NOTING WATERMARK - HOLD TO LIGHT TO VERIFY WATERMARK

Puerto Rico Electric Power Authority
CITIBANK, N.A. –CSMG
GENERAL FUND

CHECK NO. **470934**
DATE 25–SEP–19

PAY Six Thousand Eight Hundred Fifty And NO/100 Dollars **********$6,850.00

TO THE ORDER OF

SECRETARIO DE HACIENDA
JUNTA DE CALIDAD AMBIENTAL
PO BOX 11488
SAN JUAN, PR 00910-1488

José A. Ruiz Torres
Dalia Sánchez Serrano

NOT VALID AFTER THREE MONTHS FROM DATE OF ISSUE

⑈00470934⑈ ⑆021502040⑆ 040001501 5⑈

Puerto Rico Electric Power Authority

CITIBANK CSMG – GENERAL FUND

Vendor Number	Date	Check No.
00498715	25–SEP–19	470934

Date	Invoice	Description	Gross	Withheld Amount	Discount	Net
24–JUN–19	19–06–SR–118	DISPENSA PALO SECO MEGA GENERADORES	6,850.00	0.00	0.00	6,850.00
THE ATTACHED CHECK IS IN PAYMENT FOR ITEMS DESCRIBED ABOVE		**TOTAL**	6,850.00	0.00	0.00	6,850.00

RENOVACIÓN APROBADA: 16 de noviembre, 2015

RENEWAL APPROVED ON: November 16, 2015

NÚM. EMP. 11964

Estado Libre Asociado de Puerto Rico
Commonwealth of Puerto Rico

DEPARTAMENTO DE ESTADO
Department of State

Secretaría Auxiliar de Juntas Examinadoras
Office of the Assistant Secretary of State for Examining Boards

La Junta Examinadora de Ingenieros y Agrimensores
The Examining Board of Engineers and Land Surveyors

por la presente certifica que
hereby certifies that

Efran Paredes Maisonet

habiendo cumplido todos los requisitos de Ley, se ha inscrito en el Registro de esta Junta como
having met all the requirements of law, has been registered as:

Ingeniero Licenciado
Licensed Engineer

16 DIC 15 AM 9:08

En testimonio de lo cual, se expide esta licencia para el ejercicio de dicha profesión, bajo el sello de la Junta Examinadora.
In testimony whereof, this license is issued to practice this profession, under the seal of the Board of Examiners.

En San Juan, Puerto Rico, efectivo 15 de diciembre de 2015
In San Juan, Puerto Rico, effective December 15, 2015.

Número de Licencia: 17776
License Number

Vencimiento: 15 de diciembre de 2020
Expires: December 15, 2020

JUNTA EXAMINADORA DE INGENIEROS Y AGRIMENSORES
ESTADO LIBRE ASOCIADO DE PUERTO RICO
DEPARTAMENTO DE ESTADO

Presidente

Secretario Auxiliar Lcdo. Francisco Rodríguez Bernier
Under Secretary

Certifico que es copia fiel y exacta del original.

Sonia Miranda Vega, Directora
Planificación y Protección Ambiental
Núm. Emp. 9218, Tel. 4884

COPY

#empleado 11964

SECC ARCHIVOS DE PERSONAL

Y CORREOS-NOV15'18 AM11:06



CERTIFICO QUE ESTE DOCUMENTO ES
COPIA FIEL Y EXACTA DEL ORIGINAL.

Mónica A. de Plaza 14/nov/2018

FIRMA FECHA


G
EFRAN
PAREDES MAISONET
11964

APENDICE B

ESPECIFICACIONES DEL MANUFACTURERO (PWPS/ARG)



PERFORMANCE CURVES & EMISSION RATES

Following find FT8 Guaranteed Performance for this proposal. Performance tables and curves are shown for dry and water injection burning with diesel or natural gas

Guaranteed net unit output (diesel) @ specified conditions without water or steam injection	MW 22.563
Guaranteed net unit output (NG) @ specified conditions without water or steam injection	MW 23.842
Unit minimum load for continuous operation	MW 1
Time from shutdown to guaranteed net unit output	**Minutes 10**
Unit Heat Rate (NG – LHV) Assume 21,414 BTU/Lb energy content @ guar net unit output	BTU/KW-hr 9574
Unit Heat Rate (diesel – LHV) Assume 18,646 BTU/Lb energy content @ guar net unit output	BTU/KW-hr 9759

(1) If energy price varies with output, provide data related to this variation. Provide output vs. Energy Price curves if applicable.

This document, its content and all its attachments in any form and function are the sole commercial and intellectual property of el Contractor. Unauthorized disclosure of the whole or parts of this document constitutes a breach of confidentiality and such disclosure(s) is strictly prohibited without previous written authorization from the Contractor. Any and all registered ®, Trade Marked and/or copyrighted© material and or references shall remain the property of their respective owners and el Contractor does not claim past, present and/or future representation, distribution rights and/or ownership whether whole and/or limited of such material, name brands which shall remain the rightful owners of their property.



FT8® GAS TURBINE MOBILEPAC®
Notes Applicable to Performance and Emissions Data
PREPA - ARG

Prf_CustCpy_PREPA-ARG_FT8-MP_60Hz_138_AS_R0_091418.xlsm

WARNING -- This document contains technical data the export of which is or may be restricted by the Export Administration Act and the Export Administration Regulations (EAR), 15 C.F.R. parts 730-774. Diversion contrary to U.S. law is prohibited. The export, reexport, transfer or re-transfer of this technical data to any other company, entity, person, or destination, or for any use or purpose other than that for which the technical data was originally provided by PW Power Systems (PWPS), is prohibited without prior written approval from PWPS and authorization under applicable export control laws.
EAR Export Classification: ECCN EAR99

Notes:

1. All Performance/Emissions Data submitted are subject to the sum of the following notes, and the most recent version of PWPS "Factory and Field Tests" at the time of the proposal offering. Guaranteed values are indicated by the following designations, (G) or bold/boxed, all other data are estimates.
2. The MOBILEPAC® (MP) consists of one turbine (1-GT) driving one generator. Rates are shown as per GT, and per MOBILEPAC® (MP), which are equivalent for this configuration.
3. Gaseous fuel supplied to gas turbines must meet PWPS fuel specification FR-2, liquid fuel supplied to gas turbines must meet PWPS fuel specification FR-1.
4. Data shown is based on standard combustor without water injection.
5. All data supplied based on 0m/0ft Alt. and 70% relative humidity.
6. Inlet loss estimated at 63.5mm/2.5in W.C. with 2-stage inlet filter. No correction of test results for inlet loss.
7. Exhaust loss for all cases estimated at 25.4mm/1in W.C. for standard exhaust stack. There will be no correction of test results for exhaust loss in simple-cycle.
8. Stack exhaust velocity is based on exhaust gas vol flow rate and exhaust exit area (4.63sq m/49.8sq ft).
9. Secondary (enclosure) cooling air is mixed with primary exhaust flow, before stack exit.
10. Data designated as "primary exhaust" is referenced to the GT exhaust and does not include secondary (enclosure) cooling air.
11. All data submitted is based upon a generator operating at 60Hz, 0.9 power factor @ 13.8kV.
12. Net Power = Power measured at the generator terminals, minus auxiliary load for power island and 200 kW BOP.
13. GSU losses and gas compression loads are not included in Net Power output or Net Heat Rate determinations.
14. Performance Acceptance Test for GT Net Power Output and GT Net Heat Rates to be conducted per PWPS test procedures, instrumentation, and calculations; all being in general accordance with ASME PTC-22 (2005) and PTC-19.1.
15. Performance acceptance testing for GT Net Power Output and GT Net Heat Rate shall be furnished by PWPS through third party contractor.
16. Test boundary shall be Ambient Temperature as defined by the average dry bulb temperature at the inlet filter face.
17. Site performance to be corrected for changes in ambient temperature, pressure, relative/specific humidity and power factor.
18. Thermal performance tests must be conducted in "New & Clean" condition, with less than 100 fired-hours. If Units are dispatched for Commercial Operation, or operated by Purchaser for more than 100 fired-hours, then thermal performance will have been deemed to have been met, and any thermal performance testing would be conducted and reported as "Information Only".
19. Approximately 30 days prior to performance testing of the units, Purchaser will be provided with correction curves for the GT power and heat rate, as well as draft performance acceptance test procedures. Curves and procedures will not be issued with RFQ responses.
20. Emission data is representative of steady-state operation, and may not be indicative of emissions during transient operation. Demonstration of emission concentrations for NOx, CO and VOC's are based on 1-hour averages, after operation under steady-state conditions for 1-hour. "Steady state" shall be defined as less than +/-1.3% variation from the average for power output, which is in alignment for the PTC-22 (2005) gas turbine code for steady state conditions. Compliance with shall be based on the average of stack traverse's.
21. Applications that utilize CEM systems, must use a multi-point, multiple probe system to read emissions concentrations in the backpass. This averaging system is required to prevent emission compliance issues related to diluent stratification associated with the addition of secondary (enclosure) cooling air, and the use of noise attenuation baffles in the stack.
22. Performance and emissions are based upon assumed fuel compositions shown on Sheet - 2, and significant changes from these assumed characteristics can change the quoted performance and emissions.
23. SO2 data is estimated from Sulfur contents stated on Sheet - 2, which PWPS does not control and therefore can't guarantee.
24. All emission measurements to be by US EPA methods. All emissions measurements for engine tuning, demonstration of emissions levels and/or Air Permit compliance (and related procedures), to be furnished by Purchaser, and shall conform to PWPS Quality Assurance procedure: "McHale PWPS EmissionsTuningQAProcedure 0001ETQAR3.pdf"
25. Volatile Organic Compounds (VOC) are defined as non methane, non ethane, with > 85% of the composition being ethene. Values shown are based upon PWPS experience and measurement using EPA Method 25A (total UHC) on liquid fuel, and/or Method 18 (w/Tedlar bag samples) if UHC exceeds VOC levels on gaseous fuel.
26. Testing for PM10 shall conform to PWPS Quality Assurance documentation in addition to EPA Reference Method 5 (filterable) and R/M 202 (condensable/back half) fractions. Volumetric flow rate for determination of PM10 to be per EPA Method 19, which utilized fuel flow, O2%, and F-factors.
27. Particulate samples shall be drawn isokinetically, with a minimum of 3-hour sample duration and are to consist of 3-tests. sample results are outside of specification, any suspect PM10 test shall be rejected and retested at the expense of the customer.
28. In the event that the customer does not provide emissions measurements for tuning of water injection systems which meet the requirements of the PWPS Emissions Quality Assurance document, then PWPS reserves the right to tune water/fuel ratios in accordance with our default levels.
29. In the event that the customer does not conduct emissions testing for the verification of compliance with PWPS emissions levels, or if such testing is not in accordance with PWPS Emissions Quality Assurance document, the achievement of substantial completion of the project by PWPS shall not be delayed.
30. If future emissions tuning or testing are required after the initial commissioning period when staffed by PWPS personnel and/or contractors, the additional mobilizations/demobilizations and provision of technical teams for the tuning and/or testing shall be at the customers expense.
31. Tested NOx concentrations shall be corrected lower for liquid fuel bound nitrogen (FBN) in excess of 0.015% by weight.

This document, its content and all its attachments in any form and function are the sole commercial and intellectual property of el Contractor. Unauthorized disclosure of the whole or parts of this document constitutes a breach of confidentiality and such disclosure(s) is strictly prohibited without previous written authorization from the Contractor. Any and all registered ®, Trade Marked and/or copyrighted© material and or references shall remain the property of their respective owners and el Contractor does not claim past, present and/or future representation, distribution rights and/or ownership whether whole and/or limited of such material, name brands which shall remain the rightful owners of their property.



FT8® GAS TURBINE MOBILEPAC®

EAR Export Classification: ECCN EAR99

Assumed Fuel Properties

PREPA - ARG

The following fuel properties are assumed as representative of site fuels, based on specified data.

Specified Natural Gas				
	Volume - Mol %		Units	
Methane	96.33	Hydrogen to Carbon Ratio	$H_{(mw)} / C_{(mw)}$	0.330
Ethane	3.08	Hydrocarbon Molecular Weight		16.535
Propane	0.16	Gas Molar Weight		16.635
N-Butane	0.01	Higher Heating Value	Btu/lb	23,748
Isobutane	0.01		kJ/kg	55,238
N-Pentane	0.00		Btu/SCF	1,036
Isopentane	0.00		kJ/Nm3	38,593
N-Hexane	0.00	Lower Heating Value	Btu/lb	21,414
Nitrogen	0.26		kJ/kg	49,809
CO2	0.14		Btu/SCF	934.0
Total	100.0		kJ/Nm3	34,800
		Ratio HHV/LHV		1.109
		Specific Gravity		0.5743
		Assumed Max Sulfur in gas fuel	grains/100 scf	5.0
		Assumed Max Sulfur in gas fuel	mg/Nm3	121

Standard No. 2 Fuel Oil				
	Weight %		Units	
Carbon	87.12	Hydrogen to Carbon Ratio		0.1470
Hydrogen	12.80	Higher Heating Value	Btu/lb	19,858
Nitrogen	0.015		kJ/kg	46,189
Oxygen	0.010	Lower Heating Value	Btu/lb	18,646
Sulfur Max	0.050		kJ/kg	43,371
Total	100.0	Ratio HHV/LHV		1.065
		Specific Gravity		0.816

Prf CustCpy PREPA-ARG FT8-MP 60Hz 138 AS R0 091418.xlsm

Sheet - 2

This document, its content and all its attachments in any form and function are the sole commercial and intellectual property of el Contractor. Unauthorized disclosure of the whole or parts of this document constitutes a breach of confidentiality and such disclosure(s) is strictly prohibited without previous written authorization from the Contractor. Any and all registered ®, Trade Marked and/or copyrighted© material and or references shall remain the property of their respective owners and el Contractor does not claim past, present and/or future representation, distribution rights and/or ownership whether whole and/or limited of such material, name brands which shall remain the rightful owners of their property.

