

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

NEPR

Received:

Oct 4, 2021

4:21 PM

IN RE:

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

CASE NO. NEPR-MI-2021-0002

**SUBJECT: Motion to Submit Updated List of
Projects and Thirty-Eight Scopes of Work**

**MOTION SUBMITTING UPDATED LIST OF TRANSMISSION AND
DISTRIBUTION PROJECTS AND THIRTY-EIGHT SCOPES OF WORK**

TO THE PUERTO RICO ENERGY BUREAU:

COME NOW LUMA Energy, LLC¹, and **LUMA Energy ServCo, LLC²**, (jointly referred to as “LUMA”), through the undersigned legal counsel and respectfully submit the following:

On March 26, 2021, this Puerto Rico Energy Bureau (“Energy Bureau”) issued a Resolution and Order in the instant proceeding (the “March 26 Order”), ordering, in pertinent part, that the Puerto Rico Electric Power Authority (“PREPA”) submit to the Energy Bureau the specific projects to be funded with Federal Emergency Management Agency (“FEMA”) funds or any other federal funds at least thirty (30) calendar days prior to submitting these projects to the Puerto Rico Central Office for Recovery, Reconstruction and Resiliency (“COR-3”), FEMA or any other federal agency. *See* March 26 Order at pages 18-19. This Energy Bureau thereafter determined that this directive applied to both PREPA and LUMA. *See* Resolution and Order of August 20, 2021 (“August 20 Order”) at page 3.

¹ Register No. 439372.

² Register No. 439373.

On April 14, 2021, the Puerto Rico Electric Power Authority (“PREPA”) filed with the Energy Bureau a list of projects under the categories of transmission, distribution, and substations that would be submitted by PREPA to FEMA and COR-3 for approval in connection with the 10 Year Infrastructure Plan³. See PREPA’s *Motion in Compliance with Resolution and Order Entered on March 26, 2021* (“April 14 Motion”).⁴

On June 8, 2021, this Energy Bureau issued a Resolution and Order (“June 8 Order”) approving sixty-five (65) projects that PREPA had submitted for consideration in the April 14 Motion and requesting LUMA to provide a list of remaining projects to be submitted to FEMA and/or COR-3 requiring approval by the Energy Bureau. See June 8 Order at page 1.

On June 15, 2021, LUMA filed with the Energy Bureau a motion discussing matters related to timing for the submittal to the Energy Bureau of the transmission and distribution system projects (“T&D Projects”) to be proposed by LUMA to FEMA and/or COR-3 and requesting a Technical Workshop to discuss the process of submittal and approval of T&D Projects and Scopes of Work (“SOWs”) by the Energy Bureau. See LUMA’s *Motion in Compliance with June 8th Resolution and Order and Request for Technical Workshop* (“June 15 Motion”).

On July 2, 2021, the Energy Bureau issued a Resolution and Order (the “July 2 Order”) requiring LUMA to file a list of the remaining projects that require Energy Bureau approval and

³ This document is the revised 10 Year Infrastructure Plan submitted by the Puerto Rico Electric Power Authority (“PREPA”) to the Energy Bureau in March 2021 (see *Motion Submitting March 2021 Revised 10-Year Infrastructure Plan* filed by PREPA on March 19, 2021), which was subsequently updated in July 2021 (see *Joint Motion Submitting Updated 10-Year Infrastructure Work Plan* filed by PREPA and LUMA on July 6, 2021).

⁴ Thereafter, PREPA filed with this Energy Bureau the project files that had been submitted to FEMA and COR-3. See *Motion in Compliance with Resolution and Order issued on April 22, 2021* filed by PREPA on April 28, 2021 and May 4, 2021.

will be submitted to FEMA and COR-3 and any updates or revisions to the revised 10 Year Infrastructure Plan. *See* July 2 Order at page 3. In the July 2 Order, this Energy Bureau also scheduled the Technical Conference requested by LUMA for July 12, 2021, which was held on that date.⁵ *See id.* at page 2. On July 6, 2021, LUMA and PREPA filed with the Energy Bureau an update of the 10 Year Infrastructure Plan and a PREPA-LUMA supplement to the 10 Year Infrastructure Plan providing a summary of key steps for the upcoming 90 days (“90-Day Plan”). *See Joint Motion Submitting Updated 10-Year Infrastructure Work Plan* of that same date.

On July 8, 2021, LUMA filed with this Energy Bureau a motion submitting an itemized list of T&D Projects and the SOWs for twenty-eight (28) T&D projects for this Energy Bureau’s review and approval prior to submittal to COR-3 and/or FEMA, as per this Energy Bureau’s March 26 Order. *See Motion Submitting List of Projects and Twenty-Eight Scopes of Work* filed on July 8, 2021 (“July 8 Motion”) at pages 3-4. On July 9, 2021, LUMA filed an amended list of projects. *See LUMA’s Motion Submitting Amended List of Projects* filed on July 9, 2021 (“July 9 Motion”).

On August 20, 2021, the Energy Bureau issued a Resolution and Order (“August 20 Order”) approving the SOWs for twenty-eight (28) T&D projects presented by LUMA in the July 8 and July 9 Motions.

On August 30, 2021, LUMA filed with this Energy Bureau a *Motion Requesting Clarification of a Portion of the Energy Bureau’s Resolution and Order Entered on August 20,*

⁵ LUMA appeared at the Technical Conference and gave a presentation regarding the process of review and approval of the federally funded T&D projects. LUMA thereafter filed with the Energy Bureau, on July 15, 2021, a motion submitting a corrected version of the presentation provided by LUMA during such Technical Conference and requesting the Energy Bureau to approve the process for the review and approval of federally funded T&D projects proposed by LUMA during the Technical Conference. This Energy Bureau has not ruled on this motion as of this date.

2021 and Submitting Updated List of Transmission and Distribution Projects and Twenty-Nine Scopes of Work (“August 30 Motion”).

On September 21, 2021, LUMA and PREPA jointly filed the September 2021 update to the 90-Day Plan. *See Motion Submitting September 2021 Update to the PREPA-LUMA 90 Day Plan* of that date.

On September 22, 2021, the Energy Bureau issued a Resolution and Order clarifying the August 20 Order and approving 21 SOWs for T&D Projects listed in Attachment A therein which were submitted by LUMA in the August 30 Motion and ordering LUMA to attend a Technical Conference to be held on September 30, 2021 to gather additional information regarding the projects submitted under the “buildings category.” This Technical Conference was rescheduled to October 7, 2021.⁶

LUMA has now completed the project definition for thirty-eight (38) additional T&D Projects to be submitted by LUMA to FEMA and COR-3, and hereby submits to this Energy Bureau an Updated Project List as **Exhibit 1** of this Motion. **Exhibit 1** provides, among others, the current LUMA T&D Project list in column E, which contains a total of one hundred and forty (140) projects (as listed in the updated project list submitted in the August 20 Motion) and the status of these projects in column F, showing eighty-six (86) T&D Projects that have already been approved by the Energy Bureau shown as “Approved by PREB” or “A&E Phase” (the latter of which includes sixty-five (65) projects which have been assigned a FEMA number (*see* column C) and are in the Architecture and Engineering phase); forty-six (46) projects that have been

⁶ See LUMA’s *Motion for Continuance of Technical Conference* filed on September 28, 2021 and the Energy Bureau’s Resolution and Order issued on September 29, 2021.

submitted to the Energy Bureau for approval (including the thirty-eight (38) submitted as part of this motion); and eight (8) projects with initial SOWs under development.

In accordance with the March 26 Order, LUMA also hereby submits to the Energy Bureau thirty-eight (38) SOWs for T&D Projects for this Energy Bureau's review and approval prior to submittal to COR-3 and FEMA, as **Exhibit 2** of this Motion. *See* March 26 Order at pages 18-19.

WHEREFORE, LUMA respectfully requests that the Energy Bureau **take notice** of the aforementioned, **accept** the updated list of T&D projects submitted as **Exhibit 1** to this Motion, and approve the thirty-eight (38) SOWs for T&D projects submitted as **Exhibit 2** to this Motion.

RESPECTFULLY SUBMITTED.

In San Juan, Puerto Rico, this 4th day of October, 2021.

I hereby certify that I filed this motion using the electronic filing system of this Energy Bureau and that I will send an electronic copy of this motion to the attorneys for PREPA, Joannely Marrero-Cruz, jmarrero@diazvaz.law and Katuska Bolaños-Lugo, kbolanos@diazvaz.law.



DLA Piper (Puerto Rico) LLC
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San Juan, PR 00901-1969
Tel. 787-945-9107
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/s/ Laura T. Rozas
Laura T. Rozas
RUA Núm. 10,398
laura.rozas@us.dlapiper.com

Exhibit 1

Excel Spreadsheet with Updated List of Projects Submitted via email

Exhibit 2

38 Scopes of Work



FEMA Project Scope of Work

Project Name:



Baldrich - 1422

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

This table contains a history of the revisions made to this document

Rev.	Date of Issue	Brief Description of Change
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Overview

Project Name:	Baldrich - 1422
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Baldrich Sectionalizer	1422	18.41243, -66.057083

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves repairing, restoring, and replacing damaged components and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace distribution metal-clad switchgear including associated components
- Replace oil circuit breakers and disconnect switches as required
- Replace jumper cables, conduits, control cables, and manholes as required
- Replace distribution feeder cables and conduits heading to nearby poles, manholes, or other structures as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair of Control House Elements

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:

\$1.0M



Estimated Budget for Construction & Procurement:	\$9.5M
Estimated Overall Budget for the Project:	\$10.5M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation (EHP) Requirements

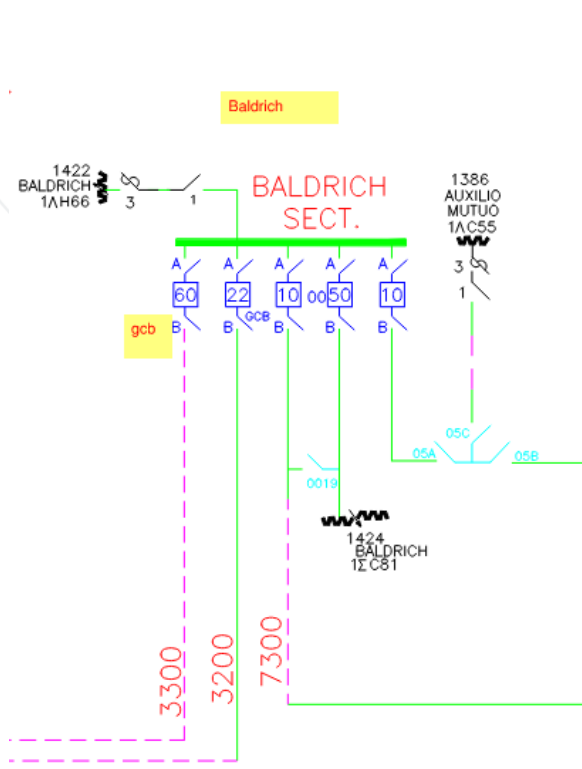
EHP considerations will be identified and evaluated during the base design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA before construction activities.

Attachments

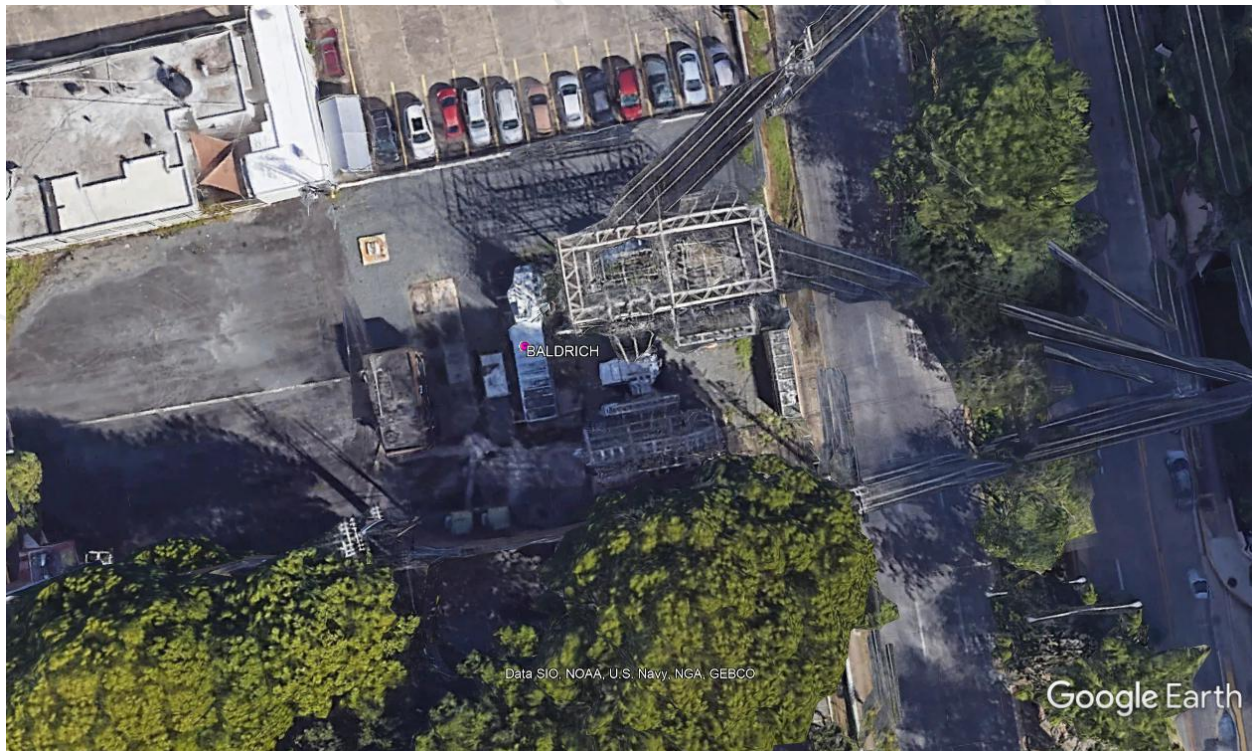
Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture



System One-Line



Aerial View





FEMA Project Scope of Work

Project Name:



Condado - 1133

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



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Overview

Project Name:	Condado - 1133
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Condado Substation	1133	18.452187, -66.066925

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves repairing, restoring, and replacing damaged components and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace distribution metal-clad switchgear including associated components
- Replace oil circuit breakers and disconnect switches as required
- Replace jumper cables, conduits, control cables, and manholes as required
- Replace distribution feeder cables and conduits heading to nearby poles, manholes, or other structures as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair of Control House Elements

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$0.6M
Estimated Budget for Construction & Procurement:	\$10.0M
Estimated Overall Budget for the Project:	\$10.6M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

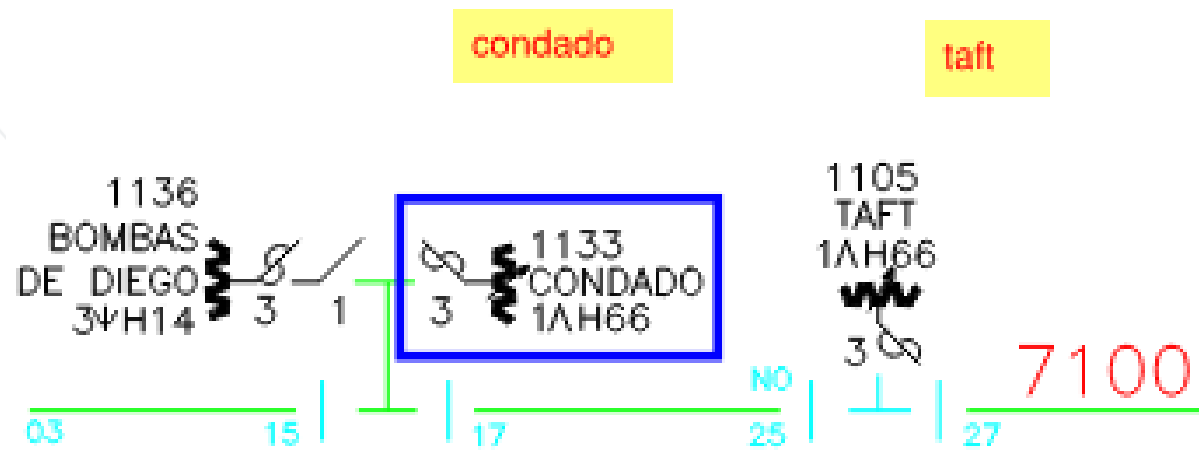
Environmental & Historic Preservation (EHP) Requirements

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

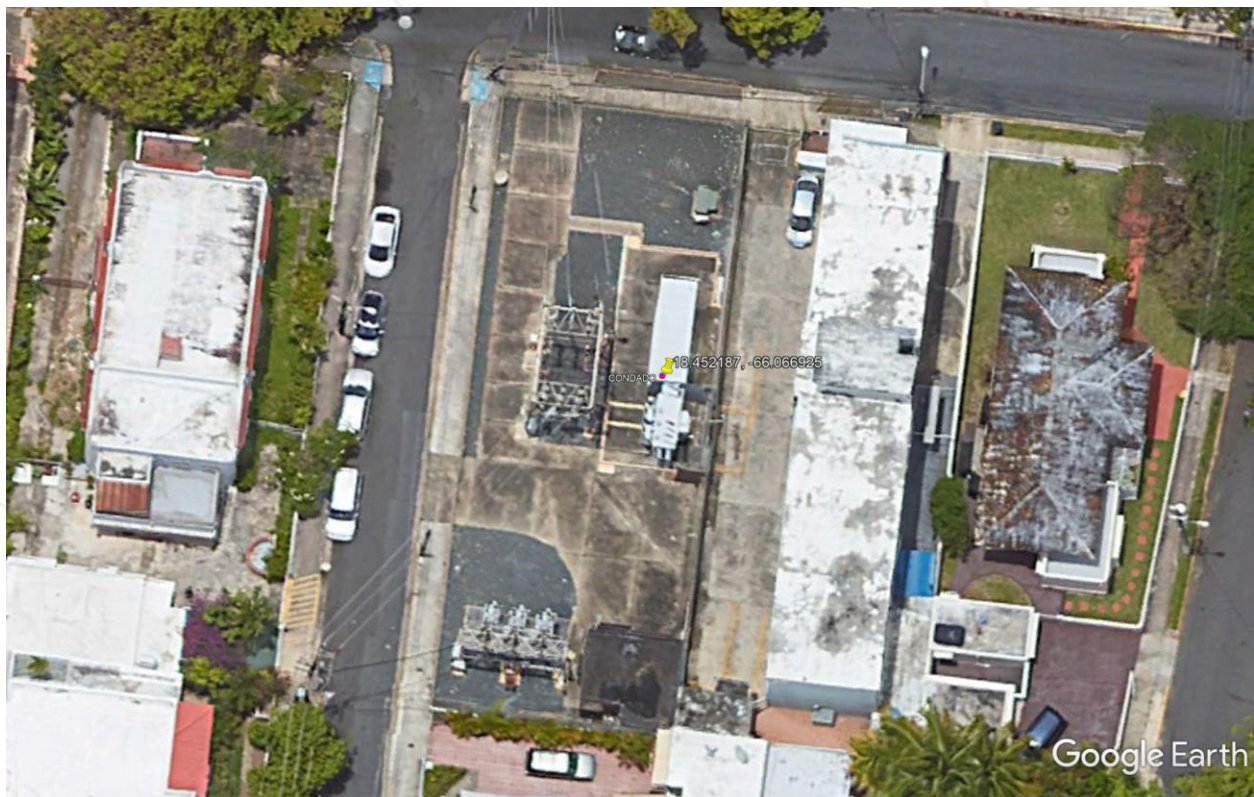
Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Aerial View







FEMA Project Scope of Work

Project Name:
Crematorio - 1512
Revision: 0
Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



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Overview

Project Name:	Crematorio - 1512
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Crematorio Substation	1512	18.429697, -66.083527

Note: GPS coordinates are required for each facility.

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves repairing, restoring, and replacing damaged components and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace distribution metal-clad switchgear including associated components
- Replace oil circuit breakers and disconnect switches as required
- Replace jumper cables, conduits, control cables, and manholes as required
- Replace distribution feeder cables and conduits heading to nearby poles, manholes, or other structures as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair of Control House Elements

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024.

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$0.6M
Estimated Budget for Construction & Procurement:	\$10.0M
Estimated Overall Budget for the Project:	\$10.6M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

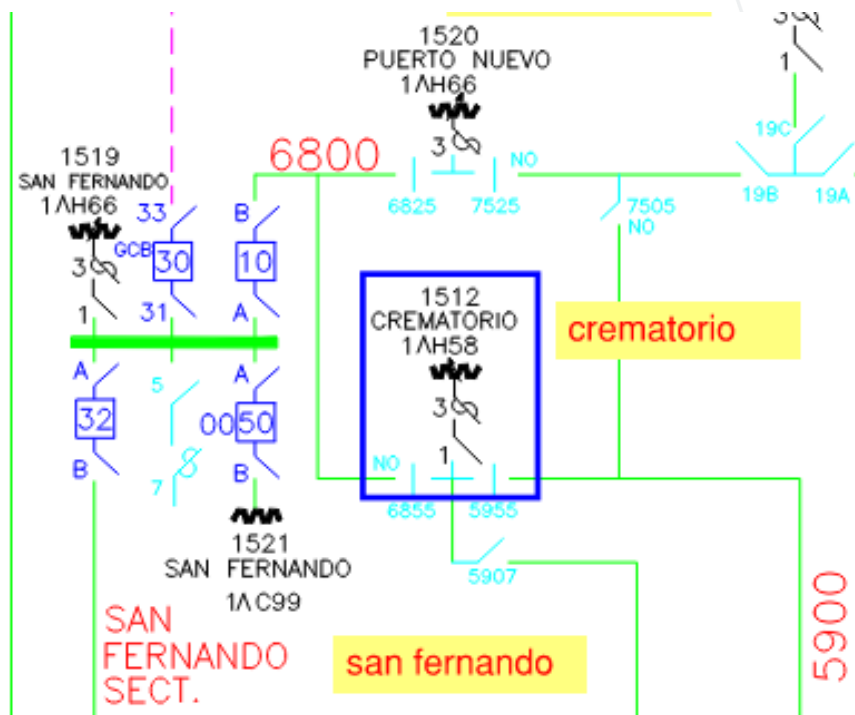
Environmental & Historic Preservation (EHP) Requirements

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

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Aerial View





FEMA Project Scope of Work

Project Name:



Egozcue - 1109

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Egozcue - 1109
Region:	Ponce
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Egozcue Sectionalizer	1109	18.440907, -66.06868

Note: GPS coordinates are required for each facility.

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves repairing, restoring, and replacing damaged components and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace distribution metal-clad switchgear including associated components
- Replace oil circuit breakers and disconnect switches as required
- Replace jumper cables, conduits, control cables, and manholes as required
- Replace distribution feeder cables and conduits heading to nearby poles, manholes, or other structures as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair of Control House Elements

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$0.5M
Estimated Budget for Construction & Procurement:	\$10.0M
Estimated Overall Budget for the Project:	\$10.5M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

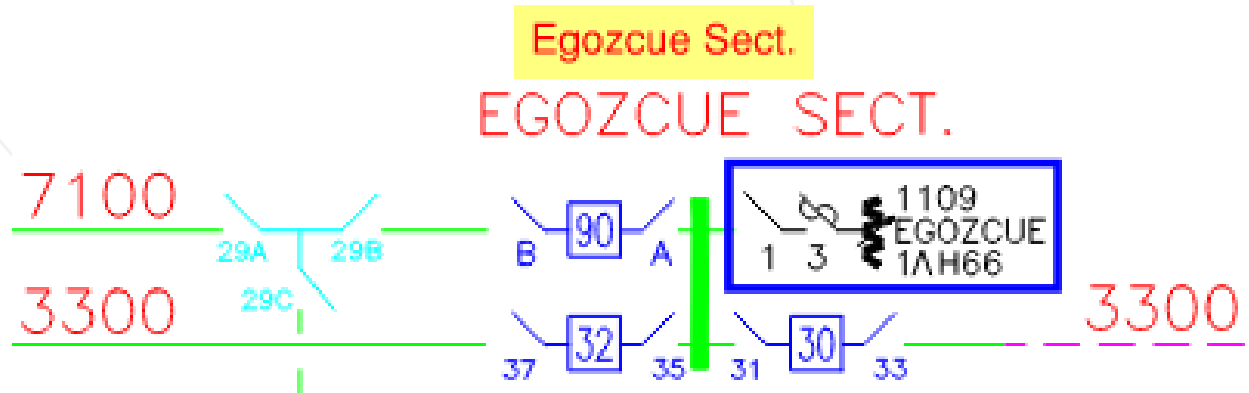
Environmental & Historic Preservation (EHP) Requirements

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

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Aerial View





FEMA Project Scope of Work

Project Name:



Esc. Industrial M. Such - 1423

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Esc. Industrial M. Such - 1423
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Esc. Industrial M. Such Substation	1423	18.410582, -66.043419

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves repairing, restoring, and replacing damaged components and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace distribution metal-clad switchgear including associated components
- Replace oil circuit breakers and disconnect switches as required
- Replace jumper cables, conduits, control cables, and manholes as required
- Replace distribution feeder cables and conduits heading to nearby poles, manholes, or other structures as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair of Control House Elements

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$0.6M
Estimated Budget for Construction & Procurement:	\$1.0M
Estimated Overall Budget for the Project:	\$10.6M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

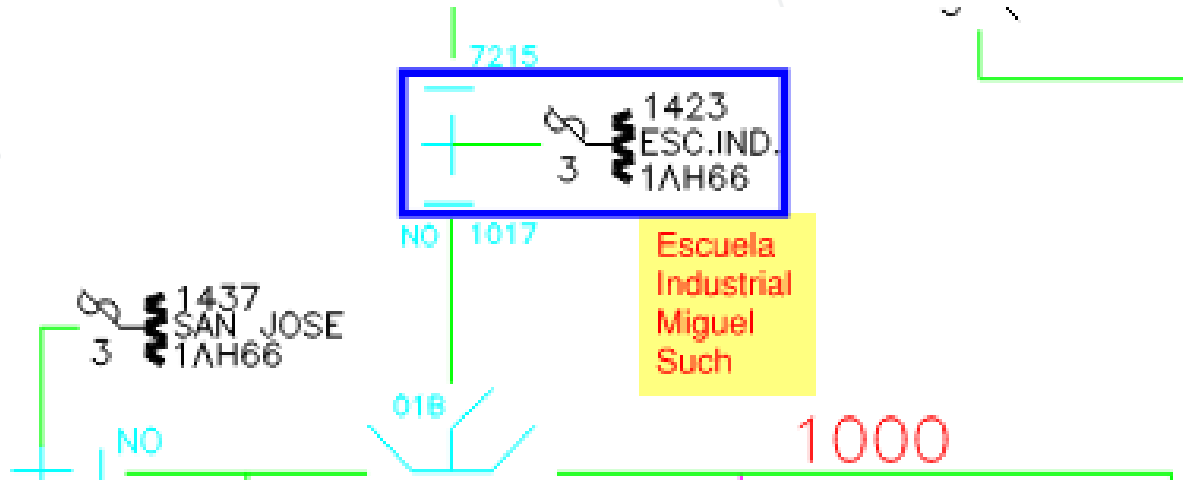
Environmental & Historic Preservation (EHP) Requirements