EAR Export Classification: ECCN EAR99

FT8® GAS TURBINE MOBILEPAC®

Performance and Emissions

PREPA - ARG

Configuration: Dual Fuel Std, Combustor Dry, 0 m Alt., 70% RH, 60-Hz PT, 60 Hz, 13.8 kV, 0.9 pf, Simple-Cycle

Performance Data																							
Fuel Type		Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas
Percent of Unit Rating	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of GT's in Operation	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ambient Relative Humidity	%	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Ambient Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	59.0	70.0	80.0	85.0	90.0	100.0
Ambient Pressure	Psia	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696
Plenum Inlet Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	59.0	70.0	80.0	85.0	90.0	100.0
Burner Water Injection In-Service	Yes / No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Inlet Loss	Inch H2O	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Exhaust Loss	Inch H2O	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fuel LHV	Btu/lb	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414
Ratio of HHV to LHV		1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109
Gross Power Output per MP, ref Gen Term	MWe	29.742	30.365	30.610	30.850	30.934	30.929	30.102	28.885	28.255	27.260	25.988	24.723	24.111	23.529	22.446	21.433						
Gross Heat Rate, LHV, ref Gen Term	Btu/kWhr	8,606	8,686	8,720	8,780	8,806	8,850	8,876	8,951	9,002	9,083	9,211	9,340	9,411	9,482	9,635	9,796						
Power Isle and BOP Aux Load, per MP	kW	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269						
Net Power Output, per MP	MWe	29.473	30.096	30.341	30.661	30.665	30.660	29.833	28.616	27.986	26.991	25.719	24.454	23.842	23.260	22.177	21.164						
Net Heat Rate, LHV	Btu/kWhr	8,686	8,764	8,797	8,857	8,883	8,927	8,956	9,036	9,088	9,174	9,307	9,442	9,574	9,692	9,752	9,920						
Fuel Flow, per GT	lbs/hr	11,955	12,317	12,465	12,690	12,720	12,762	12,477	12,074	11,877	11,563	11,178	10,783	10,596	10,419	10,100	9,804						
Gaseous Fuel Flow, per GT	SCF/hr	274,097	282,398	285,789	290,952	291,642	293,054	286,061	276,832	272,314	265,116	256,274	247,221	242,932	238,883	231,558	224,785						
Calc Heat Input, HHV, per GT	MMBtu/hr	264	293	296	301	302	304	296	287	282	275	265	256	252	247	240	233						
Burner Water Injection Flow, per GT	gal/min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
Emissions & Exhaust Conditions at Stack Exit, After Addition of Secondary (Enclosure) Cooling Air *																							
NOx	ppmvd	156	174	181	194	199	207	207	208	210	211	213	214	214	214	214	216	217					
NOx, as NO2, per GT	lbs/hr	174	200	211	230	237	247	241	235	233	228	222	215	211	208	203	198						
CO	ppmvd	14.7	12.3	11.5	10.1	9.6	9.1	9.1	8.1	9.0	9.0	8.9	8.9	8.8	8.8	8.8	8.7						
CO, per GT	lbs/hr	10.0	8.6	8.1	7.3	7.0	6.7	6.5	6.2	8.1	5.9	5.6	5.4	5.3	5.2	5.0	4.8						
VOC as C1	ppmvd	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0						
VOC as C1, per GT	lbs/hr	0.47	0.46	0.45	0.45	0.46	0.45	0.44	0.41	0.40	0.38	0.36	0.35	0.34	0.34	0.33	0.32						
SO2	ppmvd	2.77	2.77	2.77	2.76	2.76	2.76	2.76	2.77	2.77	2.77	2.77	2.77	2.78	2.78	2.78	2.78						
SO2, per GT	lbs/hr	4.31	4.44	4.49	4.57	4.58	4.60	4.49	4.35	4.28	4.17	4.03	3.88	3.82	3.75	3.64	3.53						
TSP/PM10, Filterable and Cond, per MP	lbs/hr	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88						
Exhaust Gas Mass Flow, per GT **	lbs/sec	290.4	281.7	278.5	273.4	271.0	267.1	261.9	254.9	250.9	245.2	237.8	230.5	227.1	223.6	217.0	210.3						
Exhaust Gas Temperature **	Deg F	577	634	656	693	706	729	735	747	755	764	776	785	790	795	806	816						
Exhaust Gas Molecular Weight, Wet		28.71	28.69	28.68	28.67	28.66	28.65	28.63	28.61	28.58	28.55	28.48	28.42	28.38	28.33	28.20	28.04						
Exhaust Gas Vol Flow Rate, per GT **	ACFS	7,654	7,838	7,911	8,025	8,048	8,090	7,981	7,852	7,784	7,672	7,530	7,371	7,299	7,229	7,105	6,985						
Stack Exhaust Exit Velocity**	ft/sec	153.7	157.4	158.9	161.2	161.6	162.5	160.3	157.7	156.3	154.1	151.2	148.0	146.6	145.2	142.7	140.3						
H2O **	% Vol wet	4.02	4.29	4.40	4.62	4.71	4.88	5.00	5.23	5.41	5.71	6.22	6.85	7.24	7.70	8.83	10.32						
O2 **	% Vol wet	16.49	16.22	16.10	15.91	15.85	15.73	15.73	15.71	15.68	15.64	15.56	15.46	15.40	15.32	15.11	14.82						
CO2 **	% Vol wet	2.07	2.19	2.24	2.33	2.35	2.39	2.38	2.37	2.36	2.35	2.34	2.32	2.31	2.31	2.29	2.28						
A **	% Vol wet	0.91	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.90	0.90	0.89	0.88	0.88	0.88	0.87	0.85						
N2 **	% Vol wet	76.50	76.38	76.33	76.22	76.17	76.07	75.97	75.77	75.62	75.38	74.97	74.46	74.15	73.78	72.88	71.71						

* All concentrations corrected to 15% O2

** Secondary (Enclosure) Cooling Air Mixed with Primary Exhaust

All data subject to sum of Notes on Sheet - 1

Guaranteed values are indicated by (G), or value

All other data are estimates.

Sheet - 3

Prf_CustCpy_PREPA-ARG_FT8-MP_60Hz_138_A5_R0_091418.xlsm

This document, its content and all its attachments in any form and function are the sole commercial and intellectual property of el Contractor. Unauthorized disclosure of the whole or parts of this document constitutes a breach of confidentiality and such disclosure(s) is strictly prohibited without previous written authorization from the Contractor. Any and all registered ®, Trade Marked and/or copyrighted© material and or references shall remain the property of their respective owners and el Contractor does not claim past, present and/or future representation, distribution rights and/or ownership whether whole and/or limited of such material, name brands which shall remain the rightful owners of their property.

EAR Export Classification: ECCN EAR99

FT8® GAS TURBINE MOBILEPAC®

Performance and Emissions

PREPA - ARG

Configuration: Dual Fuel Std. Combustor Dry, 0 m Alt., 70% RH, 60Hz PT, 60 Hz, 13.8 kV, 0.9 pf, Simple-Cycle

Performance Data																		
Fuel Type		Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
Percent of Unit Rating	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of GT's in Operation	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ambient Relative Humidity	%	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Ambient Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	
Ambient Pressure	Psia	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	
Plenum Inlet Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	
Burner Water Injection In-Service	Yes / No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	
Inlet Loss	Inch H2O	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Exhaust Loss	Inch H2O	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Fuel LHV	Btu/lb	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	
Ratio of HHV to LHV		1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	
Gross Power Output per MP, ref Gen Term	MWe	27.255	27.841	27.835	27.845	27.836	27.832	27.834	27.808	27.094	25.961	24.758	23.468	22.857	22.271	21.249	20.286	
Gross Heat Rate, LHV, ref Gen Term	Btu/kWhr	8,691	8,759	8,795	8,856	8,883	8,930	8,979	9,045	9,110	9,218	9,349	9,497	9,576	9,657	9,815	9,982	
Power Isle and BOP Aux Load, per MP	kW	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	
Net Power Output, per MP	MWe	26.961	27.547	27.541	27.551	27.542	27.538	27.540	27.514	26.800	25.667	24.464	23.174	22.563	21.977	20.955	19.992	
Net Heat Rate, LHV	Btu/kWhr	8,786	8,853	8,889	8,950	8,977	9,025	9,074	9,142	9,210	9,323	9,461	9,618	9,759	9,786	9,953	10,129	
Fuel Flow, per GT	lbs/hr	12,704	13,079	13,129	13,224	13,260	13,329	13,403	13,490	13,237	12,834	12,413	11,953	11,739	11,534	11,185	10,860	
Liquid Fuel Flow, per GT	gal/min	30	31	31	31	31	31	32	32	31	30	29	28	28	27	26	26	
Calc Heat Input, HHV, per GT	MMBtu/hr	252	260	261	263	263	265	266	268	263	255	246	237	233	229	222	216	
Burner Water Injection Flow, per GT	gal/min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Emissions & Exhaust Conditions at Stack Exit, After Addition of Secondary (Enclosure) Cooling Air *																		
NOx	ppmvd	265	322	342	378	396	428	460	504	510	517	526	529	531	534	541	546	
NOx, as NO2, per GT	lbs/hr	278	347	371	413	434	472	510	562	559	548	539	521	514	508	498	488	
CO	ppmvd	40.1	30.2	27.3	23.6	22.0	19.4	17.4	15.1	14.8	14.6	14.2	14.1	14.0	13.9	13.6	13.4	
CO, per GT	lbs/hr	25.5	19.9	18.0	15.7	14.7	13.0	11.7	10.2	9.9	9.4	8.8	8.4	8.2	8.0	7.6	7.3	
VOC as C1	ppmvd	8.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
VOC as C1, per GT	lbs/hr	3.26	1.88	1.88	1.90	1.91	1.92	1.93	1.94	1.90	1.84	1.78	1.71	1.68	1.65	1.60	1.55	
SO2	ppmvd	9.57	9.55	9.54	9.54	9.54	9.54	9.54	9.54	9.55	9.57	9.57	9.58	9.59	9.59	9.60	9.60	
SO2, per GT	lbs/hr	13.97	14.39	14.44	14.55	14.59	14.66	14.74	14.84	14.56	14.12	13.65	13.15	12.91	12.69	12.30	11.95	
TSP/PM10, Filterable and Cond, per MP	lbs/hr	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	
Exhaust Gas Mass Flow, per GT **	lbs/sec	286.5	277.9	274.1	268.2	265.7	261.6	257.8	252.8	248.3	241.6	234.2	226.8	223.2	219.6	213.1	206.7	
Exhaust Gas Temperature **	Deg F	553	608	627	659	673	695	719	748	757	766	779	788	793	798	809	820	
Exhaust Gas Molecular Weight, Wet		28.99	28.99	28.99	28.99	28.98	28.98	28.96	28.93	28.91	28.88	28.82	28.75	28.70	28.65	28.52	28.35	
Exhaust Gas Vol Flow Rate, per GT **	ACFS	7,305	7,472	7,502	7,557	7,578	7,617	7,657	7,706	7,624	7,487	7,346	7,186	7,112	7,040	6,920	6,809	
Stack Exhaust Exit Velocity **	ft/sec	146.7	150.0	150.7	151.8	152.2	153.0	153.8	154.8	153.1	150.4	147.5	144.3	142.8	141.4	139.0	136.7	
H2O **	% Vol wet	2.28	2.44	2.51	2.64	2.70	2.85	3.04	3.37	3.55	3.86	4.39	5.04	5.44	5.91	7.07	8.57	
O2 **	% Vol wet	17.00	16.75	16.67	16.53	16.47	16.36	16.24	16.07	16.04	16.01	15.91	15.81	15.75	15.67	15.44	15.15	
CO2 **	% Vol wet	2.62	2.78	2.83	2.91	2.95	3.00	3.06	3.14	3.13	3.11	3.10	3.08	3.08	3.05	3.04	3.03	
A **	% Vol wet	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.90	0.89	0.89	0.89	0.87	0.86	
N2 **	% Vol wet	77.17	77.09	77.06	76.98	76.94	76.85	76.71	76.48	76.33	76.08	75.66	75.14	74.82	74.45	73.54	72.35	

* All concentrations corrected to 15% O2

** Secondary (Enclosure) Cooling Air Mixed with Primary Exhaust

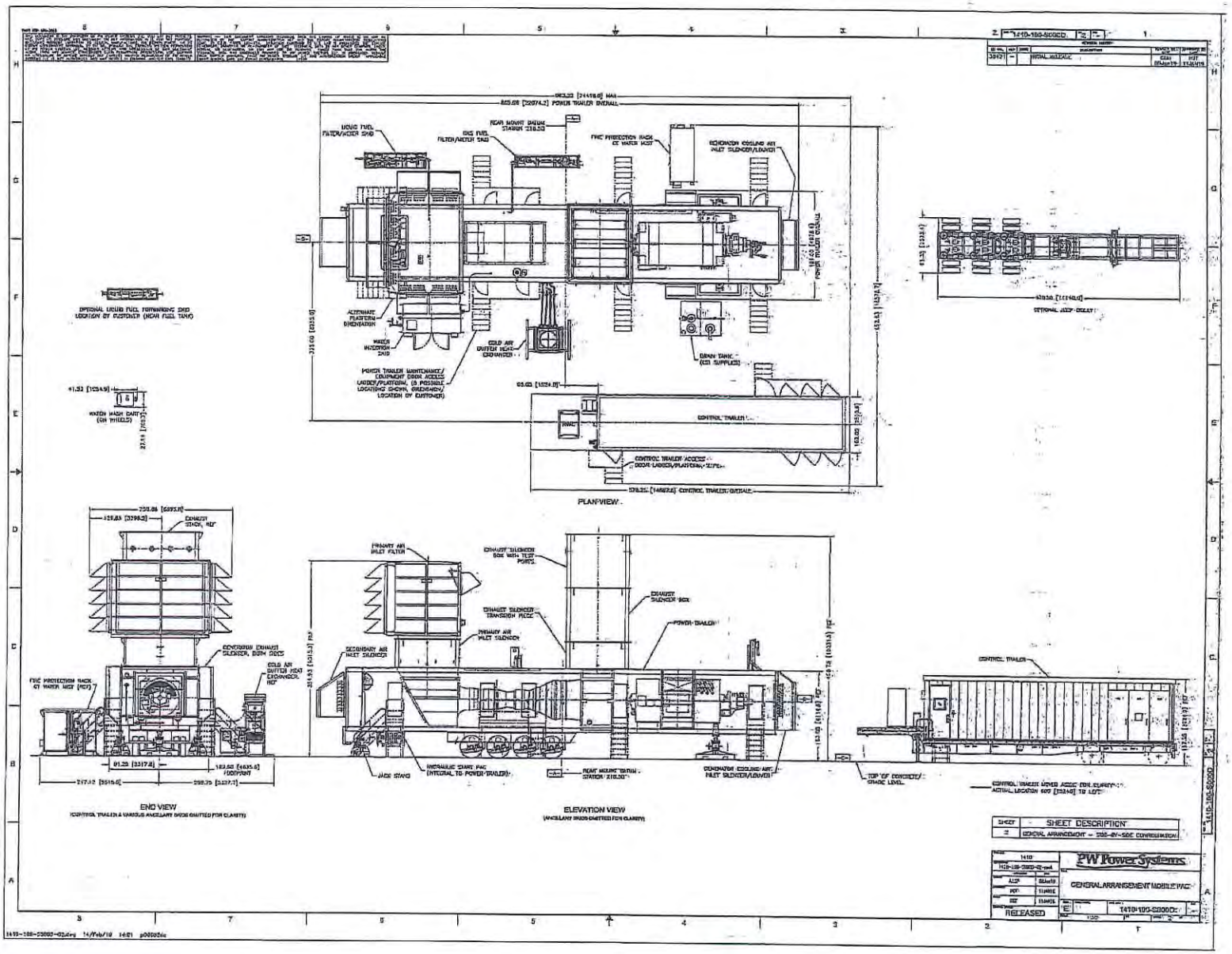
All data subject to sum of Notes on Sheet - 1

Guaranteed values are indicated by (G), or value

All other data are estimates.



This document, its content and all its attachments in any form and function are the sole commercial and intellectual property of el Contractor. Unauthorized disclosure of the whole or parts of this document constitutes a breach of confidentiality and such disclosure(s) is strictly prohibited without previous written authorization from the Contractor. Any and all registered ®, Trade Marked and/or copyrighted© material and or references shall remain the property of their respective owners and el Contractor does not claim past, present and/or future representation, distribution rights and/or ownership whether whole and/or limited of such material, name brands which shall remain the rightful owners of their property.


PLAN VIEW
ELEVATION VIEW
END VIEW
SHEET DESCRIPTION
GENERAL ARRANGEMENT MOBILE PAC
PW Power Systems
RELEASED

APENDICE C

FACTORES DE EMISION, ESTIMADO DE EMISIONES

Tabla 1: Factores de Emisión para las Turbinas PW FT8 Mobilepac:

PALO SECO TURBINAS FT-8 MOBILEPAC [1]					
OPERACION EN DIESEL - DRY			OPERACION EN GAS NATURAL - DRY		
CONTAMINANTE	FACTOR DE EMISION	UNIDADES	CONTAMINANTE	FACTOR DE EMISION	UNIDADES
PM	0.0773	Lbs/MMBtu	PM	0.0233	Lbs/MMBtu
PM10	0.0773	Lbs/MMBtu	PM10	0.0233	Lbs/MMBtu
PM2.5	0.0773	Lbs/MMBtu	PM2.5	0.0233	Lbs/MMBtu
SOx	0.0554	Lbs/MMBtu	SOx (Mass Bal.)	0.0152	Lbs/MMBtu
NOx	2.206	Lbs/MMBtu	NOx	0.8373	Lbs/MMBtu
VOC	0.0072	Lbs/MMBtu	VOC	0.0013	Lbs/MMBtu
CO	0.0352	Lbs/MMBtu	CO	0.021	Lbs/MMBtu
HEAT INPUT	233	MMBtu/Hr	HEAT INPUT	252	MMBtu/Hr

Tabla 2: Estimado de Emisiones - Turbinas PW FT8 Mobilepac, período de dispensa:

PALO SECO TURBINAS FT-8 MOBILEPAC (3 UNIDADES) - DRY - BAJO LIMITE SIGNIFICATIVO DE PSD[1]			
CONTAMINANTE	PW FT8 EMISIONES PERMISIBLES (tons) PSD	PW FT8 COMBUSTIBLE PERMISIBLE - GAS (SCF)	PW FT8 COMBUSTIBLE PERMISIBLE - DIESEL (GAL)
NOx	39	91,329,802	256,217
PM	24	2,016,806,723	4,502,415
PM10	14	1,176,470,588	2,626,409
PM2.5	9	756,302,521	1,688,406
SO2	39	5,044,656,606	10,201,057
VOC	39	56,678,200,692	78,390,269
CO	99	9,229,744,728	40,768,823

[1] NOTES:

1) PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F
2) PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant
3) Natural Gas Sulfur Content 5.0 gr/100 dscf
4) Fuel Oil Sulfur Content .05 % per wt
5) SO2 emissions based upon fuel sulfur content limits
6) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
7) Heating Value Fuel Oil .138 MMBtu/Gal
8) Heating Value Natural Gas .00102 MMBtu/SCF
9) NOx PSD Limiting Pollutant

EFRAN PAREDES MAISONET
INGENIERO LICENCIADO
LIC. #17776
PUERTO RICO

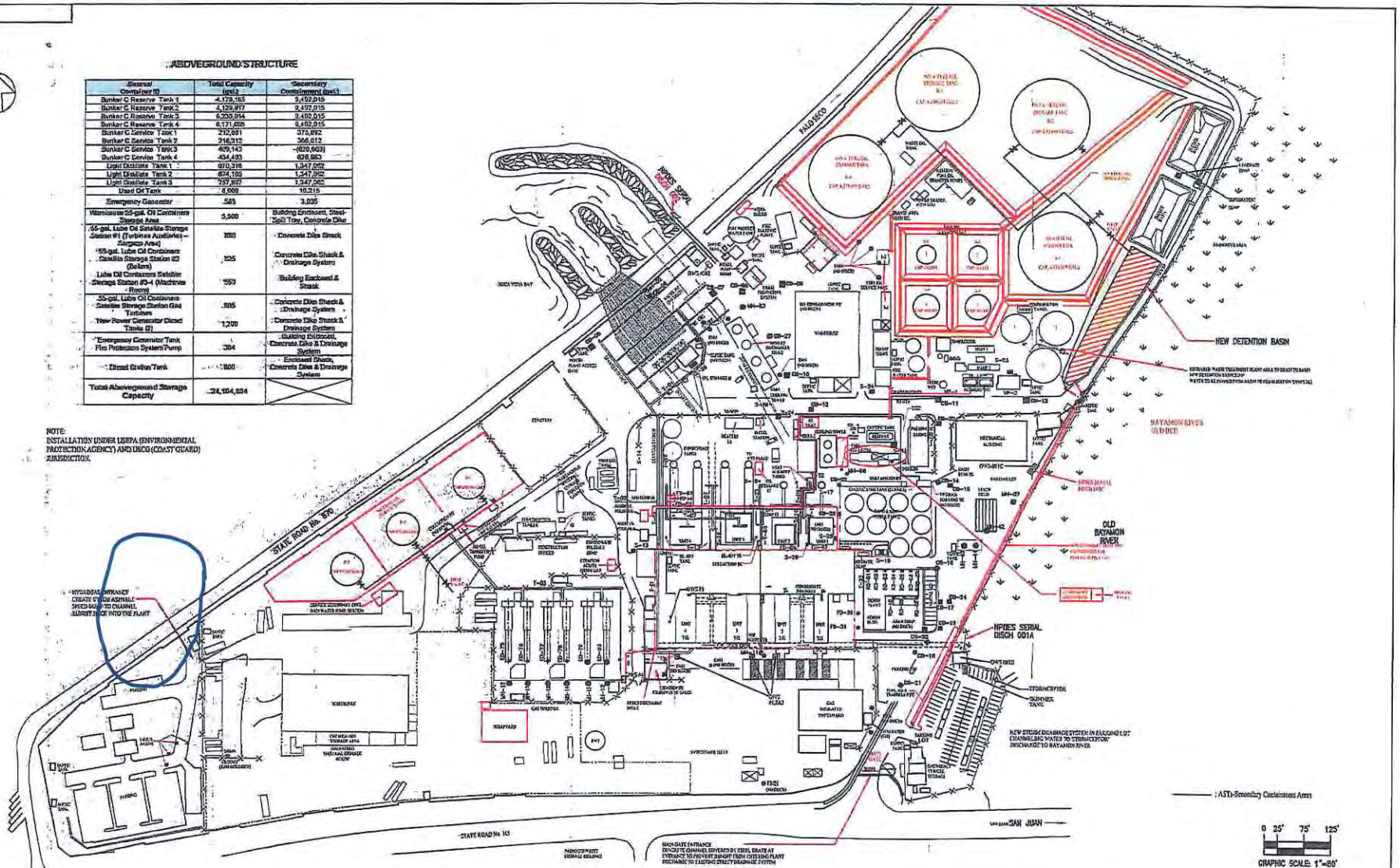
APENDICE D

PLANO DE SITIO – CENTRAL PALO SECO

ABOVEGROUND STRUCTURE

Source/ Container ID	Total Capacity (gal.)	Secondary Containment (gal.)
Bunker C Reserve Tank 1	4,179,165	9,492,015
Bunker C Reserve Tank 2	4,129,917	9,492,015
Bunker C Reserve Tank 3	6,230,014	9,492,015
Bunker C Reserve Tank 4	6,171,625	9,492,015
Bunker C Service Tank 1	212,661	375,892
Bunker C Service Tank 2	216,312	366,612
Bunker C Service Tank 3	409,143	(626,603)
Bunker C Service Tank 4	434,403	626,663
Light Distillate Tank 1	670,316	1,347,062
Light Distillate Tank 2	674,165	1,347,062
Light Distillate Tank 3	757,897	1,347,062
Used Oil Tank	6,000	10,215
Emergency Generator	585	3,035
Warehouse 55-gal. Oil Containers Storage Area	5,500	Building Enclosed, Steel-Spill Tray, Concrete Dike
55-gal. Lube Oil Satellite Storage Station #1 (Turbines Auxiliaries – Sargeco Area)	880	Concrete Dike Shack
55-gal. Lube Oil Containers Satellite Storage Station #2 (Boilers)	825	Concrete Dike Shack & Drainage System
Lube Oil Containers Satellite Storage Station #3-4 (Machines Room)	550	Building Enclosed & Shack
55-gal. Lube Oil Containers Satellite Storage Station Gas Turbines	805	Concrete Dike Shack & Drainage System
New Power Generator Diesel Tanks (2)	1,200	Concrete Dike Shack & Drainage System
Emergency Generator Tank Fire Protection System Pump	304	Building Enclosed, Concrete Dike & Drainage System
Diesel Station Tank	800	Enclosed Shack, Concrete Dike & Drainage System
Total Aboveground Storage Capacity	24,104,804	

NOTE:
INSTALLATION UNDER USEPA (ENVIRONMENTAL PROTECTION AGENCY) AND USCG (COAST GUARD) JURISDICTION.



REVISIONS				REVISIONS				REFERENCE DRAWINGS	
NO.	DATE	DESCRIPTION	APPD.	NO.	DATE	DESCRIPTION	APPD.	NUMBER	TITLE
0	[illegible]	[illegible]							

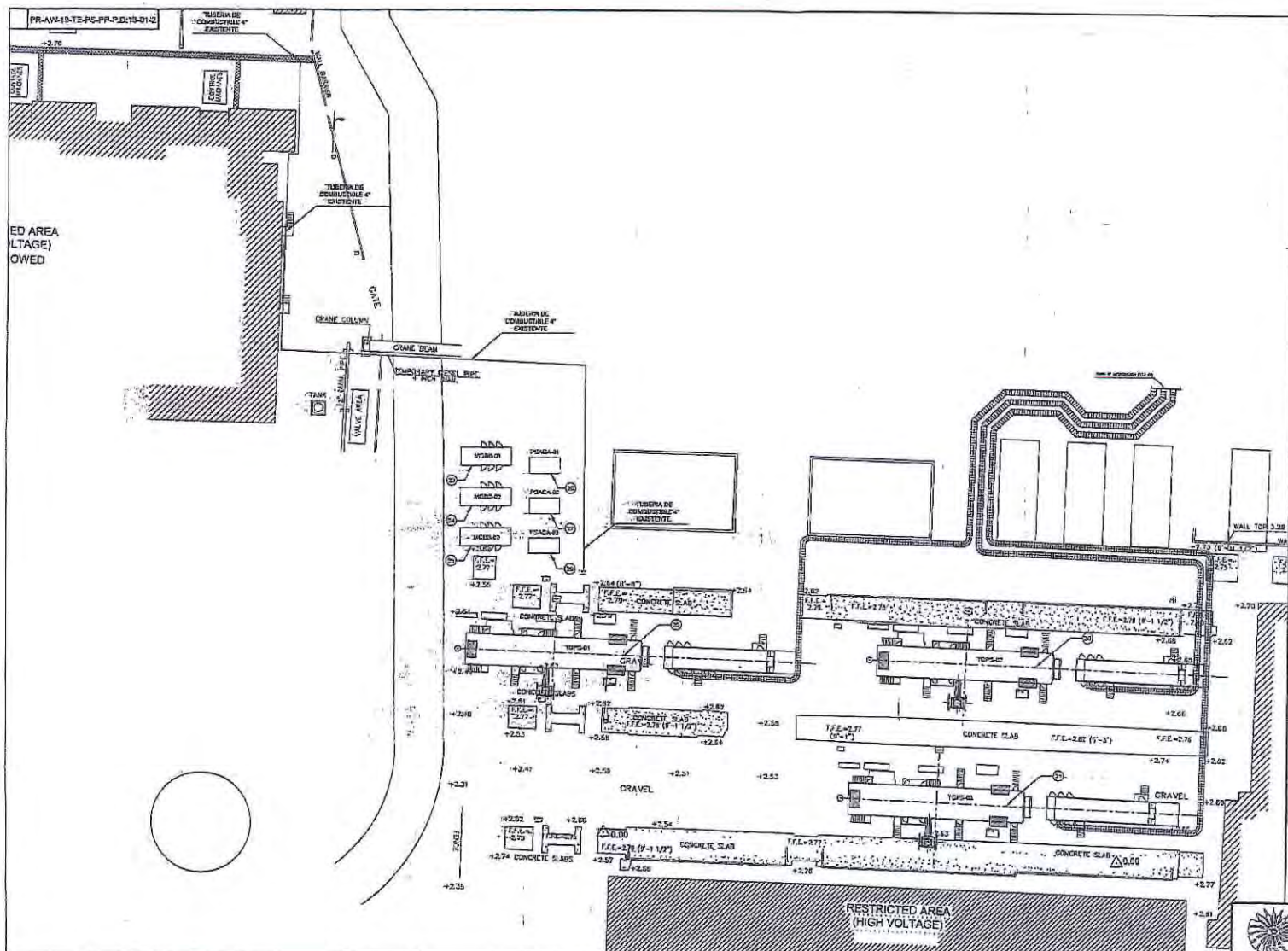
COORDINATED		
DEPARTMENT	SIGNATURE	DATE
ARCHITECTURAL		
CIVIL		
ELECTRICAL		
MECHANICAL		