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

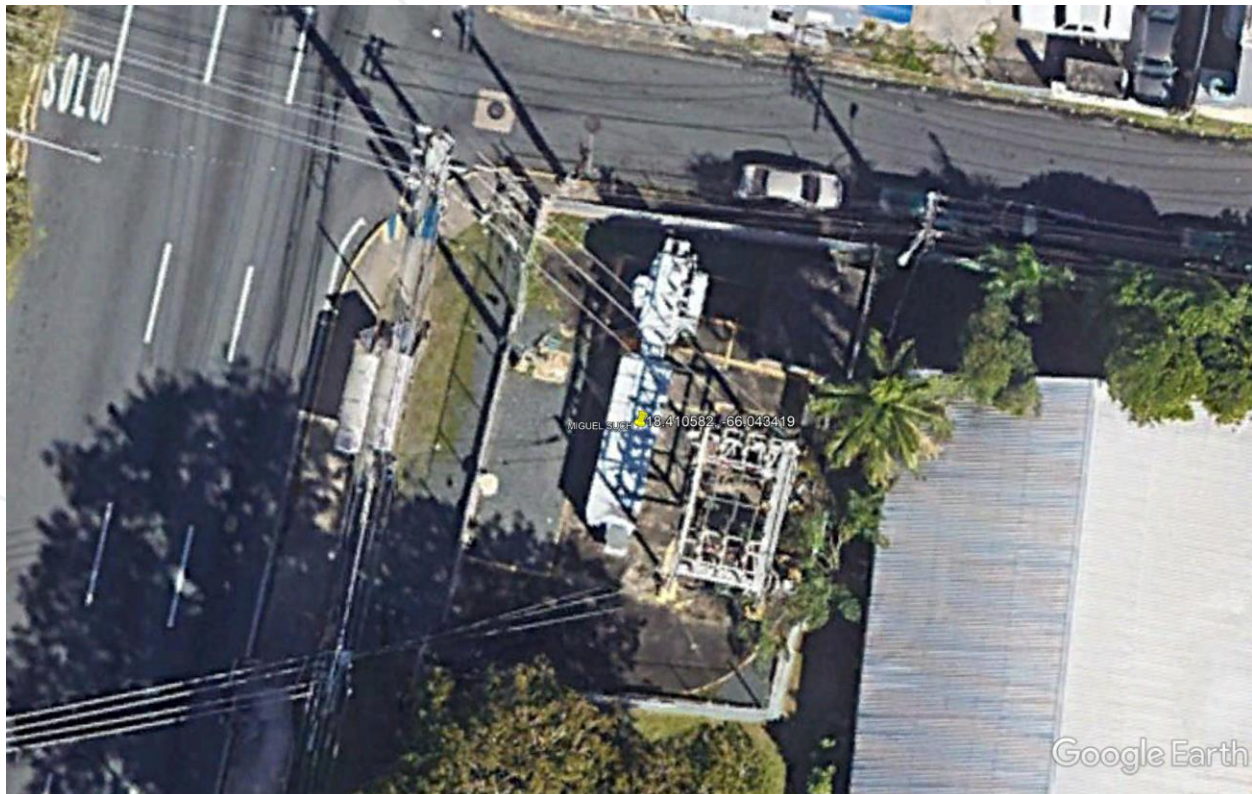
Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Aerial View





FEMA Project Scope of Work

Project Name:



Fonalledas GIS Rebuilt 1401 1421

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

This table contains a history of the revisions made to this document

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Overview

Project Name:	Fonalledas GIS Rebuilt 1401 1421
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Fonalledas Substation	1401 1421	18.407068, -66.067925

Facility Description

This facility includes transformers, circuit breakers, disconnect switches, a control house, steel structures, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged the existing control house, structures, distribution switchgear, lighting fixtures, fence, and other components.

This project aims to rebuild the entire facility at the existing site based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves the design and construction of a new substation with the required components to replace the functionality of the existing flooded facility. Following is a high-level list of anticipated tasks and components:

- Substation Yard:
 - Power transformer with SPCC (oil containment).
 - Distribution transformers.
 - Circuit breakers and circuit switchers.
 - Transmission & distribution switchgear
 - Prefabricated control enclosure with new protection, control, SCADA, telecom, battery bank, and other auxiliary equipment pre-installed and tested.
 - Steel structures, bus work, disconnect switches, surge arresters, and potential transformers as required.
 - Remote Metering Unit Transformer and corresponding control cabinet
 - Capacitor Bank System.
 - Site development, perimeter fence, drainage, grounding, trenching, yard lights, and other components as required.
 - Perform soil electrical resistivity measurements and Grounding Grid Design. The design shall include the use of theft-deterrent grounding wires and methods.
- Cross-Coordination:
 - Relocation of transmission lines (Transmission Line Scope, not included here)
 - Relocation of distribution feeder circuits (Distribution Scope, not included here)
 - Installation or modification of remote end site(s), including telecommunication (not included here).

Perform system reliability and planning studies to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$1.4M
Estimated Budget for Construction & Procurement:	\$30.0M
Estimated Overall Budget for the Project:	\$31.4M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

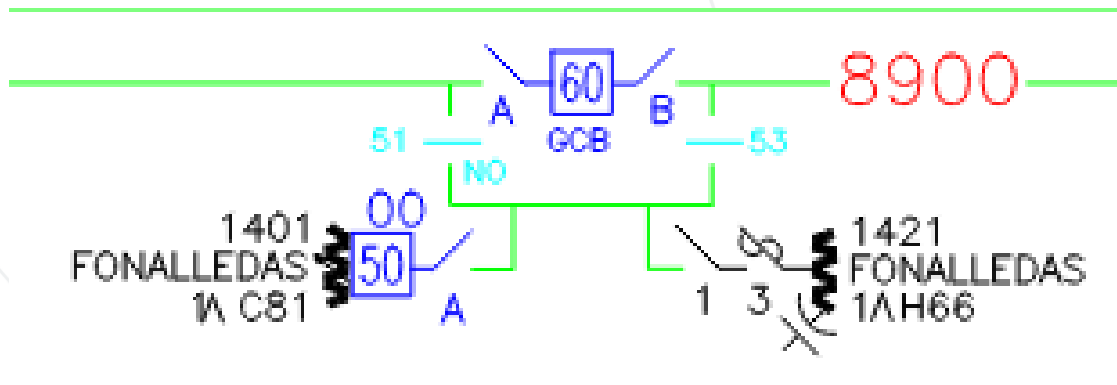
Environmental & Historic Preservation (EHP) Requirements

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

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Existing Fonalledas Sub GIS





FEMA Project Scope of Work

Project Name:



Guaynabo Pueblo Substation

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/27/2021
Department VP's Name	Signature	Date
Don Cortez		9/27/21



Document Change Control

This table contains a history of the revisions made to this document

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Overview

Project Name:	Guaynabo Pueblo Substation
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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. COR3 and FEMA will review the completed document to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace the eligible facility, including Section 406 hazard mitigation for a specific project.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Guaynabo Pueblo Sectionalizer	1901	18.364885, -66.111198

Facility Description

This facility includes transformers, circuit breakers, disconnect switches, a control house, steel structures, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged the existing control house, structures, distribution switchgear, lighting fixtures, fence, and other components.

This project aims to rebuild the entire facility at the existing site based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves the design and construction of a new substation with the required components to replace the functionality of the existing flooded facility. Following is a high-level list of anticipated tasks and components:

- **Substation Yard:**
 - Power transformer with SPCC (oil containment).
 - Distribution transformers.
 - Circuit breakers and circuit switchers.
 - Transmission & distribution switchgear
 - Prefabricated control enclosure with new protection, control, SCADA, telecom, battery bank, and other auxiliary equipment pre-installed and tested.
 - Steel structures, bus work, disconnect switches, surge arresters, and potential transformers as required.
 - Remote Metering Unit Transformer and corresponding control cabinet
 - Capacitor Bank System.
 - Site development, perimeter fence, drainage, grounding, trenching, yard lights, and other components as required.
 - Perform soil electrical resistivity measurements and Grounding Grid Design. The design shall include the use of theft-deterrent grounding wires and methods.
- **Cross-Coordination:**
 - Relocation of transmission lines (Transmission Line Scope, not included here)
 - Relocation of distribution feeder circuits (Distribution Scope, not included here)
 - Installation or modification of remote end site(s), including telecommunication (not included here).

Perform system reliability and planning studies to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$ 1.5M
Estimated Budget for Construction & Procurement:	\$15.7M
Estimated Overall Budget for the Project:	\$17.2M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

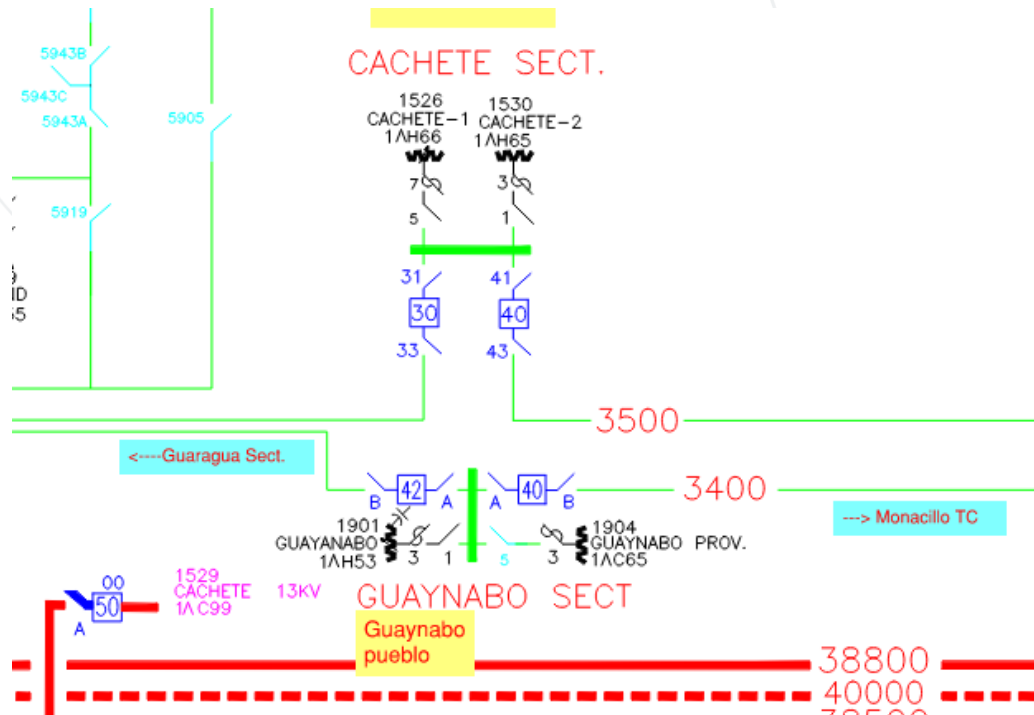
Environmental & Historic Preservation (EHP) Requirements

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

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Existing Guaynabo Pueblo Sectionalizer





FEMA Project Scope of Work

Project Name:



Santurce Planta (Sect) 1116

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Santurce Planta (Sect) 1116
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Santurce Planta Sectionalizer MC	1116	18.454226, -66.075966

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves repairing, restoring, and replacing damaged components and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace distribution metal-clad switchgear including associated components
- Replace oil circuit breakers and disconnect switches as required
- Replace jumper cables, conduits, control cables, and manholes as required
- Replace distribution feeder cables and conduits heading to nearby poles, manholes, or other structures as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair of Control House Elements

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$0.6M
Estimated Budget for Construction & Procurement:	\$9.3M
Estimated Overall Budget for the Project:	\$9.9M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

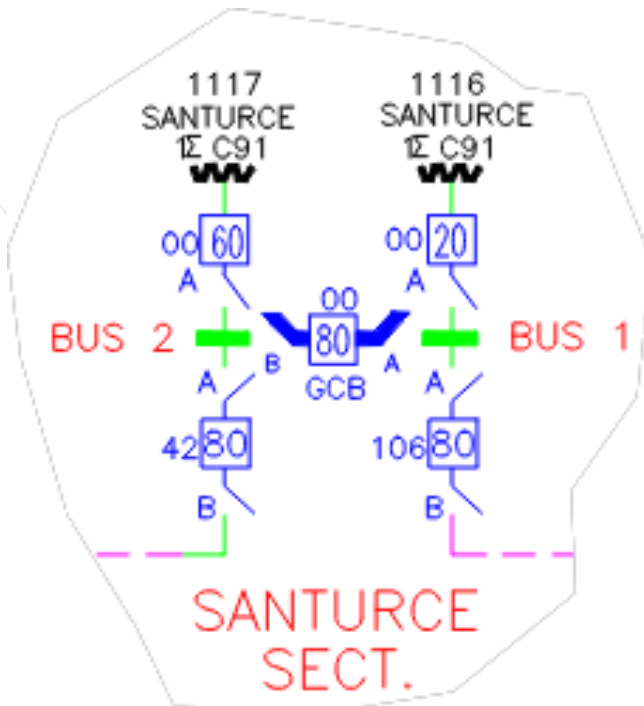
Environmental & Historic Preservation (EHP) Requirements