DESIGNED
SURVEYED
DRAWN
CHECKED
SUBMITTED
RECOMMENDED
APPROVED

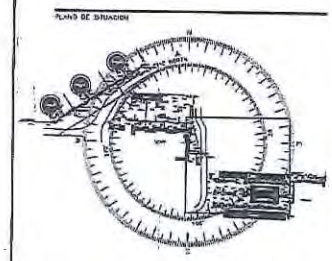
PUERTO RICO ELECTRIC POWER AUTHORITY
WATER QUALITY DEPARTMENT

PALO SECO STEAM PLANT
SITE PLAN – SPCCP

SCALE: SAN JUAN PUERTO RICO November 2014



PLANO DE SITUACION



LEYENDA:

[illegible]	COMPRA A INSTALAR
———	TUBERIA DE COMBUSTIBLE 4" EXISTENTE
(8'-02")	GROUND LEVEL CONVERSION ENGLISH UNITS
+2.49	GROUND LEVEL (MEAN SEA LEVEL) METERS
△ EST-1	CONTROL STATION

LISTA DE EQUIPOS

PIN	TAG	DESCRIPCION	NORTE	ESTE
23	MGBS-01	MOTOGENERADOR DIESEL – BLACK START 01	268815.38	230005.03
24	MGBS-02	MOTOGENERADOR DIESEL – BLACK START 02	268810.81	230005.03
25	MGBS-03	MOTOGENERADOR DIESEL – BLACK START 03	268806.23	230005.03
26	PSACA-01	Paquete de SACA 01	268814.27	230011.87
27	PSACA-02	Paquete de SACA 02	268809.70	230011.87
28	PSACA-03	Paquete de SACA 03	268805.31	230011.87
29	TOPS-01	Turbogenerador Polo Seco 01	268,703.26	230,012.88
30	TOPS-02	Turbogenerador Polo Seco 02	268,792.15	230,032.46
31	TOPS-03	Turbogenerador Polo Seco 03	268,776.32	230,036.23

GRAPHIC SCALE (METERS)

GRAPHIC SCALE (FEET)

Wellington Turbines LLC

PRECISION CORP.

REVISIONS				REVISIONS				REFERENCE DRAWINGS	
NO	DATE	DESCRIPTION	APPR	NO	DATE	DESCRIPTION	APPR	NUMBER	TITLE

COORDINATED		
DEPARTMENT	SIGNATURE	DATE
ARCHITECTURAL		
CIVIL		
ELECTRICAL		
MECHANICAL		

DESIGNED
SUBMITTED
DRAWN
CHECKED
SUBMITTED
RECOMMENDED
APPROVED

PUERTO RICO ELECTRIC POWER AUTHORITY
CORPORATE SEAL

PUERTO RICO ELECTRIC POWER AUTHORITY
ENGINEERING DIVISION

SAN JUAN, PUERTO RICO – PLANTA PALO SECO
PLOT PLANT

SCALE: 1:200 | SAN JUAN, PUERTO RICO | HOJA 02 DE 02

Appendix E:

Black Start Generator Manufacturer's Emissions Certification

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2019 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Caterpillar Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: **KCPXL12.5NYS-006**

Effective Date: 07/24/2018

Expiration Date: 12/31/2019

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 07/24/2018

Revision Date: N/A

Model Year: 2019
Manufacturer Type: Original Engine Manufacturer
Engine Family: KCPXL12.5NYS

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 225<=kW<450
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Smoke Puff Limiter, Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

CATERPILLAR

Engine Emissions Data

For Emissions / Certification feedback and questions, please submit a ticket via our ERC Request Portal

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	**PW300837**
Sales Model	C13
Regulatory Build Date	19-AUG-2019
As Shipped Data	
Engine Arrangement Number	5066872
Certification Arrangement	3662120
Test Spec Number	0K9333
Regulatory Status	EPA Emergency Stationary @ Constant Speed
Labeled Model Year	2019
EPA Family Code	KCPXL12.5NYS
Current Flash file	5607704
Flash File Progression	5607704
CORR FL Power at RPM	620 HP (462.0 KW)1800 RPM
Advertised Power	609 HP 1,800RPM
Total Displacement	12.5

Disclaimer: The information provided has been compiled from third party sources and is accurate to the best of Caterpillar's knowledge. However, Caterpillar cannot guarantee the accuracy, completeness, or validity of the information and is not liable for any errors or omissions contained therein. All information provided should be independently verified and confirmed, including by examining the emissions label located on the engine.

Need emission replacement label? Click here!

Caterpillar Confidential: **Green**
Content Owner: Commercial Processes Division
Web Master(s): PSG Web Based Systems Support
Current Date: 10/24/2019 9:39:20 AM
© Caterpillar Inc. 2019 All Rights Reserved.
Data Privacy Statement.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2018 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Caterpillar Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: **JCPXL12.5NYS-005**

Effective Date: 06/19/2017

Expiration Date: 12/31/2018

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/19/2017

Revision Date: N/A

Model Year: 2018
Manufacturer Type: Original Engine Manufacturer
Engine Family: JCPXL12.5NYS

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 225<=kW<450
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Smoke Puff Limiter, Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

CATERPILLAR

Engine Emissions Data

For Emissions / Certification feedback and questions, please submit a ticket via our ERC Request Portal

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	**PW300530**
Sales Model	C13
Regulatory Build Date	30-JUL-2018
As Shipped Data	
Engine Arrangement Number	5066872
Certification Arrangement	
Test Spec Number	0K9333
Regulatory Status	EPA Emergency Stationary @ Constant Speed
Labeled Model Year	2018
EPA Family Code	JCPXL12.5NYS
Current Flash file	5607704
Flash File Progression	5607704
CORR FL Power at RPM	620 HP (462.0 KW)1800 RPM
Advertised Power	609 HP 1,800RPM
Total Displacement	12.5

Disclaimer: The information provided has been compiled from third party sources and is accurate to the best of Caterpillar's knowledge. However, Caterpillar cannot guarantee the accuracy, completeness, or validity of the information and is not liable for any errors or omissions contained therein. All information provided should be independently verified and confirmed, including by examining the emissions label located on the engine.

Need emission replacement label? Click here!

Caterpillar Confidential: **Green**
Content Owner: Commercial Processes Division
Web Master(s): PSG Web Based Systems Support
Current Date: 10/24/2019 9:53:22 AM
© Caterpillar Inc. 2019 All Rights Reserved.
Data Privacy Statement.

Caterpillar Confidential: **Green**

Content Owner: Commercial Processes Division
Web Master(s): PSG Web Based Systems Support
Current Date: 10/24/2019 9:53:19 AM
© Caterpillar Inc. 2019 All Rights Reserved.
Data Privacy Statement.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2018 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Caterpillar Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: **JCPXL12.5NYS-005**

Effective Date: 06/19/2017

Expiration Date: 12/31/2018

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/19/2017

Revision Date: N/A

Model Year: 2018
Manufacturer Type: Original Engine Manufacturer
Engine Family: JCPXL12.5NYS

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 225<=kW<450
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Smoke Puff Limiter, Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

CATERPILLAR

Engine Emissions Data

For Emissions / Certification feedback and questions, please submit a ticket via our ERC Request Portal

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	**PW300535**
Sales Model	C13
Regulatory Build Date	01-AUG-2018
As Shipped Data	
Engine Arrangement Number	5066872
Certification Arrangement	
Test Spec Number	0K9333
Regulatory Status	EPA Emergency Stationary @ Constant Speed
Labeled Model Year	2018
EPA Family Code	JCPXL12.5NYS
Current Flash file	5607704
Flash File Progression	5607704
CORR FL Power at RPM	620 HP (462.0 KW)1800 RPM
Advertised Power	609 HP 1,800RPM
Total Displacement	12.5

Disclaimer: The information provided has been compiled from third party sources and is accurate to the best of Caterpillar's knowledge. However, Caterpillar cannot guarantee the accuracy, completeness, or validity of the information and is not liable for any errors or omissions contained therein. All information provided should be independently verified and confirmed, including by examining the emissions label located on the engine.

Need emission replacement label? Click here!

Caterpillar Confidential: **Green**
Content Owner: Commercial Processes Division
Web Master(s): PSG Web Based Systems Support
Current Date: 10/24/2019 9:47:33 AM
© Caterpillar Inc. 2019 All Rights Reserved.
Data Privacy Statement.

PERFORMANCE DATA[EM1694]

October 24, 2019

Performance Number: EM1694

Change Level: 02

SALES MODEL:	C13	**COMBUSTION:**	DIRECT INJECTION
BRAND:	CAT	**ENGINE SPEED (RPM):**	1,800
ENGINE POWER (BHP):	609	**HERTZ:**	60
GEN POWER WITH FAN (EKW):	400.0	**FAN POWER (HP):**	20.1
COMPRESSION RATIO:	16.3	**ADDITIONAL PARASITICS (HP):**	10.4
RATING LEVEL:	STANDBY	**ASPIRATION:**	TA
PUMP QUANTITY:	1	**AFTERCOOLER TYPE:**	ATAAC
FUEL TYPE:	DIESEL	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC, ATAAC
MANIFOLD TYPE:	DRY	**INLET MANIFOLD AIR TEMP (F):**	120
GOVERNOR TYPE:	ELEC	**JACKET WATER TEMP (F):**	192.2
ELECTRONICS TYPE:	ADEM4	**TURBO CONFIGURATION:**	SINGLE
CAMSHAFT TYPE:	STANDARD	**TURBO QUANTITY:**	1
IGNITION TYPE:	CI	**TURBOCHARGER MODEL:**	GTA5002BS 1.60A/R
INJECTOR TYPE:	EUI	**CERTIFICATION YEAR:**	2015
REF EXH STACK DIAMETER (IN):	5	**PISTON SPD @ RATED ENG SPD (FT/MIN):**	1,854.3
MAX OPERATING ALTITUDE (FT):	1,640		

INDUSTRY	SUBINDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET

General Performance Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
400.0	100	609	351	0.326	28.4	56.6	117.0	1,287.5	38.0	1,058.8
360.0	90	546	315	0.326	25.4	50.2	112.8	1,239.3	32.8	1,026.2
320.0	80	486	280	0.355	24.6	53.7	115.3	1,243.0	36.2	1,014.2
300.0	75	457	263	0.367	24.0	54.1	115.3	1,242.2	36.6	1,006.9
280.0	70	428	247	0.373	22.8	51.8	113.2	1,230.3	34.6	994.7
240.0	60	372	214	0.381	20.3	45.8	108.4	1,193.6	30.2	964.8
200.0	50	316	182	0.387	17.5	37.8	103.0	1,140.2	25.0	927.6
160.0	40	261	151	0.389	14.5	27.4	96.5	1,080.7	18.9	889.3
120.0	30	206	119	0.390	11.5	17.1	90.3	998.9	12.9	840.0
100.0	25	178	102	0.392	9.9	12.4	87.5	948.6	10.3	810.6
80.0	20	149	86	0.396	8.4	8.5	85.3	886.6	8.2	770.9
40.0	10	90.8	52	0.427	5.5	3.6	82.6	689.5	5.6	609.6

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
400.0	100	609	61	357.2	978.1	2,936.2	4,292.2	4,490.4	950.7	854.7
360.0	90	546	54	330.0	915.9	2,656.6	3,998.8	4,176.7	879.0	792.5
320.0	80	486	58	344.8	970.5	2,788.5	4,248.8	4,421.0	930.2	846.5
300.0	75	457	59	347.3	982.7	2,801.1	4,301.0	4,468.6	939.1	857.4
280.0	70	428	56	338.9	963.1	2,705.2	4,203.1	4,362.5	914.6	836.0
240.0	60	372	50	314.6	901.9	2,463.5	3,915.9	4,057.6	850.3	779.2
200.0	50	316	41	280.3	812.5	2,156.6	3,510.3	3,632.6	764.3	702.0
160.0	40	261	30	234.0	687.0	1,781.4	2,955.8	3,057.3	649.3	597.7
120.0	30	206	19	186.1	559.5	1,398.1	2,396.3	2,476.6	528.9	488.0
100.0	25	178	14	163.5	501.9	1,216.0	2,144.3	2,213.9	470.7	434.8
80.0	20	149	10	143.6	454.1	1,050.9	1,934.8	1,994.0	419.9	388.7
40.0	10	90.8	5	114.6	397.9	789.9	1,686.8	1,725.7	363.2	341.4

Heat Rejection Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHUAST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY

PERFORMANCE DATA[EM1694]

October 24, 2019

EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
400.0	100	609	8,952	2,925	23,022	13,776	3,243	4,130	25,831	60,887	64,860
360.0	90	546	8,186	2,654	20,622	12,177	2,905	3,479	23,152	54,534	58,093
320.0	80	486	7,906	2,618	21,212	12,600	2,812	3,904	20,601	52,796	56,241
300.0	75	457	7,710	2,546	21,145	12,570	2,738	3,995	19,365	51,406	54,761
280.0	70	428	7,378	2,442	20,304	12,022	2,604	3,800	18,150	48,885	52,075
240.0	60	372	6,706	2,418	18,182	10,623	2,315	3,233	15,765	43,469	46,305
200.0	50	316	6,033	2,483	15,558	8,900	1,999	2,492	13,418	37,535	39,984
160.0	40	261	5,465	2,508	12,515	6,965	1,660	1,628	11,079	31,161	33,194
120.0	30	206	4,843	2,208	9,534	5,102	1,312	920	8,725	24,624	26,230
100.0	25	178	4,472	1,897	8,187	4,276	1,137	653	7,535	21,350	22,743
80.0	20	149	4,040	1,542	6,945	3,504	965	452	6,327	18,124	19,307
40.0	10	90.8	2,963	1,112	4,536	1,834	634	216	3,852	11,904	12,681