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

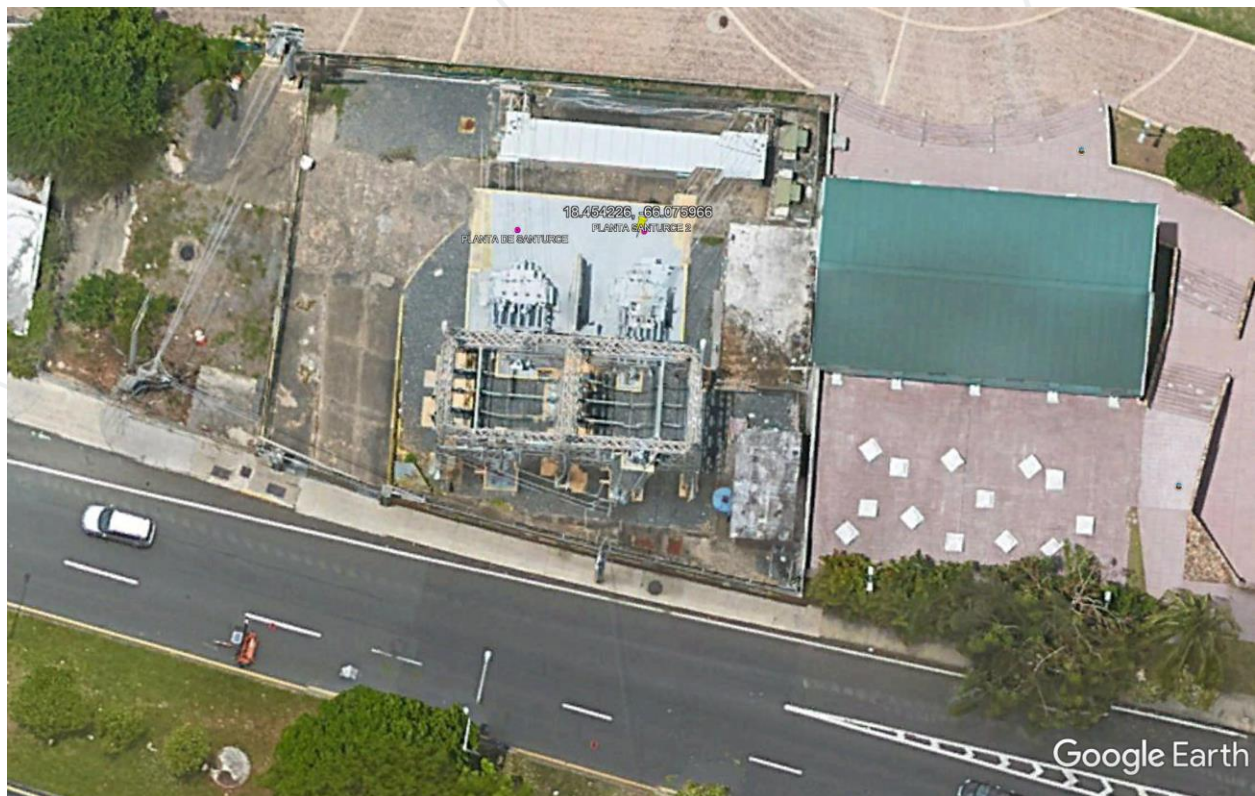
Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Aerial View





FEMA Project Scope of Work

Project Name:



Arecibo Pueblo 8002 Relocation

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Arecibo Pueblo 8002 Relocation
Region:	Arecibo
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Arecibo Pueblo Substation	8002	18.471102, -66.715561

Facility Description

This facility includes transformers, circuit breakers, disconnect switches, a control house, steel structures, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged the existing control house, structures, distribution switchgear, lighting fixtures, fence, and other components.

This project aims to rebuild the entire facility at a new greenfield site outside of a flooded zone based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves the design and construction of a new substation with the required components to replace the functionality of the existing flooded facility. Following is a high-level list of anticipated tasks and components:

- **New Greenfield Substation Yard:**
 - Power transformer with SPCC (oil containment).
 - Distribution transformers.
 - Circuit breakers and circuit switchers.
 - Transmission & distribution switchgear
 - Prefabricated control enclosure with new protection, control, SCADA, telecom, battery bank, and other auxiliary equipment pre-installed and tested.
 - Steel structures, bus work, disconnect switches, surge arresters, and potential transformers as required.
 - Remote Metering Unit Transformer and corresponding control cabinet
 - Capacitor Bank System.
 - Site development, perimeter fence, drainage, grounding, trenching, yard lights, and other components as required.
 - Perform soil electrical resistivity measurements and Grounding Grid Design. The design shall include the use of theft-deterrent grounding wires and methods.
- **Cross-Coordination:**
 - Relocation of transmission lines (Transmission Line Scope, not included here)
 - Relocation of distribution feeder circuits (Distribution Scope, not included here)
 - Installation or modification of remote end site(s) including telecommunication (not included here).

Perform system reliability and planning studies to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q3 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$ 1.7M
Estimated Budget for Construction & Procurement:	\$15.4M
Estimated Overall Budget for the Project:	\$17.1M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

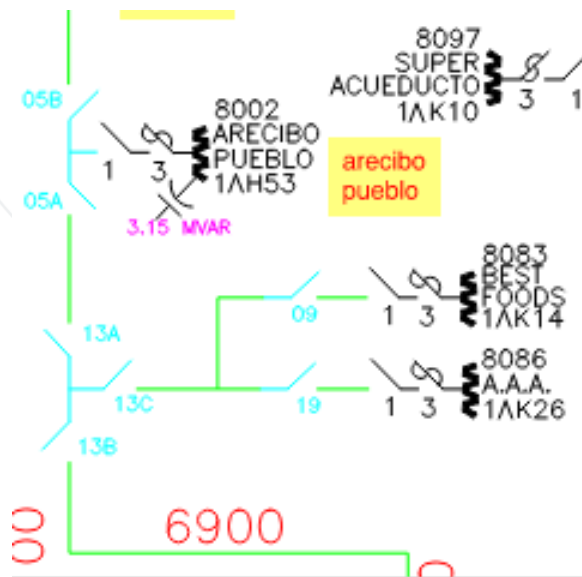
Environmental & Historic Preservation (EHP) Requirements

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

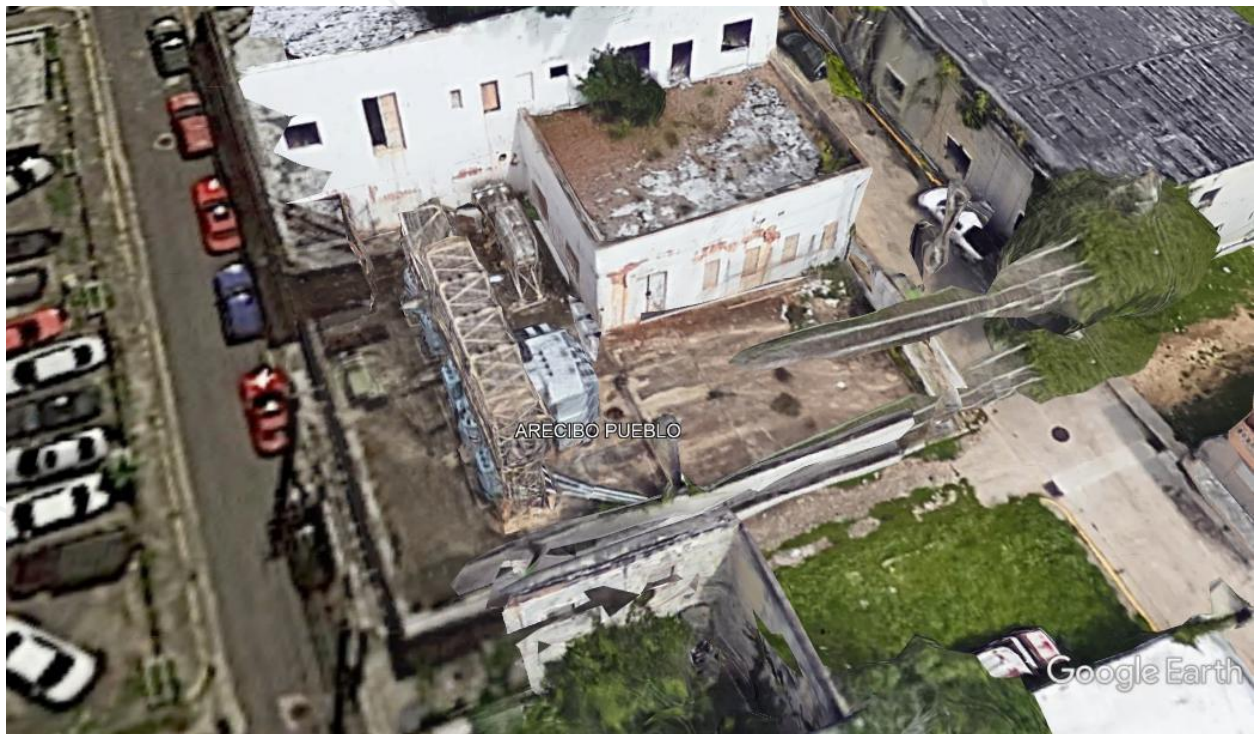
Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Existing Arecibo Pueblo Sustation







FEMA Project Scope of Work

Project Name:
Bayview Sectionalizer 1802 Relocation
Revision: 0
Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Bayview Sectionalizer 1802 Relocation
Region:	Bayamon
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facility

Facility

Name	Substation Number	GPS Location
Bay View Sectionalizer Relocation	1802	18.449759, -66.138306

Note: GPS coordinates are required for each facility.

Facility Description

This facility includes transformers, circuit breakers, disconnect switches, a control house, steel structures, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged the existing control house, structures, distribution switchgear, lighting fixtures, fence, and other components.

This project aims to rebuild the entire facility at a new greenfield site outside of a flooded zone based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves the design and construction of a new substation with the required components to replace the functionality of the existing flooded facility. Following is a high-level list of anticipated tasks and components:

- **New Greenfield Substation Yard:**
 - Power transformer with SPCC (oil containment).
 - Distribution transformers.
 - Circuit breakers and circuit switchers.
 - Transmission & distribution switchgear
 - Prefabricated control enclosure with new protection, control, SCADA, telecom, battery bank, and other auxiliary equipment pre-installed and tested.
 - Steel structures, bus work, disconnect switches, surge arresters, and potential transformers as required.
 - Remote Metering Unit Transformer and corresponding control cabinet
 - Capacitor Bank System.
 - Site development, perimeter fence, drainage, grounding, trenching, yard lights, and other components as required.
 - Perform soil electrical resistivity measurements and Grounding Grid Design. The design shall include the use of theft-deterrent grounding wires and methods.
- **Cross-Coordination:**
 - Relocation of transmission lines (Transmission Line Scope, not included here)
 - Relocation of distribution feeder circuits (Distribution Scope, not included here)
 - Installation or modification of remote end site(s) including telecommunication (not included here).

Perform system reliability and planning studies to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q3 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$ 0.5M
Estimated Budget for Construction & Procurement:	\$ 16.2M
Estimated Overall Budget for the Project:	\$ 16.7M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

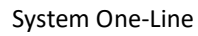
Note: If available, detailed engineering cost estimates will be included as an attachment.

Environmental & Historic Preservation (EHP) Requirements

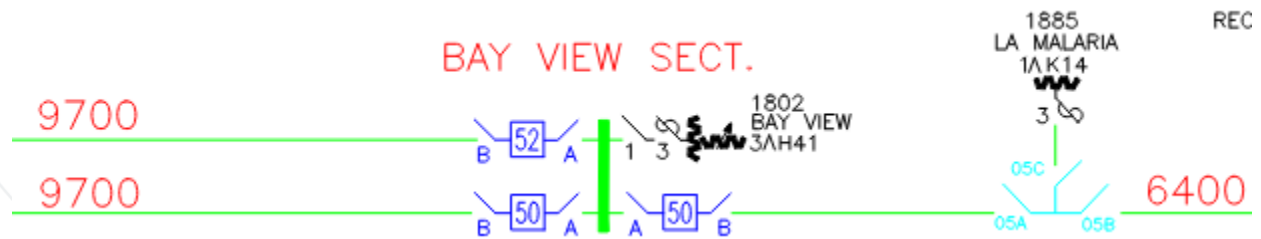
EHP considerations will be identified and evaluated during the base design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA before construction activities.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture



BAY VIEW SECT.



Existing Bay View Sectionalizer





FEMA Project Scope of Work

Project Name:



Charco Hondo 8008 Relocation

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Charco Hondo 8008 Relocation
Region:	Arecibo
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Charco Hondo Substation	8008	18.412067, -66.713974

Facility Description

This facility includes transformers, circuit breakers, disconnect switches, a control house, steel structures, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged the existing control house, structures, distribution switchgear, lighting fixtures, fence, and other components.

This project aims to rebuild the entire facility at a new greenfield site outside of a flooded zone based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves the design and construction of a new substation with the required components to replace the functionality of the existing flooded facility. Following is a high-level list of anticipated tasks and components:

- **New Greenfield Substation Yard:**
 - Power transformer with SPCC (oil containment).
 - Distribution transformers.
 - Circuit breakers and circuit switchers.
 - Transmission & distribution switchgear
 - Prefabricated control enclosure with new protection, control, SCADA, telecom, battery bank, and other auxiliary equipment pre-installed and tested.
 - Steel structures, bus work, disconnect switches, surge arresters, and potential transformers as required.
 - Remote Metering Unit Transformer and corresponding control cabinet
 - Capacitor Bank System.
 - Site development, perimeter fence, drainage, grounding, trenching, yard lights, and other components as required.
 - Perform soil electrical resistivity measurements and Grounding Grid Design. The design shall include the use of theft-deterrent grounding wires and methods.
- **Cross-Coordination:**
 - Relocation of transmission lines (Transmission Line Scope, not included here)
 - Relocation of distribution feeder circuits (Distribution Scope, not included here)
 - Installation or modification of remote end site(s), including telecommunication (not included here).