Emissions Data

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN		EKW	400.0	300.0	200.0	100.0	40.0
PERCENT LOAD		%	100	75	50	25	10
ENGINE POWER		BHP	609	457	316	178	90.8
TOTAL NOX (AS NO2)		G/HR	2,977	1,068	588	577	371
TOTAL CO		G/HR	1,386	852	1,107	1,159	773
TOTAL HC		G/HR	11	34	57	58	82
PART MATTER		G/HR	61.3	65.7	37.7	32.1	44.3
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,481.2	1,040.3	779.4	1,396.4	1,483.0
TOTAL CO	(CORR 5% O2)	MG/NM3	1,150.6	842.7	1,484.4	2,885.1	3,110.1
TOTAL HC	(CORR 5% O2)	MG/NM3	7.5	28.5	66.0	127.6	338.9
PART MATTER	(CORR 5% O2)	MG/NM3	41.1	52.9	42.2	66.9	189.6
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,209	507	380	680	722
TOTAL CO	(CORR 5% O2)	PPM	920	674	1,188	2,308	2,488
TOTAL HC	(CORR 5% O2)	PPM	14	53	123	238	633
TOTAL NOX (AS NO2)		G/HP-HR	4.98	2.36	1.87	3.26	4.10
TOTAL CO		G/HP-HR	2.32	1.88	3.52	6.55	8.55
TOTAL HC		G/HP-HR	0.02	0.08	0.18	0.33	0.90
PART MATTER		G/HP-HR	0.10	0.15	0.12	0.18	0.49
TOTAL NOX (AS NO2)		LB/HR	6.56	2.36	1.30	1.27	0.82
TOTAL CO		LB/HR	3.05	1.88	2.44	2.55	1.71
TOTAL HC		LB/HR	0.02	0.07	0.13	0.13	0.18
PART MATTER		LB/HR	0.14	0.14	0.08	0.07	0.10

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		EKW	400.0	300.0	200.0	100.0	40.0
PERCENT LOAD		%	100	75	50	25	10
ENGINE POWER		BHP	609	457	316	178	90.8
TOTAL NOX (AS NO2)		G/HR	2,757	989	544	534	343
TOTAL CO		G/HR	741	456	592	620	414
TOTAL HC		G/HR	6	18	30	30	43
TOTAL CO2		KG/HR	275	236	172	98	55
PART MATTER		G/HR	31.4	33.7	19.4	16.5	22.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,297.5	963.2	721.7	1,293.0	1,373.1
TOTAL CO	(CORR 5% O2)	MG/NM3	615.3	450.6	793.8	1,542.8	1,663.2
TOTAL HC	(CORR 5% O2)	MG/NM3	4.0	15.1	34.9	67.5	179.3
PART MATTER	(CORR 5% O2)	MG/NM3	21.1	27.1	21.7	34.3	97.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,119	469	352	630	669
TOTAL CO	(CORR 5% O2)	PPM	492	361	635	1,234	1,331
TOTAL HC	(CORR 5% O2)	PPM	7	28	65	126	335
TOTAL NOX (AS NO2)		G/HP-HR	4.61	2.19	1.73	3.02	3.80
TOTAL CO		G/HP-HR	1.24	1.01	1.88	3.50	4.57
TOTAL HC		G/HP-HR	0.01	0.04	0.10	0.17	0.48
PART MATTER		G/HP-HR	0.05	0.07	0.06	0.09	0.25
TOTAL NOX (AS NO2)		LB/HR	6.08	2.18	1.20	1.18	0.76
TOTAL CO		LB/HR	1.63	1.00	1.31	1.37	0.91
TOTAL HC		LB/HR	0.01	0.04	0.07	0.07	0.10
TOTAL CO2		LB/HR	605	520	378	215	121
PART MATTER		LB/HR	0.07	0.07	0.04	0.04	0.05
OXYGEN IN EXH		%	7.4	9.6	10.8	11.8	14.4
DRY SMOKE OPACITY		%	1.7	1.1	1.0	2.9	2.0
BOSCH SMOKE NUMBER			1.11	0.75	0.70	1.72	1.27

Regulatory Information

EPA EMERGENCY STATIONARY		2011 - ----		
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE EMERGENCY STATIONARY REGULATIONS.				
Locality	**Agency**	**Regulation**	**Tier/Stage**	**Max Limits - G/BKW - HR**
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 4.0 PM: 0.20

Altitude Derate Data

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)													
0	609	609	609	609	609	609	609	609	609	600	590	580	609
1,000	609	609	609	609	609	609	609	598	588	578	568	558	609
2,000	609	609	609	609	609	597	587	576	566	556	547	538	607
3,000	609	609	609	597	586	575	564	554	545	535	526	517	588
4,000	609	597	586	574	564	553	543	533	524	515	506	498	570
5,000	586	575	563	552	542	532	522	513	504	495	487	479	552
6,000	564	552	542	531	521	511	502	493	484	476	468	460	534
7,000	542	531	520	510	501	492	483	474	466	458	450	442	517
8,000	520	510	500	490	481	472	464	455	447	440	432	425	500
9,000	500	490	480	471	462	454	445	437	430	422	415	408	484
10,000	480	470	461	452	444	435	427	420	412	405	398	392	467
11,000	460	451	442	434	426	418	410	403	396	389	382	376	452
12,000	442	433	424	416	408	401	393	386	380	373	367	361	437
13,000	424	415	407	399	392	384	377	371	364	358	352	346	422
14,000	406	398	390	382	375	368	362	355	349	343	337	331	407
15,000	389	381	374	366	359	353	346	340	334	328	323	318	393

Cross Reference

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
0K9333	PP7710	4343726	PG045	LS	PW300001	

Performance Parameter Reference

Parameters Reference:DM9600-11
PERFORMANCE DEFINITIONS

PERFORMANCE DEFINITIONS DM9600
APPLICATION:
Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.
PERFORMANCE PARAMETER TOLERANCE FACTORS:
Power +/- 3%
Torque +/- 3%
Exhaust stack temperature +/- 8%

PERFORMANCE DATA[EM1694]

Inlet airflow +/- 5%
Intake manifold pressure-gage +/- 10%
Exhaust flow +/- 6%
Specific fuel consumption +/- 3%
Fuel rate +/- 5%
Specific DEF consumption +/- 3%
DEF rate +/- 5%
Heat rejection +/- 5%
Heat rejection exhaust only +/- 10%
Heat rejection CEM only +/- 10%
Heat Rejection values based on using treated water.
Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications.
On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed.
These values do not apply to C280/3600. For these models, see the tolerances listed below.
C280/3600 HEAT REJECTION TOLERANCE FACTORS:
Heat rejection +/- 10%
Heat rejection to Atmosphere +/- 50%
Heat rejection to Lube Oil +/- 20%
Heat rejection to Aftercooler +/- 5%
TEST CELL TRANSDUCER TOLERANCE FACTORS:
Torque +/- 0.5%
Speed +/- 0.2%
Fuel flow +/- 1.0%
Temperature +/- 2.0 C degrees
Intake manifold pressure +/- 0.1 kPa
OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS.
REFERENCE ATMOSPHERIC INLET AIR
FOR 3500 ENGINES AND SMALLER
SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp.
FOR 3600 ENGINES
Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature.
MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE
Location for air temperature measurement air cleaner inlet at stabilized operating conditions.
REFERENCE EXHAUST STACK DIAMETER
The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available.
REFERENCE FUEL
DIESEL
Reference fuel is #2 distillate diesel with a 35API gravity;
A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 29 deg C (84.2 deg F), where the density is 838.9 G/Liter (7.001 Lbs/Gal).
GAS
Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU Ft) lower heating value gas.
ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD
Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel out put power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions.
ALTITUDE CAPABILITY
Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the current performance data set.
Standard temperature values versus altitude could be seen on TM2001.
When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet.
Engines with ADEM MEUI and HEUI fuel systems operating at

conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001.

Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings.

REGULATIONS AND PRODUCT COMPLIANCE

TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative.

Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.

EMISSION CYCLE LIMITS:

Cycle emissions Max Limits apply to cycle-weighted averages only. Emissions at individual load points may exceed the cycle-weighted limit.

EMISSIONS DEFINITIONS:

Emissions : DM1176

EMISSION CYCLE DEFINITIONS

1. For constant-speed marine engines for ship main propulsion, including,diesel-electric drive, test cycle E2 shall be applied, for controllable-pitch propeller sets
test cycle E2 shall be applied.
2. For propeller-law-operated main and propeller-law-operated auxiliary engines the test cycle E3 shall be applied.
3. For constant-speed auxiliary engines test cycle D2 shall be applied.
4. For variable-speed, variable-load auxiliary engines, not included above, test cycle C1 shall be applied.

HEAT REJECTION DEFINITIONS:

Diesel Circuit Type and HHV Balance : DM9500

HIGH DISPLACEMENT (HD) DEFINITIONS:

3500: EM1500

RATING DEFINITIONS:

Agriculture : TM6008
Fire Pump : TM6009
Generator Set : TM6035
Generator (Gas) : TM6041
Industrial Diesel : TM6010
Industrial (Gas) : TM6040
Irrigation : TM5749
Locomotive : TM6037
Marine Auxiliary : TM6036
Marine Prop (Except 3600) : TM5747
Marine Prop (3600 only) : TM5748
MSHA : TM6042
Oil Field (Petroleum) : TM6011
Off-Highway Truck : TM6039
On-Highway Truck : TM6038

SOUND DEFINITIONS:

Sound Power : DM8702
Sound Pressure : TM7080
Date Released : 07/10/19

Appendix F:

Site and Project Figures

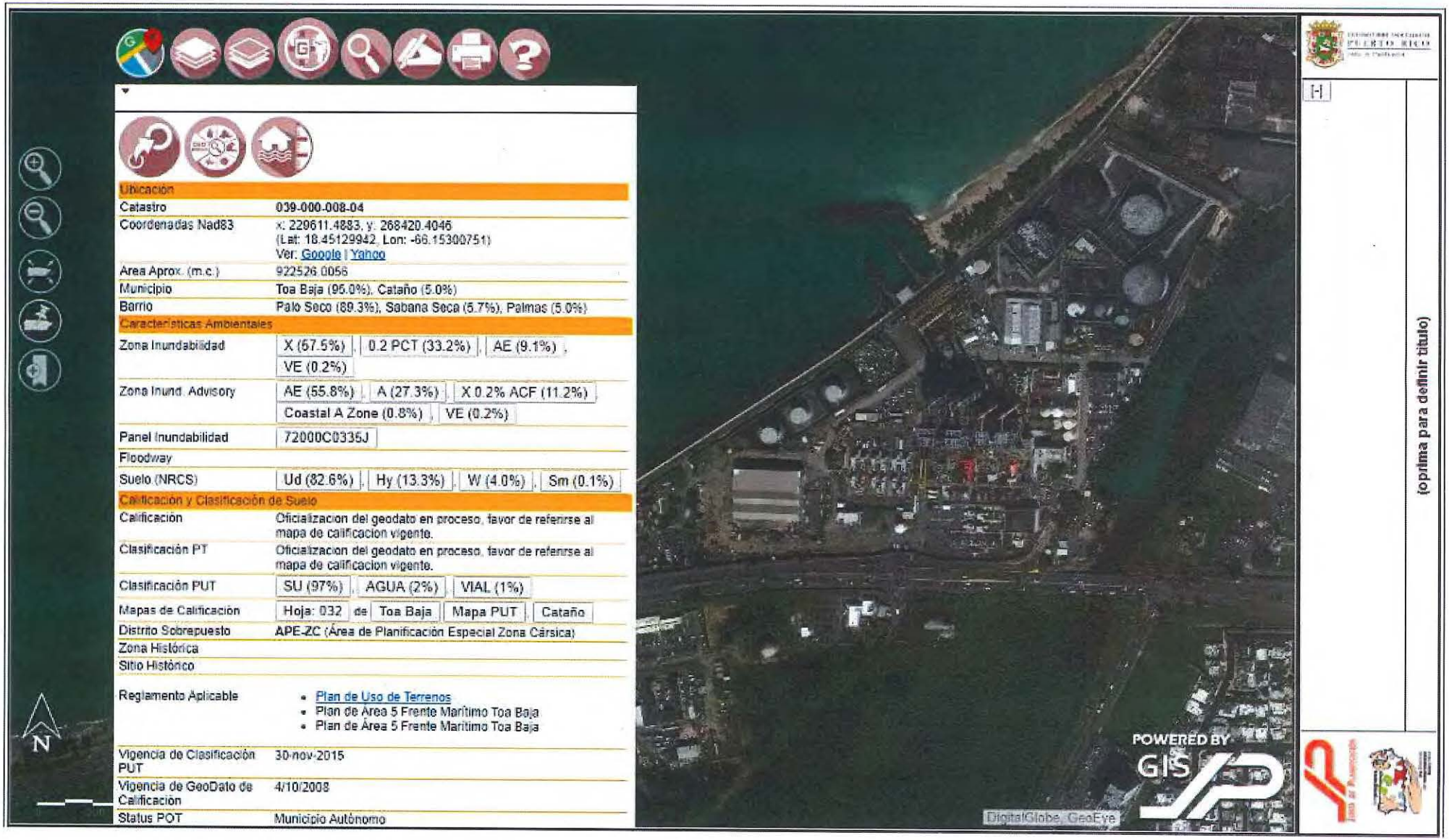
Google Maps



Imágenes © 2019 Google, Imágenes © 2019 CNES / Airbus, Maxar Technologies, U.S. Geological Survey, Datos del mapa © 2019 50 m

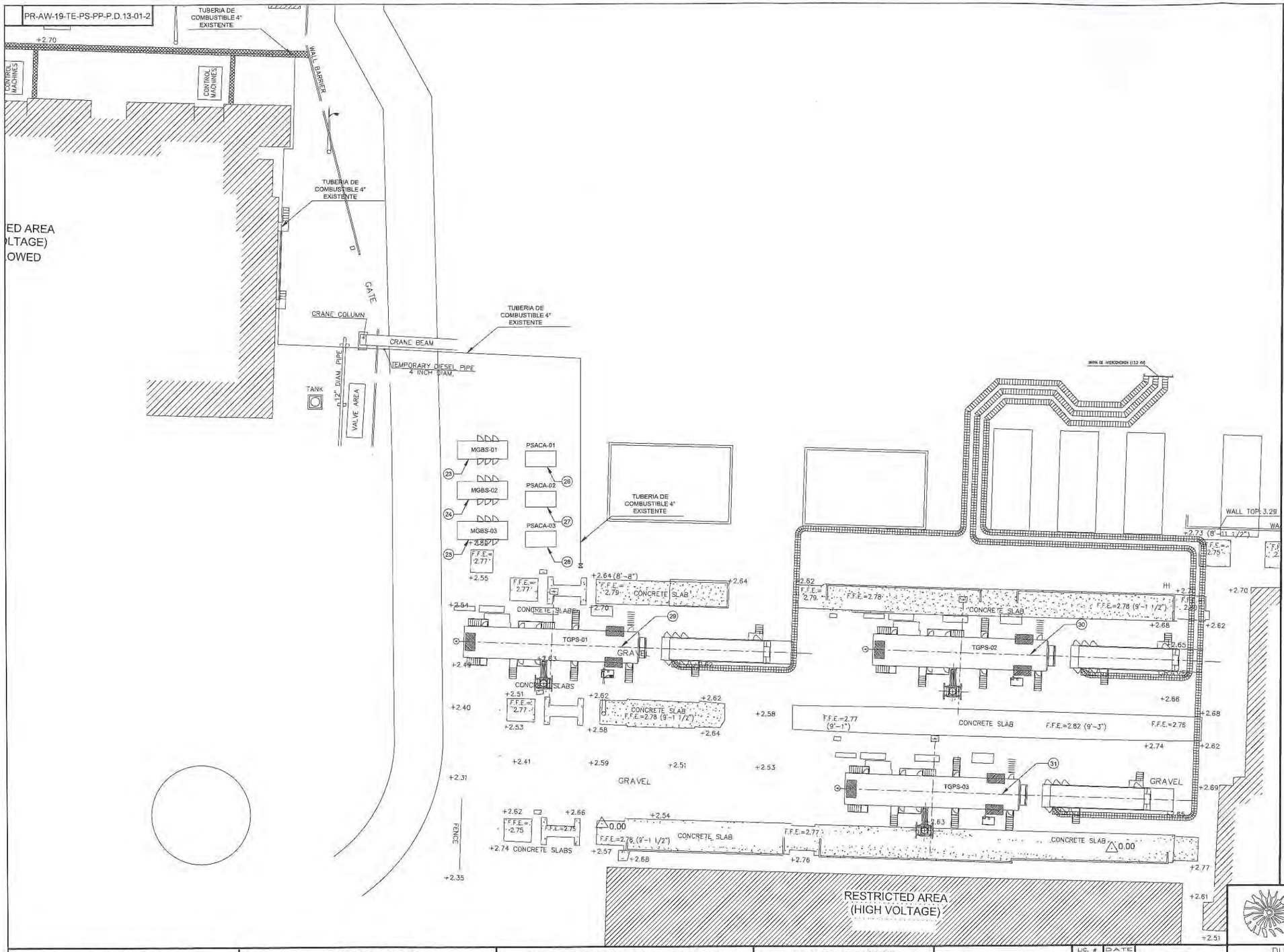
Casa
Establecer ubicación

https://www.google.com/maps/@18.4559701,-66.149336,529m/data=!3m1!1e3!5m1!1e4

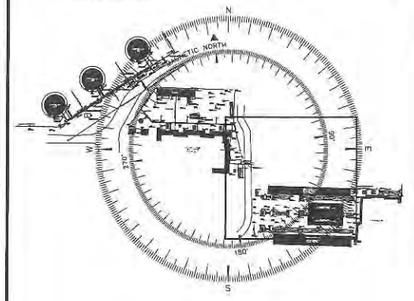


Ubicación	
Catastro	039-000-008-04
Coordenadas Nad83	x: 229611.4883, y: 268420.4046 (Lat: 18.45129942, Lon: -66.15300751) Ver: Google | Yahoo
Area Aprox. (m.c.)	922526.0056
Municipio	Toa Baja (95.0%), Cataño (5.0%)
Barrio	Palo Seco (89.3%), Sabana Seca (5.7%), Palmas (5.0%)
Características Ambientales	
Zona Inundabilidad	X (57.5%), 0.2 PCT (33.2%), AE (9.1%), VE (0.2%)
Zona Inund. Advisory	AE (55.8%), A (27.3%), X 0.2% ACF (11.2%), Coastal A Zone (0.8%), VE (0.2%)
Panel Inundabilidad	72000C0335J
Floodway	
Suelo (NRCS)	Ud (82.6%), Hy (13.3%), W (4.0%), Sm (0.1%)
Calificación y Clasificación de Suelo	
Calificación	Oficialización del geodato en proceso, favor de referirse al mapa de calificación vigente.
Clasificación PT	Oficialización del geodato en proceso, favor de referirse al mapa de calificación vigente.
Clasificación PUT	SU (97%), AGUA (2%), VIAL (1%)
Mapas de Calificación	Hoja: 032 de Toa Baja, Mapa PUT, Cataño
Distrito Sobrepuesto	APE-ZC (Área de Planificación Especial Zona Cársica)
Zona Histórica	
Sitio Histórico	
Reglamento Aplicable	• Plan de Uso de Terrenos • Plan de Área 5 Frente Marítimo Toa Baja • Plan de Área 5 Frente Marítimo Toa Baja
Vigencia de Clasificación PUT	30-nov-2015
Vigencia de GeoDato de Calificación	4/10/2008
Status POT	Municipio Autónomo


ESTADO LIBRE ASOCIADO DE
PUERTO RICO
Junta de Planificación
[-]
(oprima para definir título)
N
0
200
400ft
JUNTA DE PLANIFICACION



PLANO DE SITUACION



LEYEND:

	EQUIPOS A INSTALAR
	TUBERIA DE COMBUSTIBE 4" EXISTENTE
(8'-02")	GROUND LEVEL CONVERSION ENGLISH UNITS
+2.49	GROUND LEVEL (MEAN SEA LEVEL) METERS
△ EST-1	CONTROL STATION

LISTA DE EQUIPOS

PTO	TAG	DESCRIPCION	NORTE	ESTE
23	MGBS-01	MOTOGENERADOR DIESEL - BLACK START 01	268815.39	230005.03
24	MGBS-02	MOTOGENERADOR DIESEL - BLACK START 02	268810.81	230005.03
25	MGBS-03	MOTOGENERADOR DIESEL - BLACK START 03	268806.23	230005.03
26	PSACA-01	Paquete de SACA 01	268814.37	230011.67
27	PSACA-02	Paquete de SACA 02	268809.79	230011.67
28	PSACA-03	Paquete de SACA 03	268805.21	230011.67
29	TGPS-01	Turbogenerador Palo Seco 01	268.793.20	230.012.88
30	TGPS-02	Turbogenerador Palo Seco 02	268.792.15	230.059.46
31	TGPS-03	Turbogenerador Palo Seco 03	268.776.32	230.056.23

GRAPHIC SCALE (METERS)

0 5 10 20 30 40 50

GRAPHIC SCALE (FEET)

0 5 10 20 30 40 50 60 70 80 90 100

Wellington Turbines LLC

PRECISION CORP. INDUSTRIAL CONTRACTORS

REVISIONS				REVISIONS				REFERENCE DRAWINGS	
NO.	DATE	DESCRIPTION	APPD.	NO.	DATE	DESCRIPTION	APPD.	NUMBER	TITLE

COORDINATED		
DEPARTMENT	SIGNATURE	DATE
ARCHITECTURAL		
CIVIL		
ELECTRICAL		
MECHANICAL		

DESIGNED
SURVEYED
DRAWN
CHECKED
SUBMITTED
RECOMMENDED
APPROVED

LIC. # | DATE

PUERTO RICO ELECTRIC POWER AUTHORITY CORPORATE SEAL

PUERTO RICO ELECTRIC POWER AUTHORITY
ENGINEERING DIVISION

SAN JUAN, PUERTO RICO - PLANTA PALO SECO
PLOT PLANT

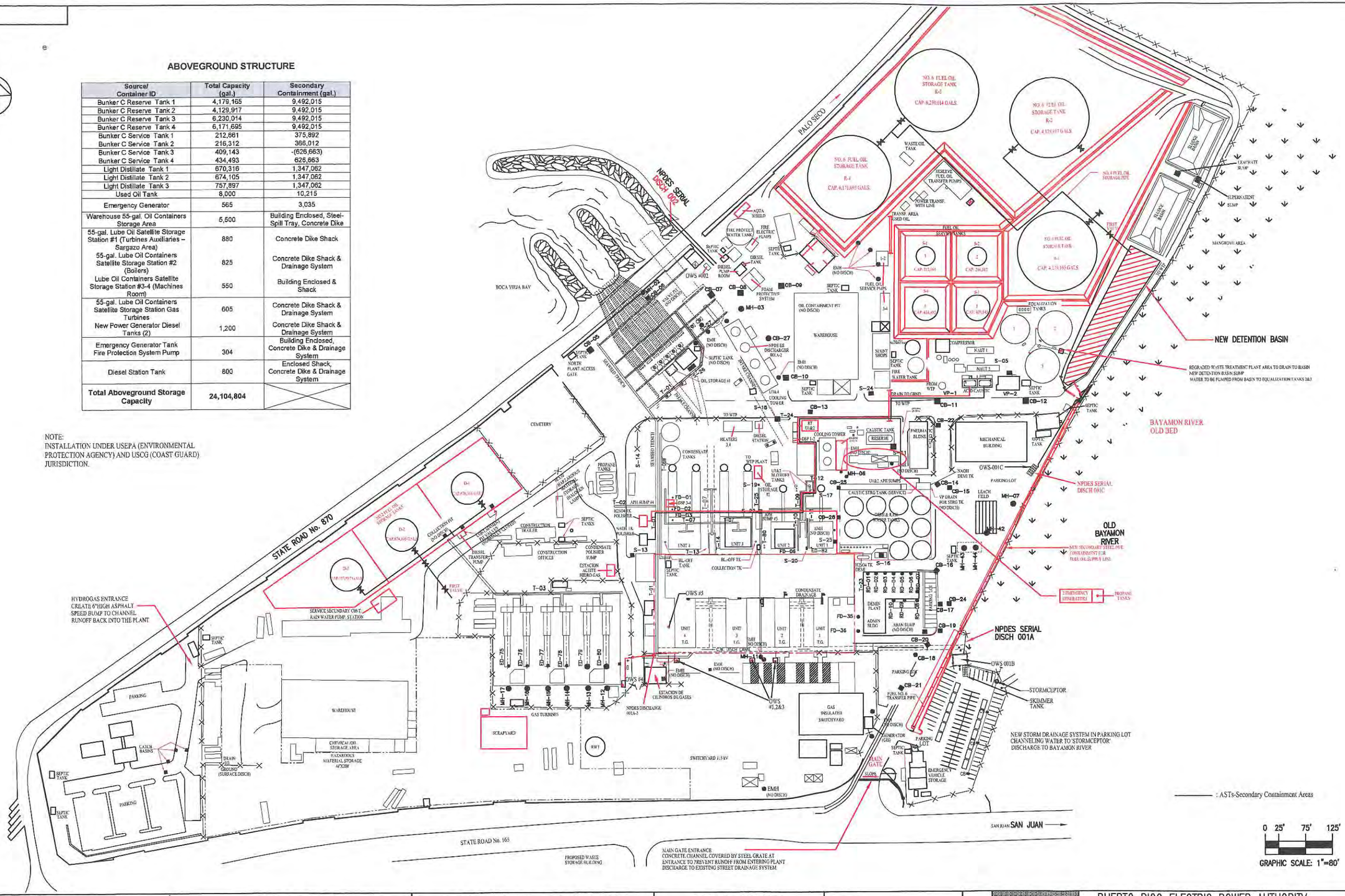
SCALE: 1:200 | SAN JUAN, PUERTO RICO | HOJA 02 DE 02

NORTH

ABOVEGROUND STRUCTURE

Source/ Container ID	Total Capacity (gal.)	Secondary Containment (gal.)
Bunker C Reserve Tank 1	4,179,165	9,492,015
Bunker C Reserve Tank 2	4,129,917	9,492,015
Bunker C Reserve Tank 3	6,230,014	9,492,015
Bunker C Reserve Tank 4	6,171,695	9,492,015
Bunker C Service Tank 1	212,661	375,892
Bunker C Service Tank 2	216,312	366,012
Bunker C Service Tank 3	409,143	-(626,663)
Bunker C Service Tank 4	434,493	626,663
Light Distillate Tank 1	670,316	1,347,062
Light Distillate Tank 2	674,105	1,347,062
Light Distillate Tank 3	757,897	1,347,062
Used Oil Tank	8,000	10,215
Emergency Generator	565	3,035
Warehouse 55-gal. Oil Containers Storage Area	5,500	Building Enclosed, Steel-Spill Tray, Concrete Dike
55-gal. Lube Oil Satellite Storage Station #1 (Turbines Auxiliaries – Sargazo Area)	880	Concrete Dike Shack
55-gal. Lube Oil Containers Satellite Storage Station #2 (Boilers)	825	Concrete Dike Shack & Drainage System
Lube Oil Containers Satellite Storage Station #3-4 (Machines Room)	550	Building Enclosed & Shack
55-gal. Lube Oil Containers Satellite Storage Station Gas Turbines	605	Concrete Dike Shack & Drainage System
New Power Generator Diesel Tanks (2)	1,200	Concrete Dike Shack & Drainage System
Emergency Generator Tank Fire Protection System Pump	304	Building Enclosed, Concrete Dike & Drainage System
Diesel Station Tank	800	Enclosed Shack, Concrete Dike & Drainage System
Total Aboveground Storage Capacity	**24,104,804**	

NOTE:
INSTALLATION UNDER USEPA (ENVIRONMENTAL PROTECTION AGENCY) AND USCG (COAST GUARD) JURISDICTION.