Perform system reliability and planning studies to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q3 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$ 1.0M
Estimated Budget for Construction & Procurement:	\$ 15.3M
Estimated Overall Budget for the Project:	\$ 16.3M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

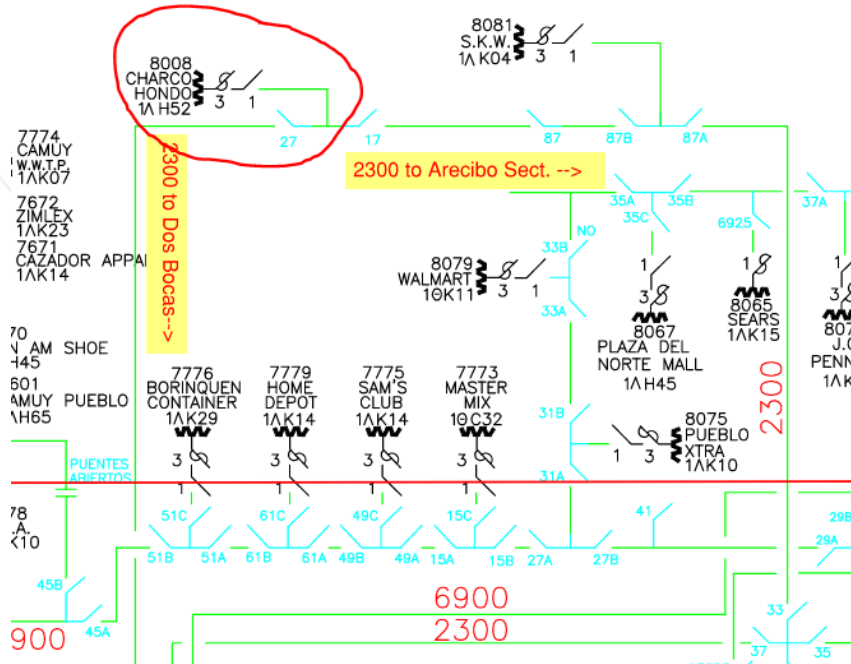
Environmental & Historic Preservation (EHP) Requirements

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

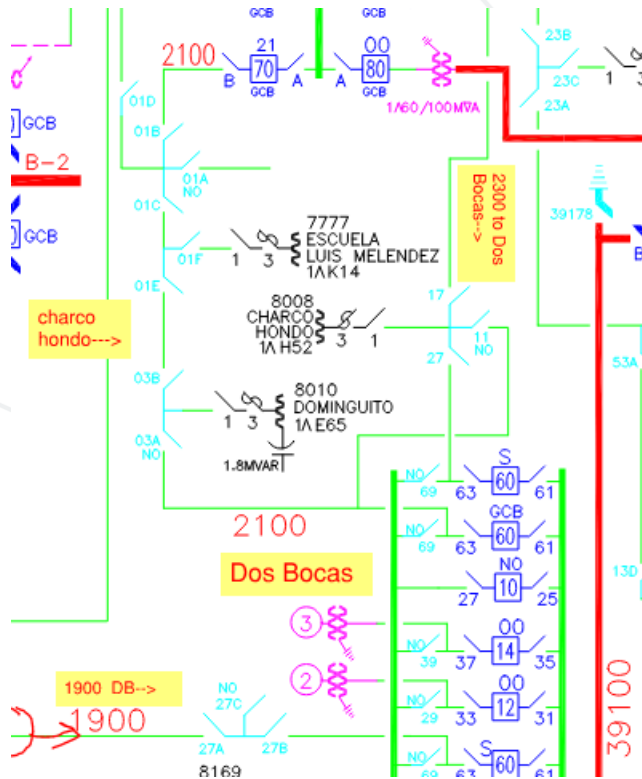
Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line (Existing Site)



System One-Line (New Site)





Existing Charco Hondo Substation







FEMA Project Scope of Work

Project Name:
Pampanos Relocation
Revision: 0
Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Pampanos Relocation
Region:	Ponce
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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. COR3 and FEMA will review the completed document to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace the eligible facility, including Section 406 hazard mitigation for a specific project.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Pampanos Sectionalizer	5005	17.994776, -66.634338

Facility Description

This facility includes transformers, circuit breakers, disconnect switches, a control house, steel structures, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged the existing control house, structures, distribution switchgear, lighting fixtures, fence, and other components.

This project aims to rebuild the entire facility at a new greenfield site outside of a flooded zone based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves the design and construction of a new substation with the required components to replace the functionality of the existing flooded facility. Following is a high-level list of anticipated tasks and components:

- **New Greenfield Substation Yard:**
 - Power transformer with SPCC (oil containment).
 - Distribution transformers.
 - Circuit breakers and circuit switchers.
 - Transmission & distribution switchgear
 - Prefabricated control enclosure with new protection, control, SCADA, telecom, battery bank, and other auxiliary equipment pre-installed and tested.
 - Steel structures, bus work, disconnect switches, surge arresters, and potential transformers as required.
 - Remote Metering Unit Transformer and corresponding control cabinet
 - Capacitor Bank System.
 - Site development, perimeter fence, drainage, grounding, trenching, yard lights, and other components as required.
 - Perform soil electrical resistivity measurements and Grounding Grid Design. The design shall include the use of theft-deterrent grounding wires and methods.
- **Cross-Coordination:**
 - Relocation of transmission lines (Transmission Line Scope, not included here)
 - Relocation of distribution feeder circuits (Distribution Scope, not included here)
 - Installation or modification of remote end site(s), including telecommunication (not included here).

Perform system reliability and planning studies to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q3 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$0.5M
Estimated Budget for Construction & Procurement:	\$15.8M
Estimated Overall Budget for the Project:	\$16.3M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

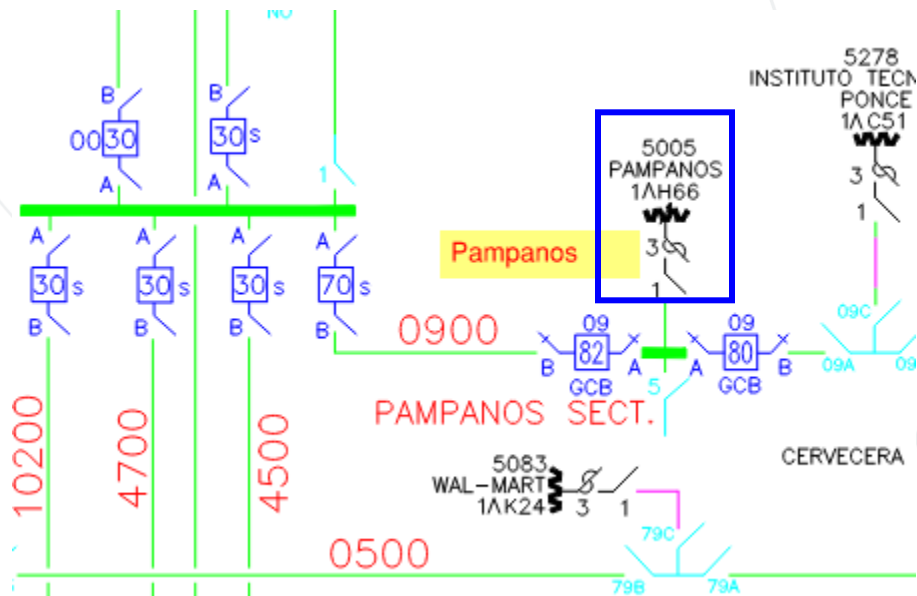
Environmental & Historic Preservation (EHP) Requirements

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

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Existing Pampanos Sectionalizer







FEMA Project Scope of Work

Project Name:
San Jose Relocation
Revision: 0
Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	San Jose Relocation
Region:	Arecibo
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
San Jose Substation	8104	18.2831, -66.702522

Facility Description

This facility includes transformers, circuit breakers, disconnect switches, a control house, steel structures, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged the existing control house, structures, distribution switchgear, lighting fixtures, fence, and other components.

This project aims to rebuild the entire facility at a new greenfield site outside of a flooded zone based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves the design and construction of a new substation with the required components to replace the functionality of the existing flooded facility. Following is a high-level list of anticipated tasks and components:

- **New Greenfield Substation Yard:**
 - Power transformer with SPCC (oil containment).
 - Distribution transformers.
 - Circuit breakers and circuit switchers.
 - Transmission & distribution switchgear
 - Prefabricated control enclosure with new protection, control, SCADA, telecom, battery bank, and other auxiliary equipment pre-installed and tested.
 - Steel structures, bus work, disconnect switches, surge arresters, and potential transformers as required.
 - Remote Metering Unit Transformer and corresponding control cabinet
 - Capacitor Bank System.
 - Site development, perimeter fence, drainage, grounding, trenching, yard lights, and other components as required.
 - Perform soil electrical resistivity measurements and Grounding Grid Design. The design shall include the use of theft-deterrent grounding wires and methods.
- **Cross-Coordination:**
 - Relocation of transmission lines (Transmission Line Scope, not included here)
 - Relocation of distribution feeder circuits (Distribution Scope, not included here)
 - Installation or modification of remote end site(s), including telecommunication (not included here).

Perform system reliability and planning studies to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q3 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$ 1.7M
Estimated Budget for Construction & Procurement:	\$15.3M
Estimated Overall Budget for the Project:	\$17.0M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

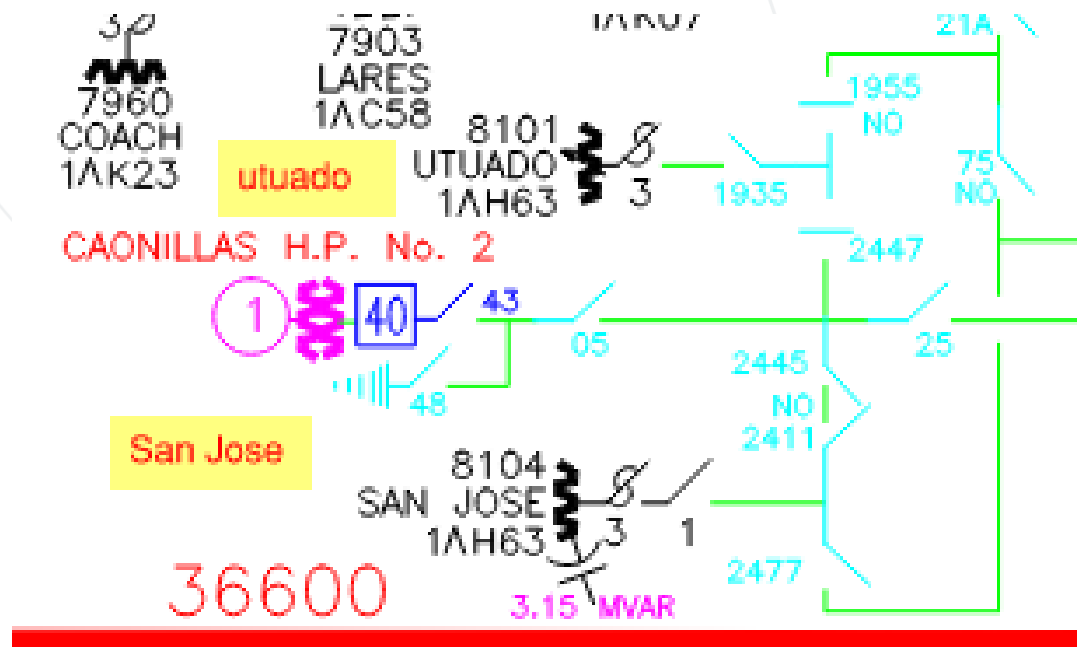
Environmental & Historic Preservation (EHP) Requirements

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

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Existing San Jose Substation







FEMA Project Scope of Work

Project Name:
Caparra 1911 & 1924
Revision: 0
Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Caparra 1911 & 1924
Region:	Bayamon
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Caparra Sectionalizer	1911, 1924	18.409592, -66.107384

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves replacing the damaged control house and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace control house with a prefabricated control enclosure including new protection, control, SCADA, Telecom, battery bank, and other auxiliary equipment pre-installed and tested.
- Replace oil circuit breaker as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.
Restores to Codes/Standards
This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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



Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$0.4M
Estimated Budget for Construction & Procurement:	\$6.2M
Estimated Overall Budget for the Project:	\$6.6M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation (EHP) Requirements

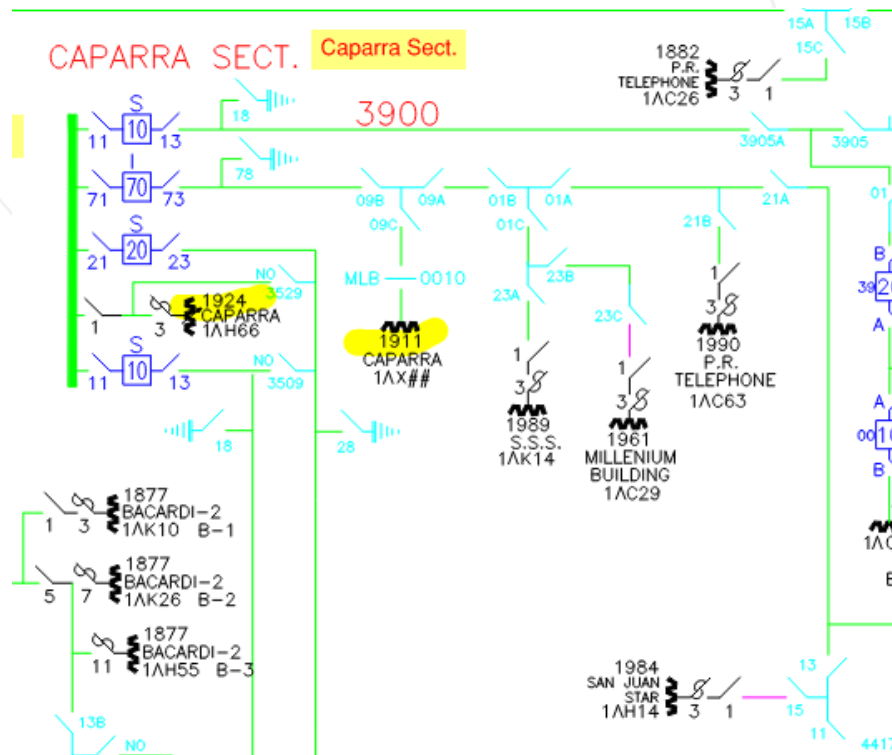
EHP considerations will be identified and evaluated during the base design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA before construction activities.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture



System One-Line





FEMA Project Scope of Work

Project Name:



Tallaboa 5402

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

This table contains a history of the revisions made to this document

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Overview

Project Name:	Tallaboa 5402
Region:	Ponce
Damage Number:	223189
Damaged Inventory/Asset Category:	Control House
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Tallaboa Substation	5402	17.995161, -66.718071

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves replacing the damaged control house and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace control house with a prefabricated control enclosure including new protection, control, SCADA, Telecom, battery bank, and other auxiliary equipment pre-installed and tested.
- Replace oil circuit breaker as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.
Restores to Codes/Standards
This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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



Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$0.6M
Estimated Budget for Construction & Procurement:	\$6.3M
Estimated Overall Budget for the Project:	\$6.9M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation (EHP) Requirements

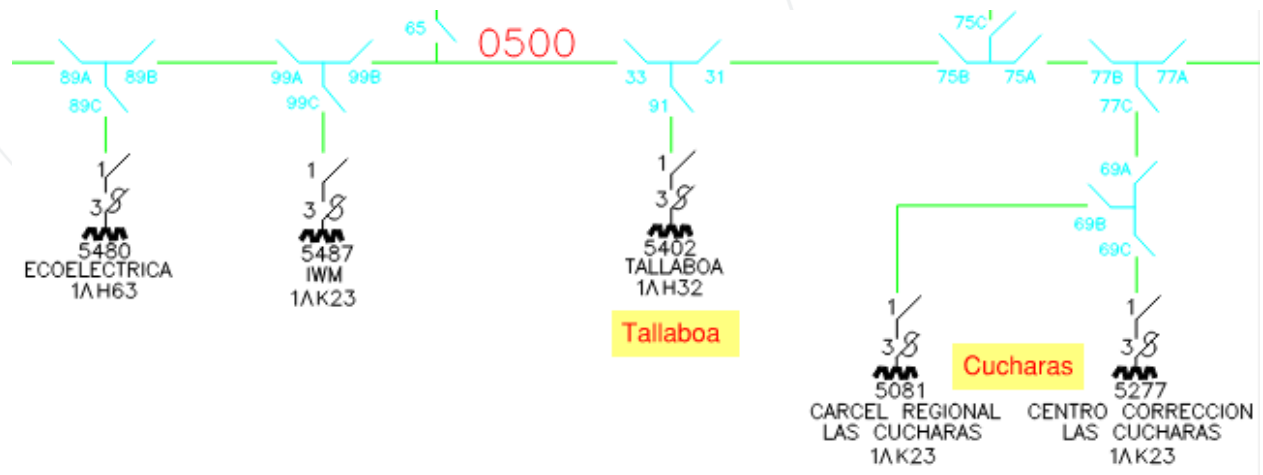
EHP considerations will be identified and evaluated during the base design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA before construction activities.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

References

System One-Line



Aerial and Street Views







FEMA Project Scope of Work

Project Name:



Parques y Recreos - 1002

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Parques y Recreos - 1002
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Parques y Recreos Sectionalizer	1002	18.462082, -66.090134

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves repairing, restoring, and replacing damaged components and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace distribution metal-clad switchgear including associated components
- Replace oil circuit breakers and disconnect switches as required
- Replace jumper cables, conduits, control cables, and manholes as required
- Replace distribution feeder cables and conduits heading to nearby poles, manholes, or other structures as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair of Control House Elements

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



Cost Estimate

Estimated Budget for Architectural & Engineering Design:	\$0.3M
Estimated Budget for Construction & Procurement:	\$7.4M
Estimated Overall Budget for the Project:	\$7.7M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation (EHP) Requirements

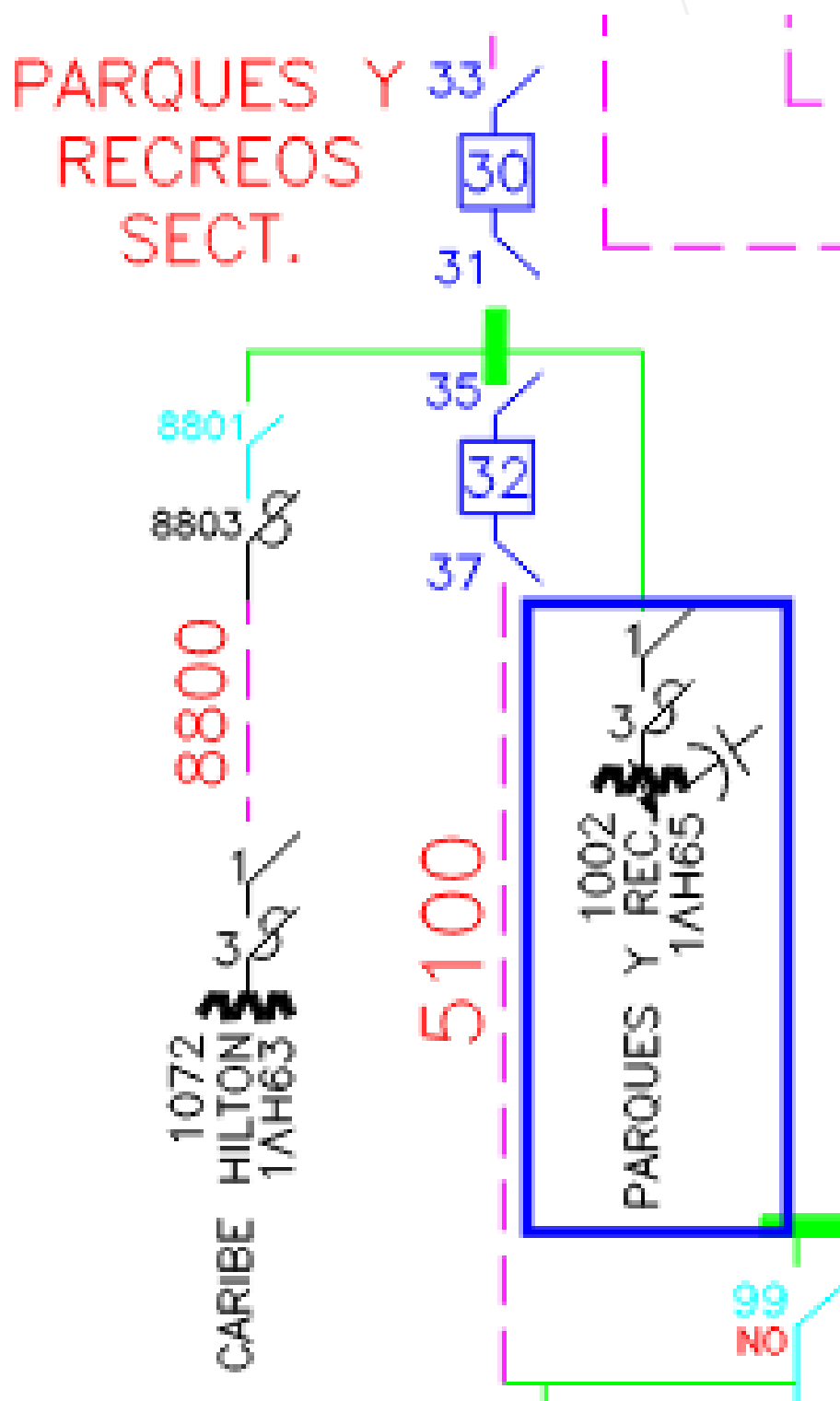
EHP considerations will be identified and evaluated during the base design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA before construction activities.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture



Doc. Name: FEMA Project Scope of Work
Project Name: Parques y Recreos - 1002
DR-4339-PR Public Assistance



Aerial and Street View





Document Name:

FEMA Project Scope of Work

Project Name:



Line 36200 Fajardo to Rio Blanco

Revision: 0

Date: 13SEPT2021

APPROVALS

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Donato Cortez		9/23/21



Document Change Control

This table contains a history of the revisions made to this document

Rev.	Date of Issue	Brief Description of Change
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Overview

Project Name:	Line 36200 Fajardo to Rio Blanco
Region:	Caguas and Carolina
Damage Number:	206253
Damaged Inventory/Asset Category:	Island Wide Transmission Line System
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facilities, sites, and systems identified in this Scope of Work that are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

The facilities listed below are part of the 18.5 circuit miles of overhead transmission line for 115kV Line 36200 from Fajardo TC to Rio Blanco HP. This line is a Near-Term priority identified by LUMA

Name	Number	GPS Start	GPS End	Voltage Level (kV)
Fajardo TC to Rio Blanco HP	36200	18.329704, -65.645927	18.243183, -65.785194	115kV

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, and any other associated components.

Structures along the Dagua TC to Rio Blanco HP line segment include multi-pole wooden guyed structures and self-supporting steel monopoles. Most structures along this line segment are accessible through roads, farm fields, or existing construction access roads and/or situated on private property. Some structures are inaccessible due to challenging terrain and overgrown vegetation. Some vegetation management is needed along certain portions of the line.

The Fajardo TC to Dagua TC line segment primarily consists of two and three-pole wood structures along with guyed steel poles and some lattice structures. This line traverses a variety of terrain and includes structures in urban/suburban environments, forested, and agricultural areas. Overall, this segment is in fair to poor condition. Many of the wood structures are leaning, some severely. Vegetative overgrowth and wire degradation concerns are also common. Numerous wood structures are on private property and near homes.



Project Scope

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

The scope of work for Line 36200 from Fajardo TC and Rio Blanco HP will consist of the repair restoration, or replacement of damaged elements and functionally interdependent non-damaged elements of the overhead portions of these lines as allowed by FEMA Public Assistance Alternative Procedures (Section 428).

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 assessments of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed assessments will be used to define the scope of work. Field surveys to locate existing alignment and property boundaries as well as 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.

In order to comply with codes and standards and to allow for construction access, vegetation removal will be considered in the scope of work. The scope of vegetation removal will be defined during the preliminary engineering phase.

The preliminary 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 Q2 2022 and construction work will be completed by 2024

Type of Project

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

This work will be in compliance with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

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

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.



Estimated Budget for Architectural & Engineering Design:	\$ 2.43 M
Estimated Budget for Procurement and Construction:	\$41.88 M
Estimated Overall Budget for the Project:	\$ 44.31 M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the preliminary 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.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
<N/A>	Location Maps and Site Picture



FEMA Project Scope of Work

Project Name:



Puerto Nuevo - 1520

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

This table contains a history of the revisions made to this document

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Overview

Project Name:	Puerto Nuevo - 1520
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Puerto Nuevo Substation	1520	18.416039, -66.079453

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves repairing, restoring, and replacing damaged components and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace distribution metal-clad switchgear including associated components
- Replace oil circuit breakers and disconnect switches as required
- Replace jumper cables, conduits, control cables, and manholes as required
- Replace distribution feeder cables and conduits heading to nearby poles, manholes, or other structures as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair of Control House Elements

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024.