PALO SECO
NPDES SERIAL DISCH 002
NO.6 FUEL OIL STORAGE TANK R-1 CAP. 6,230,014 GALS.
NO.6 FUEL OIL STORAGE TANK R-2 CAP. 4,129,917 GALS.
NO.6 FUEL OIL STORAGE TANK R-3 CAP. 4,179,165 GALS.
NO.6 FUEL OIL STORAGE TANK R-4 CAP. 6,171,695 GALS.
WASTE OIL TANK
RESERVE FUEL OIL TRANSFER PUMPS
TRANSF. AREA USED OIL
FUEL OIL SERVICE TANKS
EQUALIZATION TANKS
NEW DETENTION BASIN
REGRADED WASTE TREATMENT PLANT AREA TO DRAIN TO BASIN NEW DETENTION BASIN SUMP WATER TO BE PUMPED FROM BASIN TO EQUALIZATION TANKS 2&3
BAYAMON RIVER OLD BED
MANGROVE AREA
LEACHATE SUMP
SUPERNATENT SUMP
SETTLING BASIN
BOCA VIEJA BAY
OWS #002
FIRE PROTECT WATER TANK
FIRE ELECTRIC PUMPS
SEPTIC TANK
DIESEL TANK
DIESEL PUMP ROOM
FOAM PROTECTIVE SYSTEM
OIL CONTAINMENT PIT (NO DISCH)
WAREHOUSE
MAINT SHOPS
COMPRESSOR
NAUT 1
NAUT 2
ACID&CAUSTIC
FIRE WATER TANK
OIL STORAGE #1
UNIT 4 COOLING TOWER
DRAIN TO GRND
TO WTP
FROM WTP
VP-1
VP-2
CB-12
MECHANICAL BUILDING
OWS-001C
NPDES SERIAL DISCH 001C
PARKING LOT
LEACH FIELD
NPDES DISCHARGER RELAY
NPDES SERIAL DISCH 001A
OWS 001B
STORMCEPTOR
SKIMMER TANK
NEW STORM DRAINAGE SYSTEM IN PARKING LOT CHANNELING WATER TO 'STORMCEPTOR' DISCHARGE TO BAYAMON RIVER
OLD BAYAMON RIVER
NEW SECONDARY STEEL PIPE CONTAINMENT FOR FUEL OIL PIPE LINE
EMERGENCY GENERATORS
PROPANE TANKS
CEMETERY
STATE ROAD No. 870
STATE ROAD No. 165
HYDROGAS ENTRANCE CREATE 6"HIGH ASPHALT SPEED BUMP TO CHANNEL RUNOFF BACK INTO THE PLANT
CONSTRUCTION TRAILER
CONSTRUCTION OFFICES
CONDENSATE POLISHER SUMP
ESTACION ACEITE HIDROGAS
SERVICE SECONDARY CONT. RAIN WATER PUMP STATION
CONDENSATE TANKS
HEATERS 3,4
DIESEL STATION
TO WTP PLANT
CAUSTIC TANK RESERVE
CAUSTIC STRG TANK (SERVICE)
SHED & R/W STORAGE TANKS
H2SO4 TK DRUM
NAOH DEMI TK
VP DRAIN FOR STRG TK (NO DISCH)
DEMIN PLANT
ADMIN BLDG
MAIN SUMP (NO DISCH)
UNIT 4 T.G.
UNIT 3 T.G.
UNIT 2 T.G.
UNIT 1 T.G.
CW DISCH CANAL
OWS #3
OWS #4
OWS #1,2&3
ESTACION DE CILINDROS DE GASES
NPDES DISCHARGE 001A-3
GAS TURBINES
SCRAPYARD
RWT
GAS INSULATED SWITCHYARD
SWITCHYARD 115 kV
EMH (NO DISCH)
EMH (NO DISCH)
EMH (NO DISCH)

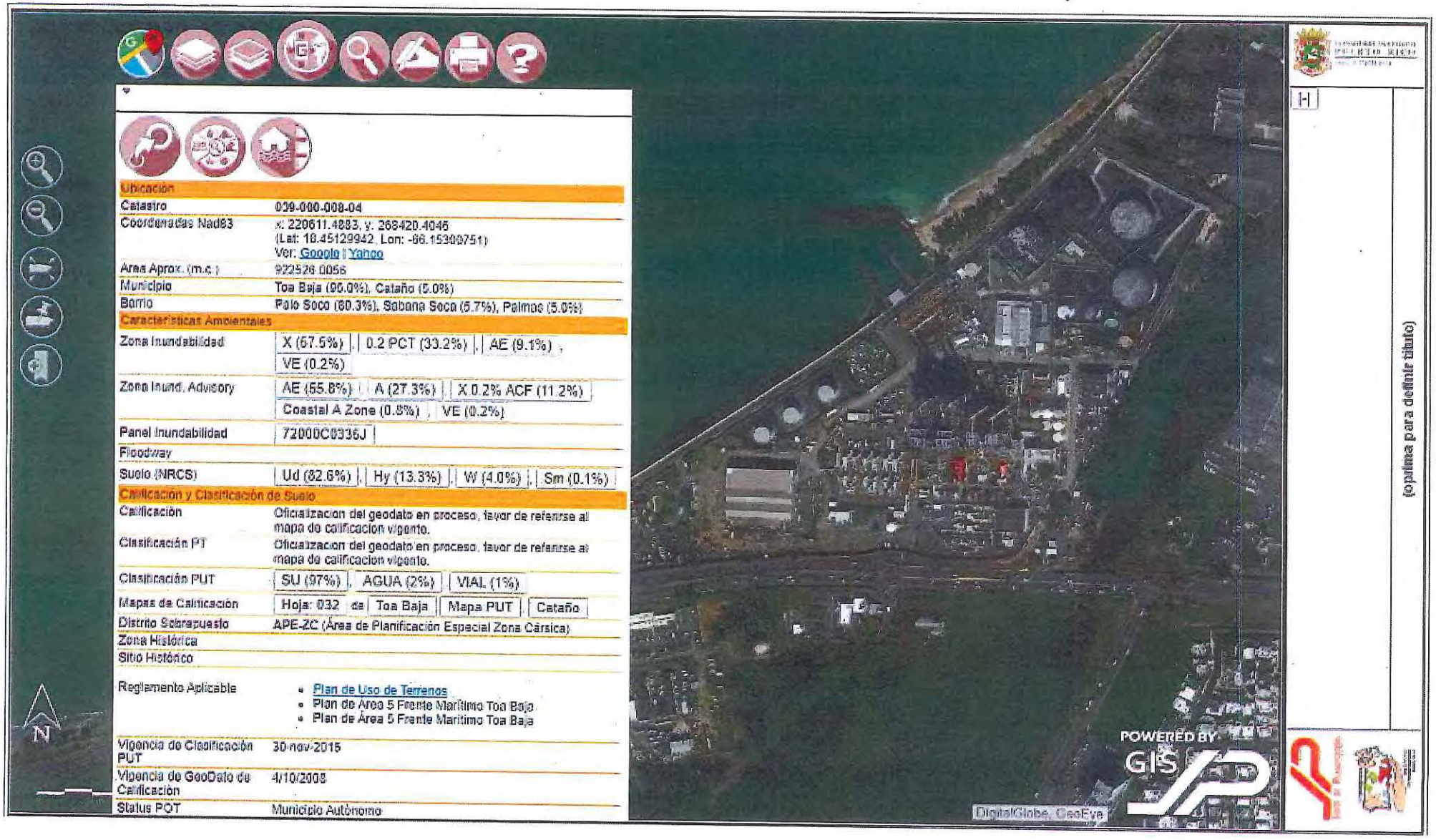
Google Maps



Imágenes © 2019 Google, Imágenes © 2019 CNES / Airbus, Maxar Technologies, U.S. Geological Survey, Datos del mapa © 2019 50 m

Casa
Establecer ubicación

https://www.google.com/maps/@18.4559701,-66.149336,529m/data=!3m1!1e3!5m1!1e4


Ubicación
Catastro 039-000-008-04
Coordenadas Nad83 x: 220611.4883, y: 268420.4046
(Lat: 18.45129942, Lon: -66.15300751)
Ver: Google | Yahoo
Area Aprox. (m.c.) 922526.0056
Municipio Toa Baja (95.0%), Cataño (5.0%)
Barrio Palo Seco (60.3%), Sabana Seca (5.7%), Palmas (5.0%)
Caracteristicas Ambientales
Zona Inundabilidad X (57.5%) | 0.2 PCT (33.2%) | AE (9.1%) | VE (0.2%)
Zona Inund. Advisory AE (55.8%) | A (27.3%) | X 0.2% ACF (11.2%) | Coastal A Zone (0.8%) | VE (0.2%)
Panel Inundabilidad 72000C0336J
Floodway
Suelo (NRCS) Ud (82.6%) | Hy (13.3%) | W (4.0%) | Sm (0.1%)
Calificación y Clasificación de Suelo
Calificación Oficialización del geodato en proceso, favor de referirse al mapa de calificación vigente.
Clasificación PT Oficialización del geodato en proceso, favor de referirse al mapa de calificación vigente.
Clasificación PUT SU (97%) | AGUA (2%) | VIAL (1%)
Mapas de Calificación Hoja: 032 de Toa Baja | Mapa PUT | Cataño
Distrito Sobrepuesto APE-ZC (Área de Planificación Especial Zona Cársica)
Zona Histórica
Sitio Histórico
Reglamento Aplicable
Plan de Uso de Terrenos
Plan de Área 5 Frente Marítimo Toa Baja
Plan de Área 5 Frente Marítimo Toa Baja
Vigencia de Clasificación PUT 30-nov-2015
Vigencia de GeoDato de Calificación 4/10/2008
Status POT Municipio Autónomo
POWERED BY GIS
DigitalGlobe, GeoEye
(óptima para definir tributo)


ESTADO LIBRE ASOCIADO DE PUERTO RICO
Junta de Planificación
[-]
(oprima para definir título)
N
0
200
400ft
JUNTA DE PLANIFICACIÓN

PR-AW-19-TE-PS-PP-P.D.13-01-2

TUBERIA DE COMBUSTIBLE 4" EXISTENTE

+2.70

CONTROL MACHINES

CONTROL MACHINES

WALL BARRIER

TUBERIA DE COMBUSTIBLE 4" EXISTENTE

ED AREA
LTAGE)
OWED

GATE

CRANE COLUMN

CRANE BEAM

TUBERIA DE COMBUSTIBLE 4" EXISTENTE

TEMPORARY DIESEL PIPE 4 INCH DIAM.

12" DIAM. PIPE

TANK

VALVE AREA

MGBS-01

MGBS-02

MGBS-03

PSACA-01

PSACA-02

PSACA-03

TUBERIA DE COMBUSTIBLE 4" EXISTENTE

F.F.E.= 2.77

+2.55

F.F.E.= 2.77

+2.64 (8'-8")

F.F.E.= 2.79

CONCRETE SLAB

+2.64

+2.54

CONCRETE SLABS

+2.70

TGPS-01

GRAVEL

+2.29

CONCRETE SLABS

+2.81

F.F.E.= 2.77

+2.62

CONCRETE SLAB

F.F.E.=2.78 (9'-1 1/2")

+2.62

+2.53

+2.58

+2.64

+2.40

+2.58

+2.41

+2.59

+2.51

+2.53

+2.31

GRAVEL

FENCE

+2.35

+2.62

F.F.E.= 2.75

+2.66

F.F.E.=2.75

+2.74 CONCRETE SLABS

+2.54

0.00

F.F.E.=2.78 (9'-1 1/2")

CONCRETE SLAB

+2.57

+2.68

F.F.E.=2.77

+2.76

CONCRETE SLAB

0.00

+2.77

RESTRICTED AREA
(HIGH VOLTAGE)

BARRA DE INTERCONEXION (132 KV)

WALL TOP= 3.29

WA

+2.73 (8'-11 1/2")

F.F.E.= 2.75'

+2.62

F.F.E.= 2.79

F.F.E.=2.78

CONCRETE SLAB

F.F.E.=2.78 (9'-1 1/2")

HH

+2.70

+2.68

+2.62

TGPS-02

+2.65

+2.66

F.F.E.=2.77 (9'-1")

CONCRETE SLAB

F.F.E.=2.82 (9'-3")

F.F.E.=2.76

+2.68

+2.74

+2.62

TGPS-03

GRAVEL

+2.69

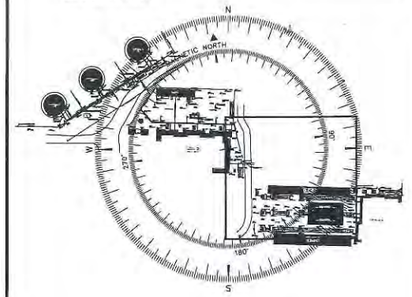
+2.63

+2.55

+2.61

+2.51

PLANO DE SITUACION



LEYEND:

EQPS	EQUIPOS A INSTALAR
———	TUBERIA DE COMBUSTIBLE 4" EXISTENTE
(8'-02")	GROUND LEVEL CONVERSION ENGLISH UNITS
+2.49	GROUND LEVEL (MEAN SEA LEVEL) METERS
△ EST-1	CONTROL STATION

N
W E
S

LISTA DE EQUIPOS				
PTO.	TAG	DESCRIPCION	NORTE	ESTE
23	MGBS-01	MOTOGENERADOR DIESEL – BLACK START 01	268815.39	230005.03
24	MGBS-02	MOTOGENERADOR DIESEL – BLACK START 02	268810.81	230005.03
25	MGBS-03	MOTOGENERADOR DIESEL – BLACK START 03	268806.23	230005.03
26	PSACA-01	Paquete de SACA 01	268814.37	230011.67
27	PSACA-02	Paquete de SACA 02	268809.79	230011.67
28	PSACA-03	Paquete de SACA 03	268805.21	230011.67
29	TGPS-01	Turbogenerador Polo Seco 01	268,793.20	230,012.88
30	TGPS-02	Turbogenerador Polo Seco 02	268,792.15	230,059.46
31	TGPS-03	Turbogenerador Polo Seco 03	268,776.32	230,058.23

GRAPHIC SCALE (METERS)
0 5 10 20 30 40 50

GRAPHIC SCALE (FEET)
0 5 10 20 30 40 50 60 70 80 90 100

Wellington Turbines LLC

PRECISION CORP. INDUSTRIAL CONTRACTORS

REVISIONS				REVISIONS				REFERENCE DRAWINGS		COORDINATED				LIC. #	DATE
NO.	DATE	DESCRIPTION	APPD.	NO.	DATE	DESCRIPTION	APPD.	NUMBER	TITLE	DEPARTMENT	SIGNATURE	DATE	DESIGNED		
										ARCHITECTURAL			SURVEYED		
										CIVIL			DRAWN		
										ELECTRICAL			CHECKED		
										MECHANICAL			SUBMITTED		
													RECOMMENDED		
													APPROVED		

PUERTO RICO ELECTRIC POWER AUTHORITY CORPORATE SEAL

PUERTO RICO ELECTRIC POWER AUTHORITY
ENGINEERING DIVISION

SAN JUAN, PUERTO RICO – PLANTA PALO SECO
PLOT PLANT

SCALE: 1:200	SAN JUAN, PUERTO RICO	HOJA 02 DE 02

ABOVEGROUND STRUCTURE

Source/ Container ID	Total Capacity (gal.)	Secondary Containment (gal.)
Bunker C Reserve Tank 1	4,179,165	9,492,015
Bunker C Reserve Tank 2	4,129,917	9,492,015
Bunker C Reserve Tank 3	6,230,014	9,492,015
Bunker C Reserve Tank 4	6,171,695	9,492,015
Bunker C Service Tank 1	212,661	375,892
Bunker C Service Tank 2	216,312	366,012
Bunker C Service Tank 3	409,143	-(626,663)
Bunker C Service Tank 4	434,493	626,663
Light Distillate Tank 1	670,316	1,347,062
Light Distillate Tank 2	674,105	1,347,062
Light Distillate Tank 3	757,897	1,347,062
Used Oil Tank	8,000	10,215
Emergency Generator	565	3,035
Warehouse 55-gal. Oil Containers Storage Area	5,500	Building Enclosed, Steel-Spill Tray, Concrete Dike
55-gal. Lube Oil Satellite Storage Station #1 (Turbines Auxiliaries – Sargazo Area)	880	Concrete Dike Shack
55-gal. Lube Oil Containers Satellite Storage Station #2 (Boilers)	825	Concrete Dike Shack & Drainage System
Lube Oil Containers Satellite Storage Station #3-4 (Machines Room)	550	Building Enclosed & Shack
55-gal. Lube Oil Containers Satellite Storage Station Gas Turbines	605	Concrete Dike Shack & Drainage System
New Power Generator Diesel Tanks (2)	1,200	Concrete Dike Shack & Drainage System
Emergency Generator Tank Fire Protection System Pump	304	Building Enclosed, Concrete Dike & Drainage System
Diesel Station Tank	800	Enclosed Shack, Concrete Dike & Drainage System
Total Aboveground Storage Capacity	**24,104,804**	

NOTE:
INSTALLATION UNDER USEPA (ENVIRONMENTAL PROTECTION AGENCY) AND USCG (COAST GUARD) JURISDICTION.