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$0.6M
Estimated Budget for Construction & Procurement:	\$10.0M
Estimated Overall Budget for the Project:	\$10.6M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

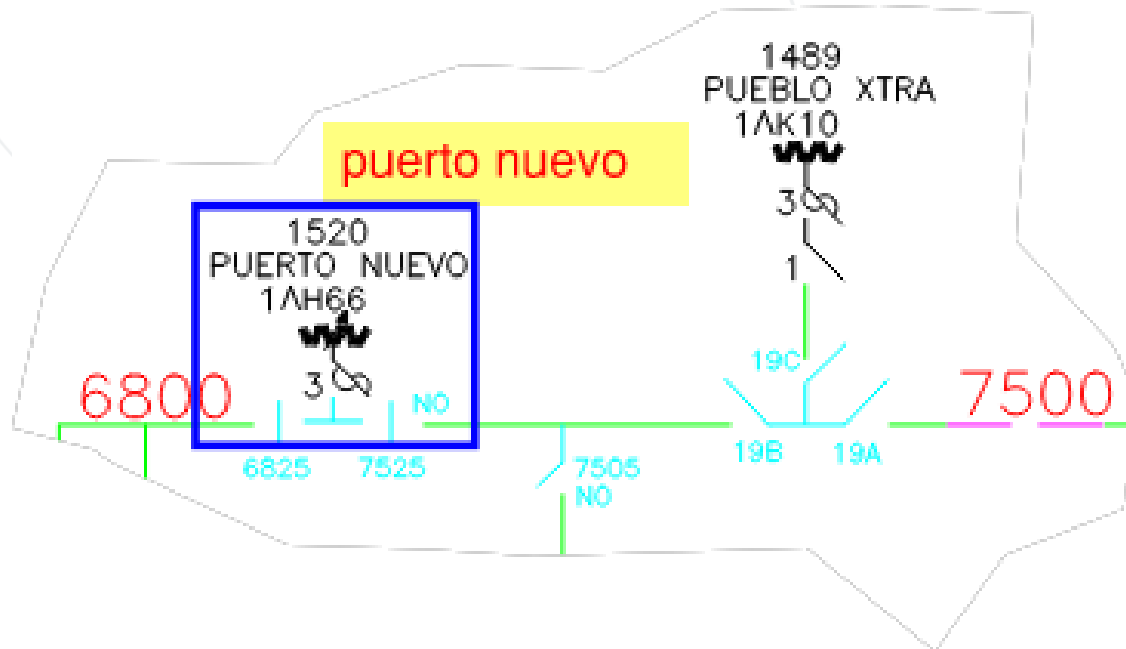
Environmental & Historic Preservation (EHP) Requirements

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

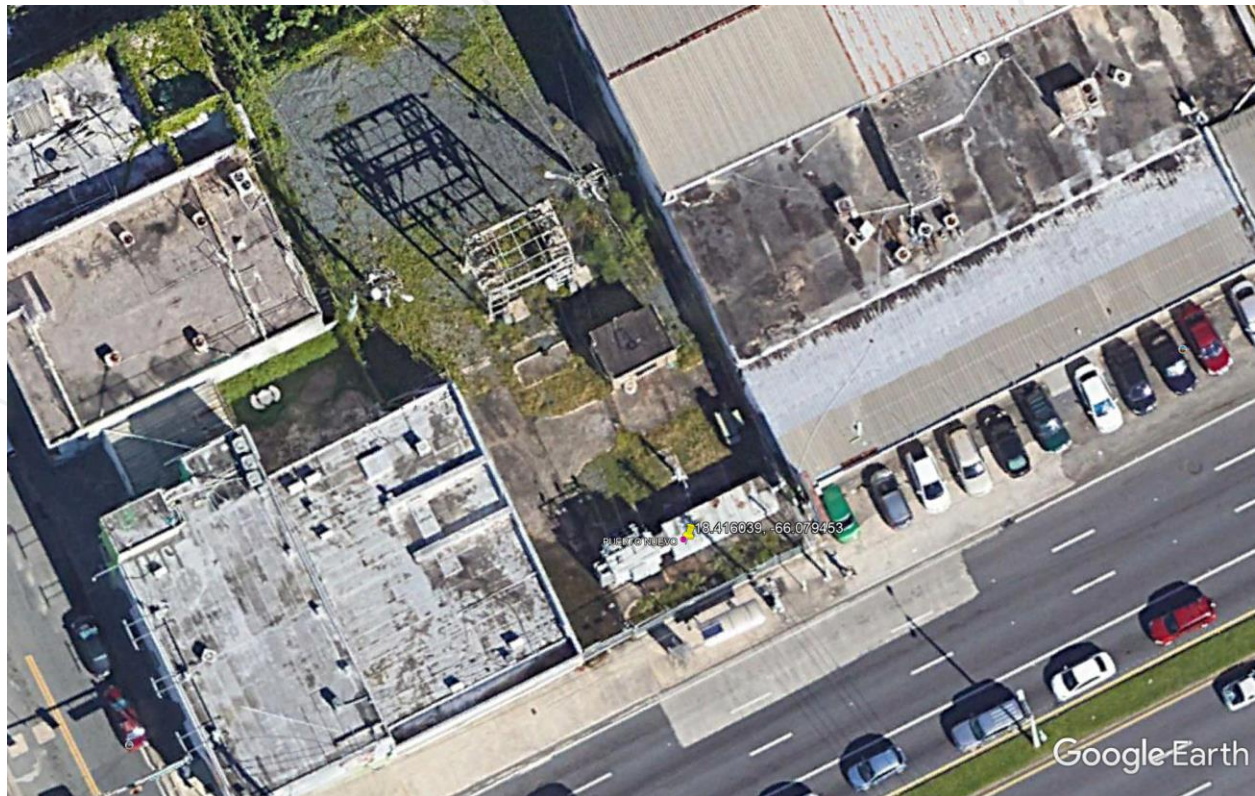
Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Aerial View





Document Name:

FEMA Project Scope of Work

Project Name:



Line 1200 Mayaguez GP to Yauco 2 HP

Revision: 0

Date: 13SEPT2021

APPROVALS

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Donato Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Line 1200 Mayaguez GP to Yauco 2 HP
Region:	Mayaguez
Damage Number:	206253
Damaged Inventory/Asset Category:	Island Wide Transmission Line System
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facilities, sites, and systems identified in this Scope of Work that are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

The facilities listed below are part of Line 1200 consisting of a 28-mile circuit of 38 kV overhead transmission line between Mayaguez GP substation and Yauco 2 HP substation. This line is a Near-Term priority identified by LUMA

Name	Number	GPS Start	GPS End	Voltage Level (kV)
Mayaguez GP to Yauco 2 HP	1200	18.21933, -67.159988	18.053434, -66.883873	38kV

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, and any other associated components.

Most of the construction along this line segment consists of wood monopole guyed structures with some interspersed self-supporting steel and concrete monopoles. This line primarily traverses urban areas between Mayaguez GP substation and Yauco 2 HP substation.



Project Scope

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

The scope of work for Line 1200 Mayaguez GP to Yauco 2 HP will consist of the repair restoration, or replacement of damaged elements and functionally interdependent non-damaged elements of the overhead portions of these lines as allowed by FEMA Public Assistance Alternative Procedures (Section 428).

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 assessments of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed assessments will be used to define the scope of work. Field surveys to locate existing alignment and property boundaries as well as 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.

In order to comply with codes and standards and to allow for construction access, vegetation removal will be considered in the scope of work. The scope of vegetation removal will be defined during the preliminary engineering phase.

The preliminary 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 Q2 2022 and construction work will be completed by 2024.

Type of Project

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

This work will be in compliance with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

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

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.



Estimated Budget for Architectural & Engineering Design:	\$ 3.05 M
Estimated Budget for Procurement and Construction:	\$52.32 M
Estimated Overall Budget for the Project:	\$ 55.37 M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the preliminary 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.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
<N/A>	Location Maps and Site Picture



Document Name:

FEMA Project Scope of Work

Project Name:



Line 600 Caguas TC to Gautier Benitez Sect.

Revision: 0

Date: 13SEPT2021

APPROVALS

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Donato Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Line 600 Caguas TC to Gautier Benitez Sect.
Region:	Caguas
Damage Number:	206253
Damaged Inventory/Asset Category:	Island Wide Transmission Line System
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facilities, sites, and systems identified in this Scope of Work that are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

The facilities listed below are part of Line 600 consisting of a 4.8-mile circuit of 38 kV overhead transmission line between Caguas TC substation and Gautier Benitez Sect. This line is a Near-Term priority identified by LUMA

Name	Number	GPS Start	GPS End	Voltage Level (kV)
Caguas TC to Gautier Benitez Sect.	600	18.239317, -66.036804	18.217611, -66.040634	38kV

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, and any other associated components.

Most of the construction along this line segment consists of wood monopole guyed structures with some interspersed self-supporting steel and concrete monopoles. This line primarily traverses urban areas between Caguas TC substation and Gautier Benitez Sect.



Project Scope

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

Line 600 Caguas TC to Gautier Benitez Sect. will consist of the repair restoration, or replacement of damaged elements and functionally interdependent non-damaged elements of the overhead portions of these lines as allowed by FEMA Public Assistance Alternative Procedures (Section 428).

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 assessments of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed assessments will be used to define the scope of work. Field surveys to locate existing alignment and property boundaries as well as 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.

In order to comply with codes and standards and to allow for construction access, vegetation removal will be considered in the scope of work. The scope of vegetation removal will be defined during the preliminary engineering phase.

The preliminary 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 Q2 2022 and construction work will be completed by 2024.

Type of Project

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

This work will be in compliance with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

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

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.



Estimated Budget for Architectural & Engineering Design:	\$ 0.56 M
Estimated Budget for Procurement and Construction:	\$9.55 M
Estimated Overall Budget for the Project:	\$ 10.11 M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the preliminary 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.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
<N/A>	Location Maps and Site Picture



Document Name:

FEMA Project Scope of Work

Project Name:



Line 2400 Dos Bocas HP to America Apparel

Revision: 0

Date: 13SEPT2021

APPROVALS

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Donato Cortez		9/23/21



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Overview

Project Name:	Line 2400 Dos Bocas HP to America Apparel
Region:	Arecibo
Damage Number:	206253
Damaged Inventory/Asset Category:	Island Wide Transmission Line System
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facilities, sites, and systems identified in this Scope of Work that are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

The facilities listed below are Line 2400 consisting of a 10.2-mile circuit of 38 kV overhead transmission line between Dos Bocas HP substation and America Apparel substation. This line is a Near-Term priority identified by LUMA

Name	Number	GPS Start	GPS End	Voltage Level (kV)
Dos Bocas HP to America Apparel	2400	18.33604, -66.666245	18.268724, -66.697655	38kV

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, and any other associated components.

Most of the construction along this line segment consists of wood monopole guyed structures with some interspersed self-supporting steel and concrete monopoles. This line primarily traverses forested and urban areas. between Dos Bocas HP substation and America Apparel.



Project Scope

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

The scope of work for Line 2400 Dos Bocas HP to America Apparel will consist of the repair restoration, or replacement of damaged elements and functionally interdependent non-damaged elements of the overhead portions of these lines as allowed by FEMA Public Assistance Alternative Procedures (Section 428).

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 assessments of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed assessments will be used to define the scope of work. Field surveys to locate existing alignment and property boundaries as well as 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.

In order to comply with codes and standards and to allow for construction access, vegetation removal will be considered in the scope of work. The scope of vegetation removal will be defined during the preliminary engineering phase.

The preliminary 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 Q2 2022 and construction work will be completed by 2024

Type of Project

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

This work will be in compliance with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

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

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.



Estimated Budget for Architectural & Engineering Design:	\$ 1.18 M
Estimated Budget for Procurement and Construction:	\$20.29 M
Estimated Overall Budget for the Project:	\$ 21.47 M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the preliminary 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.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
<N/A>	Location Maps and Site Picture



Document Name:

FEMA Project Scope of Work

Project Name:



Line 1500 Mayaguez GP to GOAB 1515

Revision: 0

Date: 13SEPT2021

APPROVALS

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Donato Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Line 1500 Mayaguez GP to GOAB 1515
Region:	Mayaguez
Damage Number:	206253
Damaged Inventory/Asset Category:	Island Wide Transmission Line System
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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.

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



Facilities

Facilities List

The facilities listed below are part of Line 1500 consisting of a 29.7-mile circuit of 38 kV overhead transmission line between Mayaguez GP substation and GOAB 1515. This line is a Near-Term priority identified by LUMA

Name	Number	GPS Start	GPS End	Voltage Level (kV)
Mayaguez GP to GOAB 1515	1500	18.21933, -67.159988	18.042861, -66.948594	38kV

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, and any other associated components.

Most of the construction along this line segment consists of wood monopole guyed structures with some interspersed self-supporting steel and concrete monopoles. This line primarily traverses forested areas between Mayaguez GP substation and GOAB 1515.



Project Scope

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

The scope of work for Line 1500 Mayaguez GP to GOAB 1515 will consist of the repair restoration, or replacement of damaged elements and functionally interdependent non-damaged elements of the overhead portions of these lines as allowed by FEMA Public Assistance Alternative Procedures (Section 428).

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 assessments of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed assessments will be used to define the scope of work. Field surveys to locate existing alignment and property boundaries as well as 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.

In order to comply with codes and standards and to allow for construction access, vegetation removal will be considered in the scope of work. The scope of vegetation removal will be defined during the preliminary engineering phase.

The preliminary 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 Q2 2022 and construction work will be completed by 2024

Type of Project

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

This work will be in compliance with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

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

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.



Estimated Budget for Architectural & Engineering Design:	\$ 3.22 M
Estimated Budget for Procurement and Construction:	\$55.39 M
Estimated Overall Budget for the Project:	\$ 58.61 M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the preliminary 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.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
<N/A>	Location Maps and Site Picture



Document Name:

FEMA Project Scope of Work

Project Name:



Line 6700 Martin Peña TC to Villamar Sect.

Revision: 0

Date: 13SEPT2021

APPROVALS

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Donato Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Line 6700 Martin Peña TC to Villamar Sect.
Region:	San Juan
Damage Number:	206253
Damaged Inventory/Asset Category:	Island Wide Transmission Line System
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facilities, sites, and systems identified in this Scope of Work that are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

The facilities listed below are part of Line 6700 consisting of a 3-mile circuit of 38 kV overhead transmission line between Martin Peña TC substation and Villamar Sect. This line is a Near-Term priority identified by LUMA

Name	Number	GPS Start	GPS End	Voltage Level (kV)
Martin Peña TC to Villamar Sect	6700	18.434256, -66.060188	18.440519, -66.024963	38kV

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, and any other associated components.

Most of the construction along this line segment consists of wood monopole guyed structures with some interspersed self-supporting steel and concrete monopoles. This line primarily traverses urban areas between Martin Pena TC substation and Villamar Sect substation.



Project Scope

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

The scope of work for Line 6700 Martin Peña TC to Villamar Sect. will consist of the repair restoration, or replacement of damaged elements and functionally interdependent non-damaged elements of the overhead portions of these lines as allowed by FEMA Public Assistance Alternative Procedures (Section 428).

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 assessments of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed assessments will be used to define the scope of work. Field surveys to locate existing alignment and property boundaries as well as 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.

In order to comply with codes and standards and to allow for construction access, vegetation removal will be considered in the scope of work. The scope of vegetation removal will be defined during the preliminary engineering phase.

The preliminary 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 Q2 2022 and construction work will be completed by 2024

Type of Project

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

This work will be in compliance with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

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

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.