NORTH

PALO SECO

NPDES SERIAL DISCH 002

NO.6 FUEL OIL STORAGE TANK R-3 CAP: 6,230,014 GALS.

NO.6 FUEL OIL STORAGE TANK R-4 CAP: 6,171,695 GALS.

NO.6 FUEL OIL STORAGE TANK R-2 CAP: 4,129,917 GALS.

NO.6 FUEL OIL STORAGE TANK R-1 CAP: 4,179,165 GALS.

NEW DETENTION BASIN

REGRADED WASTE TREATMENT PLANT AREA TO DRAIN TO BASIN
NEW DETENTION BASIN SUMP
WATER TO BE PUMPED FROM BASIN TO EQUALIZATION TANKS 2&3

BAYAMON RIVER OLD BED

OLD BAYAMON RIVER

NPDES SERIAL DISCH 001A

NPDES SERIAL DISCH 001C

NEW STORM DRAINAGE SYSTEM IN PARKING LOT CHANNELING WATER TO 'STORMCEPTOR' DISCHARGE TO BAYAMON RIVER

STATE ROAD No. 870

STATE ROAD No. 165

SAN JUAN SAN JUAN

ROCA VIEJA BAY

HYDROGAS ENTRANCE
CREATE 6"HIGH ASPHALT SPEED BUMP TO CHANNEL RUNOFF BACK INTO THE PLANT

MAIN GATE ENTRANCE
CONCRETE CHANNEL COVERED BY STEEL GRATE AT ENTRANCE TO PREVENT RUNOFF FROM ENTERING PLANT DISCHARGE TO EXISTING STREET DRAINAGE SYSTEM

PROPOSED WASTE STORAGE BUILDING

: ASTs-Secondary Containment Areas

0 25' 75' 125'
GRAPHIC SCALE: 1"=80'

REVISIONS				REVISIONS				REFERENCE DRAWINGS		COORDINATED		
NO.	DATE	DESCRIPTION	APPD.	NO.	DATE	DESCRIPTION	APPD.	NUMBER	TITLE	DEPARTMENT	SIGNATURE	DATE
(1)	OCTOBER 2013	SPCC PLAN REVISION								ARCHITECTURAL		
										CIVIL		
										ELECTRICAL		
										MECHANICAL		

DESIGNED
SURVEYED
DRAWN
CHECKED
SUBMITTED
RECOMMENDED
APPROVED

PUERTO RICO ELECTRIC POWER AUTHORITY
WATER QUALITY DEPARTMENT

PALO SECO STEAM PLANT
SITE PLAN – SPCCP

SCALE: | SAN JUAN, PUERTO RICO | November 2014

ESTADO LIBRE ASOCIADO DE PUERTO RICO
Oficina de Gerencia de Permisos

Recibo de Pago

PERMISO: 2019-268588-DEC-077728

DESCRIPCIÓN	CANTIDAD		NÚM. RECIBO	FECHA DE ENVÍO
Costo Base del Trámite		$ 18.75	06121904748V	6/12/2019 9:45:43 PM

Total: $18.75

ESTADO LIBRE ASOCIADO DE PUERTO RICO
Oficina de Gerencia de Permisos

Recibo de Pago

PERMISO: 2019-268588-DEC-077849

DESCRIPCIÓN	CANTIDAD		NÚM. RECIBO	FECHA DE ENVÍO
Costo Base del Trámite		$ 18.75	06181900525V	6/18/2019 10:02:19 AM

Total: $18.75

Certificación de Cumplimiento Ambiental por Exclusión Categórica

Puerto Rico Electric Power Authority (PREPA) Palo Seco

Fecha de Expedición:

13/JUN/2019

Datos de Localización

De conformidad con las disposiciones contenidas en las leyes y los reglamentos vigentes, se expide la presente Certificación de Exclusión Categórica para la acción(es) antes descrita(s):

Dirección Física:

Dirección: PALO SECO POWER PLANT
PR-870,
PUERTO RICO, 00949
Municipio: Toa Baja
Estado: Puerto Rico
Código Postal: 00949

Dueño:

Autoridad Energia Electrica

Sometido por:

Autoridad Energia Electrica

Número(s) de Catastro:

039-000-008-04

Calificación

Distrito(s) de Calificación: I-P (50%), CR (49%), DT-G (1%)

Distrito en el Mapa de Inundabilidad: X (57.5%), 0.2 PCT (33.2%), AE (9.1%), VE (0.2%)
Tipo de Suelo: Ud (82.6%), Hy (13.3%), W (4.0%), Sm (0.1%)

Datos de determinación

Exclusión Categórica

Números de exclusión categórica aplicables de acuerdo a la R-11-17 de la JCA*:

39

Fecha de Expedición:

13/JUN/2019

Condiciones Generales

De acuerdo con la solicitud de esta Determinación, se certificó cumplimiento con los siguientes requisitos, cuyo incumplimiento podrá repercutir en la revocación de esta Determinación:

1. Las actividades de uso o de construcciones livianas de nuevas estructuras no están ubicadas o desarrolladas en:

a. Areas especiales de riesgo de inundaciones, derrumbes o marejadas.

b. Areas en las que la Junta de Calidad Ambiental (JCA) u otras agencias gubernamentales estatales o federales hayan determinado que existe un grado de contaminación que excede el permitido por los reglamentos vigentes.

c. Areas ecológicamente sensitivas o protegidas, según establecido por el Departamento de Recursos Naturales y Ambientales (DRNA), en las que existan especies únicas de fauna o flora o que estén en peligro de extinción o en las que puedan afectarse ecológicamente sistemas naturales o artificiales, ya sea en forma directa o indirecta.

d. Areas en las que existan problemas de infraestructura o de deficiencias en los sistemas de servicios de suministro de agua potable, disposición de las aguas sanitarias, suministro de energía eléctrica o capacidad vial para el manejo adecuado del tránsito de vehículos de motor.

e. Areas que constituyan yacimientos minerales, conocidos o potenciales.

f. Areas en las que existen yacimientos arqueológicos o de valor cultural, según determinado por el Instituto

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Certificación de Cumplimiento Ambiental por Exclusión Categórica

de Cultura Puertorriqueña (ICP).

g. Areas de topografía escarpada, en cuencas hidrográficas donde se puedan afectar fuentes de abasto de agua potable.

h. Cualquier otra acción que la JCA haya establecido mediante Resolución.

2. No descargarán contaminantes a cuerpos de agua, ni generará desperdicios peligrosos o emisiones al aire que excedan dos (2) toneladas al año de contaminantes de aire criterio, o cinco (5) toneladas de cualquier combinación de contaminantes criterios, ni emitirá al aire contaminantes peligrosos o tóxicos u olores objetables.

3. La disposición o descarga de las aguas usadas se realizará mediante acometidas a un sistema sanitario existente, lo cual requerirá la obtención del endoso de la AAA previo a la solicitud de permisos de construcción.

4. Que existe la infraestructura necesaria (agua potable y alcantarillado sanitario suministrado por la AAA, energía eléctrica, alcantarillado pluvial, vías de acceso) para servir a la operación del proyecto o actividad propuesta, con excepción de los proyectos agrícolas que se ubican por regla general en las áreas rurales, así como las residencias unifamiliares asociadas en las que las instalaciones de esa naturaleza son limitadas.

5. La operación de la actividad no afectará áreas residenciales o zonas de tranquilidad por contaminación sónica según establecido por el Reglamento para el Control de la Contaminación por Ruido.

6. Que el desarrollo de la instalación comercial, industrial, de servicio, institucional y de desarrollo de terrenos para uso turístico y proyectos recreativos no excede de cinco mil (5,000) pies cuadrados de conStrucción en área total de ocupación y área bruta de piso y que cumple con las condiciones de ubicación y operación establecidas por la OGPe u otra agencia con jurisdicción, según sean aplicables.

7. El uso de edificios o estructuras existentes para facilidades comerciales, almacenes y usos industriales o de servicios no excederán de cien mil (100,000) pies cuadrados en área total de ocupación y área bruta de piso. Dicha operación deberá cumplir con las condiciones de ubicación y operación establecidas por la OGPe u otra agencia con jurisdicción, según sean aplicables, y las establecidas para las exclusiones categóricas en este Reglamento.

8. Para la ejecución o desarrollo de las acciones aprobadas como exclusiones categóricas, se requerirá la obtención de los permisos aplicables de las agencias gubernamentales para las etapas de construcción y operación.

9. La acción no ha sido fragmentada o segmentada para fines de la evaluación y será determinación de la agencia proponente si la misma satisface o no los requisitos para ser considerada y ejecutada bajo una exclusión categórica.

10. Que ha cumplido con el requisito de publicación de un Aviso Público de conformidad con la Regla 122 del Reglamento de Evaluación y Trámite de Documentos Ambientales de la JCA, en el caso que la acción propuesta esté relacionada al uso u otorgamiento de fondos federales que requieran un proceso de evaluación parecido al de NEPA (NEPA-Like Process).

Aviso

Si luego de haberse aquí dado cumplimiento con el Artículo 4(B) de la Ley Núm. 416 surgieran variaciones sustanciales en la acción propuesta que requieran la evaluación a los impactos ambientales, habrá que presentar el correspondiente documento ambiental, de conformidad con la Ley sobre Política Pública Ambiental.

Condiciones Especiales

NINGUNA

Firma / Sellos

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

Certificación de Cumplimiento Ambiental por Exclusión Categórica

Fecha de Expedición:
13/JUN/2019



Arq. María R. Cintrón Flores

Secretaria Auxiliar de la OGPe, DDEC

PO Box 41179 San Juan, Puerto Rico 00940-1179 • 787-721-8282

SBP
SINGLE BUSINESS PORTAL



Ricardo Oscar Ramos
Solicitante - Individuo
ricardordj@yahoo.com

PermitPCOC 152 actualizado

Permiso de Construcción

Información General | Uso Principal | Proyectista y Especialista | Obras de Urbanización | Obras de Construcción | Obras de Demolición | Attachments | Resumen | Pagos | Completar

Anejos del Trámite

Aneje los documentos que aparecen requeridos en la tabla bajo estas líneas. No podrá continuar con el proceso hasta que haya anejado **cada uno** de los documentos requeridos.

Trámite Actual:
2019-268588-PCOC-000152

Anejos Requeridos del Trámite | Otros Anejos del Trámite

Nombre del Archivo	Acción
Autorización del Dueño del Proyecto	Subir
Memorial Explicativo	Acciones

Nombre del Archivo		
Licencia y Colegiación del Proyectista		Subir
Certificacion, informe o estudio de las condiciones de suelo		Subir
Certificación archivo gráfico y mapa		Subir
Certifación Códigos y Reglamentos		Subir
Especificaciones Técnicas		Subir
Evidencia de Cumplimiento Ambiental		Subir
Certificación de Inundabilidad		Subir
Plano(PDF)		Subir
Certificación del Proyectista		Subir
Fotografía de la propiedad		Subir
Certificación de que la estructura no contiene asbesto y/o pinturas a base de plomo.		Subir
Certificación de que la propiedad no es histórica.		Subir
Other	Opcional	Subir

Anejos del Trámite

Nombre del Archivo	Tipo de Anejo	Eliminar

Back

Siguiente

Copyright © 2019 Gobierno de Puerto Rico

Versión de la Aplicación: 6.0.3 | Términos y Condiciones

ESTADO LIBRE ASOCIADO DE PUERTO RICO
Oficina de Gerencia de Permisos

Recibo de Pago

PERMISO: 2019-268588-PCOC-000152

DESCRIPCIÓN	CANTIDAD		NÚM. RECIBO	FECHA DE ENVÍO
Costo Por Sellos del CIAPR y CAAPPR		$ 0.41	No Pagado	00-00-0000
PermitPCOC - Primer Pago de Evaluación		$ 1.39	No Pagado	00-00-0000

Total: $1.80

26. Acciones para conservar energía tales como la instalación y reemplazo de equipos o sistemas de alta eficiencia energética para mejorar la eficiencia en el control de la calidad ambiental en una instalación existente.

B. Modificar usos existentes o acciones aprobadas

21. Relocalización o reemplazo de líneas eléctricas aéreas y soterradas en áreas previamente impactadas o urbanizadas. Incluye la instalación de tuberías, trincheras, registros y postes con un máximo de ciento cinco pulgadas (105") de profundidad para

excavación de trincheras, y de doce pies (12') máximos de profundidad para fosas de postes.

Número de Permiso	Fecha de Creación	Última Modificación	Tipo de Permiso	Estado Actual
2019-268588-DEC-077849	2019-06-18 08:23:37 AST	2019-06-18 08:23:37 AST	DEC-Determinación de Cumplimiento Ambiental vía Exclusión Categórica	Rectificación

Nota

SALUDOS

FAVOR ENVIAR CORREO ELECTRONICO AL DIRECTOR DEL DECA JAIME GREEN EN MODO DE CONSULTA.

EMAIL: JAIMEGREEN@OGPE.PR.GOV

EL DIRECTOR DETERMINARA SI SU PETICION ES CONSIDERADA UNA EXCLUSION CATEGORICA.

Ok