Estimated Budget for Architectural & Engineering Design:	\$ 0.33 M
Estimated Budget for Procurement and Construction:	\$5.68 M
Estimated Overall Budget for the Project:	\$ 6.01 M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the preliminary 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.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
<N/A>	Location Maps and Site Picture



Document Name:

FEMA Project Scope of Work

Project Name:



Line 4000 Comerio HP to Escuela Francisco Morales

Revision: 0

Date: 13SEPT2021

APPROVALS

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Donato Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Line 4000 Comerio HP to Escuela Francisco Morales
Region:	Caguas
Damage Number:	206253
Damaged Inventory/Asset Category:	Island Wide Transmission Line System
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facilities, sites, and systems identified in this Scope of Work that are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

The facilities listed below are part of Line 4000 consisting of a 10.6-mile circuit of 38 kV overhead transmission line between Comerio HP substation and Escuela Francisco Morales. This line is a Near-Term priority identified by LUMA

Name	Number	GPS Start	GPS End	Voltage Level (kV)
Comerio HP to Escuela Francisco Morales	4000	18.222433, -66.223145	18.299755, -66.249232	38kV

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, and any other associated components.

Most of the construction along this line segment consists of wood monopole guyed structures with some interspersed self-supporting steel and concrete monopoles. This line primarily traverses urban areas between Comerio HP substation and Escuela Francisco Morales.



Project Scope

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

The scope of work for Line 4000 Comerio HP to Escuela Francisco Morales will consist of the repair restoration, or replacement of damaged elements and functionally interdependent non-damaged elements of the overhead portions of these lines as allowed by FEMA Public Assistance Alternative Procedures (Section 428).

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 assessments of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed assessments will be used to define the scope of work. Field surveys to locate existing alignment and property boundaries as well as 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.

In order to comply with codes and standards and to allow for construction access, vegetation removal will be considered in the scope of work. The scope of vegetation removal will be defined during the preliminary engineering phase.

The preliminary 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 Q2 2022 and construction work will be completed by 2024

Type of Project

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

This work will be in compliance with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

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

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.



Estimated Budget for Architectural & Engineering Design:	\$ 1.23 M
Estimated Budget for Procurement and Construction:	\$21.10 M
Estimated Overall Budget for the Project:	\$ 22.33 M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the preliminary 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.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
<N/A>	Location Maps and Site Picture



Document Name:

FEMA Project Scope of Work

Project Name:



Line 9100 Guaraguao TC to Bayamon Pueblo Sect.

Revision: 0

Date: 13SEPT2021

APPROVALS

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Donato Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Line 9100 Guaraguao TC to Bayamon Pueblo Sect.
Region:	Bayamon
Damage Number:	206253
Damaged Inventory/Asset Category:	Island Wide Transmission Line System
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facilities, sites, and systems identified in this Scope of Work that are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

The facilities listed below are part of Line 9100 consisting of a 2.4-mile circuit of 38 kV overhead transmission line between Guaraguao TC substation and Bayamon Pueblo Sect.. This line is a Near-Term priority identified by LUMA

Name	Number	GPS Start	GPS End	Voltage Level (kV)
Guaraguao TC to Bayamon Pueblo Sect.	9100	18.378166, -66.143791	18.398211, -66.157944	38kV

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, and any other associated components.

Most of the construction along this line segment consists of wood monopole guyed structures with some interspersed self-supporting steel and concrete monopoles. This line primarily traverses urban areas between Guaraguao TC substation and Bayamon Pueblo Sect substation.



Project Scope

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

The scope of work for Line 9100 Guaraguao TC to Bayamon Pueblo Sect. will consist of the repair restoration, or replacement of damaged elements and functionally interdependent non-damaged elements of the overhead portions of these lines as allowed by FEMA Public Assistance Alternative Procedures (Section 428).

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 assessments of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed assessments will be used to define the scope of work. Field surveys to locate existing alignment and property boundaries as well as 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.

In order to comply with codes and standards and to allow for construction access, vegetation removal will be considered in the scope of work. The scope of vegetation removal will be defined during the preliminary engineering phase.

The preliminary 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 Q2 2022 and construction work will be completed by 2024

Type of Project

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

This work will be in compliance with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

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

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.



Estimated Budget for Architectural & Engineering Design:	\$ 0.28 M
Estimated Budget for Procurement and Construction:	\$4.77 M
Estimated Overall Budget for the Project:	\$ 5.05 M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the preliminary 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.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
<N/A>	Location Maps and Site Picture



Document Name:

FEMA Project Scope of Work

Project Name:



Line 9700 Palo Seco SP to Bay View Sect.

Revision: 0

Date: 13SEPT2021

APPROVALS

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Donato Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Line 9700 Palo Seco SP to Bay View Sect.
Region:	San Juan
Damage Number:	206253
Damaged Inventory/Asset Category:	Island Wide Transmission Line System
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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.

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



Facilities

Facilities List

The facilities listed below are part of Line 9700 consisting of a 1.1-mile circuit of 38 kV overhead transmission line between Palo Seco SP and Bay View Sect. This line is a Near-Term priority identified by LUMA

Name	Number	GPS Start	GPS End	Voltage Level (kV)
Palo Seco SP to Bay View Sect	9700	18.45454, -66.14888	18.449759, -66.138306	38kV

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, and any other associated components.

Most of the construction along this line segment consists of self-supporting steel and concrete monopoles. This line primarily traverses urban areas with easy access between Palo Seco SP and Bay View Sect.



Project Scope

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

The scope of work for Line 9700 Palo Seco SP to Bay View Sect will consist of the repair restoration, or replacement of damaged elements and functionally interdependent non-damaged elements of the overhead portions of these lines as allowed by FEMA Public Assistance Alternative Procedures (Section 428).

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 assessments of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed assessments will be used to define the scope of work. Field surveys to locate existing alignment and property boundaries as well as 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.

In order to comply with codes and standards and to allow for construction access, vegetation removal will be considered in the scope of work. The scope of vegetation removal will be defined during the preliminary engineering phase.

The preliminary 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 Q2 2022 and construction work will be completed by 2024.

Type of Project

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

This work will be in compliance with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

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

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.



Estimated Budget for Architectural & Engineering Design:	\$ 0.13 M
Estimated Budget for Procurement and Construction:	\$2.19 M
Estimated Overall Budget for the Project:	\$ 2.32 M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the preliminary 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.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
<N/A>	Location Maps and Site Picture



Document Name:

FEMA Project Scope of Work

Project Name:



Line 11100 Canovanas Sect. to GOAB 11115

Revision: 0

Date: 13SEPT2021

APPROVALS

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Donato Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Line 11100 Canovanas Sect. to GOAB 11115
Region:	Carolina
Damage Number:	206253
Damaged Inventory/Asset Category:	Island Wide Transmission Line System
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facilities, sites, and systems identified in this Scope of Work that are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

The facilities listed below are part of Line 11100 consisting of a 1.8-mile circuit of 38 kV overhead transmission line between Canovanas Sect. and GOAB 11115. This line is a Near-Term priority identified by LUMA

Name	Number	GPS Start	GPS End	Voltage Level (kV)
Canovanas Sect to GOAB 11115	11100	18.380341, -65.90107	18.384085, -65.886134	38kV

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, and any other associated components.

Most of the construction along this line segment consists of wood monopole guyed structures with some interspersed self-supporting steel and concrete monopoles. This line primarily traverses urban areas between Canovanas Sect. and GOAB 11115.



Project Scope

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

The scope of work for Line 11100 Canovanas Sect. to GOAB 11115 will consist of the repair restoration, or replacement of damaged elements and functionally interdependent non-damaged elements of the overhead portions of these lines as allowed by FEMA Public Assistance Alternative Procedures (Section 428).

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 assessments of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed assessments will be used to define the scope of work. Field surveys to locate existing alignment and property boundaries as well as 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.

In order to comply with codes and standards and to allow for construction access, vegetation removal will be considered in the scope of work. The scope of vegetation removal will be defined during the preliminary engineering phase.

The preliminary 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 Q2 2022 and construction work will be completed by 2024

Type of Project

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

This work will be in compliance with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

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

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.



Estimated Budget for Architectural & Engineering Design:	\$ 0.21 M
Estimated Budget for Procurement and Construction:	\$3.58 M
Estimated Overall Budget for the Project:	\$ 3.79 M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the preliminary 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.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
<N/A>	Location Maps and Site Picture



Document Name:

FEMA Project Scope of Work

Project Name:



Line 11400 Barceloneta TC to Florida TO

Revision: 0

Date: 13SEPT2021

APPROVALS

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Donato Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Line 11400 Barceloneta TC to Florida TO
Region:	Arecibo
Damage Number:	206253
Damaged Inventory/Asset Category:	Island Wide Transmission Line System
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facilities, sites, and systems identified in this Scope of Work that are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

The facilities listed below are part of Line 11400 consisting of a 6.6-mile circuit of 38 kV overhead transmission line between Barceloneta TC and Florida TO. This line is a Near-Term priority identified by LUMA

Name	Number	GPS Start	GPS End	Voltage Level (kV)
Barceloneta TC to Florida TO	11400	18.430212, -66.567955	18.363997, -66.569519	38kV

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, and any other associated components.

Most of the construction along this line segment consists of wood monopole guyed structures with some interspersed self-supporting concrete monopoles. This line primarily traverses forested areas with urban areas coming out from Barceloneta TC substation and right before going into Florida TO substation.



Project Scope

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

The scope of work for Line 11400 Barceloneta TC to Florida TO will consist of the repair restoration, or replacement of damaged elements and functionally interdependent non-damaged elements of the overhead portions of these lines as allowed by FEMA Public Assistance Alternative Procedures (Section 428).

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 assessments of overhead facilities and document damaged assets to be repaired or replaced. The results of this detailed assessments will be used to define the scope of work. Field surveys to locate existing alignment and property boundaries as well as 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.

In order to comply with codes and standards and to allow for construction access, vegetation removal will be considered in the scope of work. The scope of vegetation removal will be defined during the preliminary engineering phase.

The preliminary 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 Q2 2022 and construction work will be completed by 2024.

Type of Project

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

This work will be in compliance with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)



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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

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

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.



Estimated Budget for Architectural & Engineering Design:	\$ 0.76 M
Estimated Budget for Procurement and Construction:	\$13.05 M
Estimated Overall Budget for the Project:	\$ 13.81 M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the preliminary 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.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
<N/A>	Location Maps and Site Picture





FEMA Project Scope of Work

Project Name:
Berwind TC - 1336
Revision: 0
Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Berwind TC - 1336
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Berwing Transmission Center	1336	18.410133, -66.011391

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves repairing, restoring, and replacing damaged components and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace distribution metal-clad switchgear including associated components
- Replace oil circuit breakers and disconnect switches as required
- Replace jumper cables, conduits, control cables, and manholes as required
- Replace distribution feeder cables and conduits heading to nearby poles, manholes, or other structures as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair of Control House Elements

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024.

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$0.7M
Estimated Budget for Construction & Procurement:	\$11.7M
Estimated Overall Budget for the Project:	\$13.4M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation (EHP) Requirements

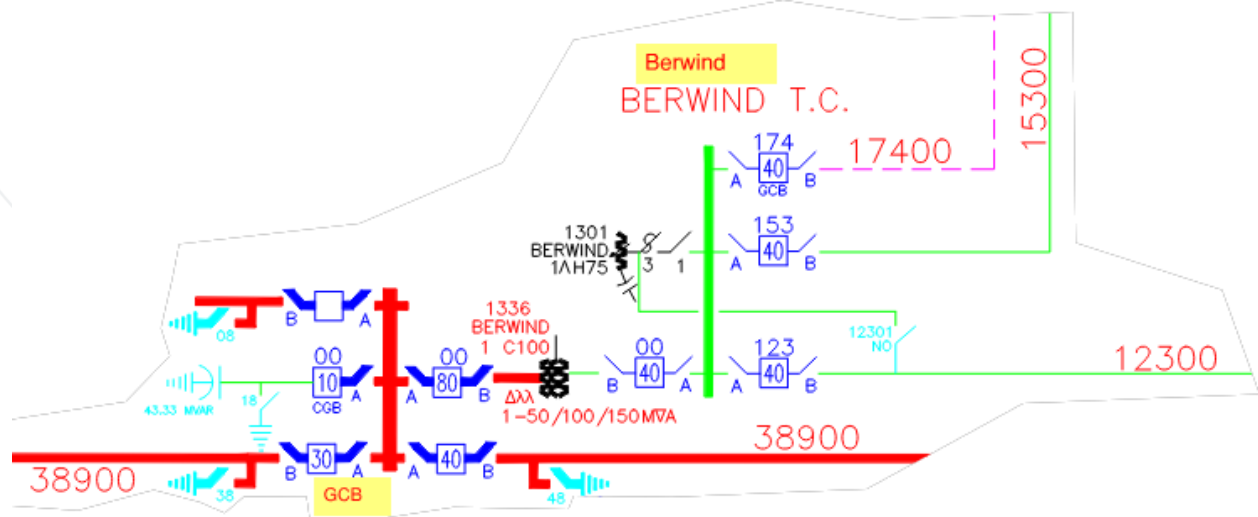
EHP considerations will be identified and evaluated during the base design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA before construction activities.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture



System One-Line



Aerial View





FEMA Project Scope of Work

Project Name:



Caguas TC

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Caguas TC
Region:	Caguas
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Caguas Transmission Center	3004, 3006	18.239454, -66.036736

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves replacing damaged circuit breakers and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace circuit breakers and disconnect switches
- Replace jumper cables, conduits, and control cables as required
- Design and install equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair or replace Control House Elements as required

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024.

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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



Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$0.2M
Estimated Budget for Construction & Procurement:	\$2.3M
Estimated Overall Budget for the Project:	\$2.5M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation (EHP) Requirements

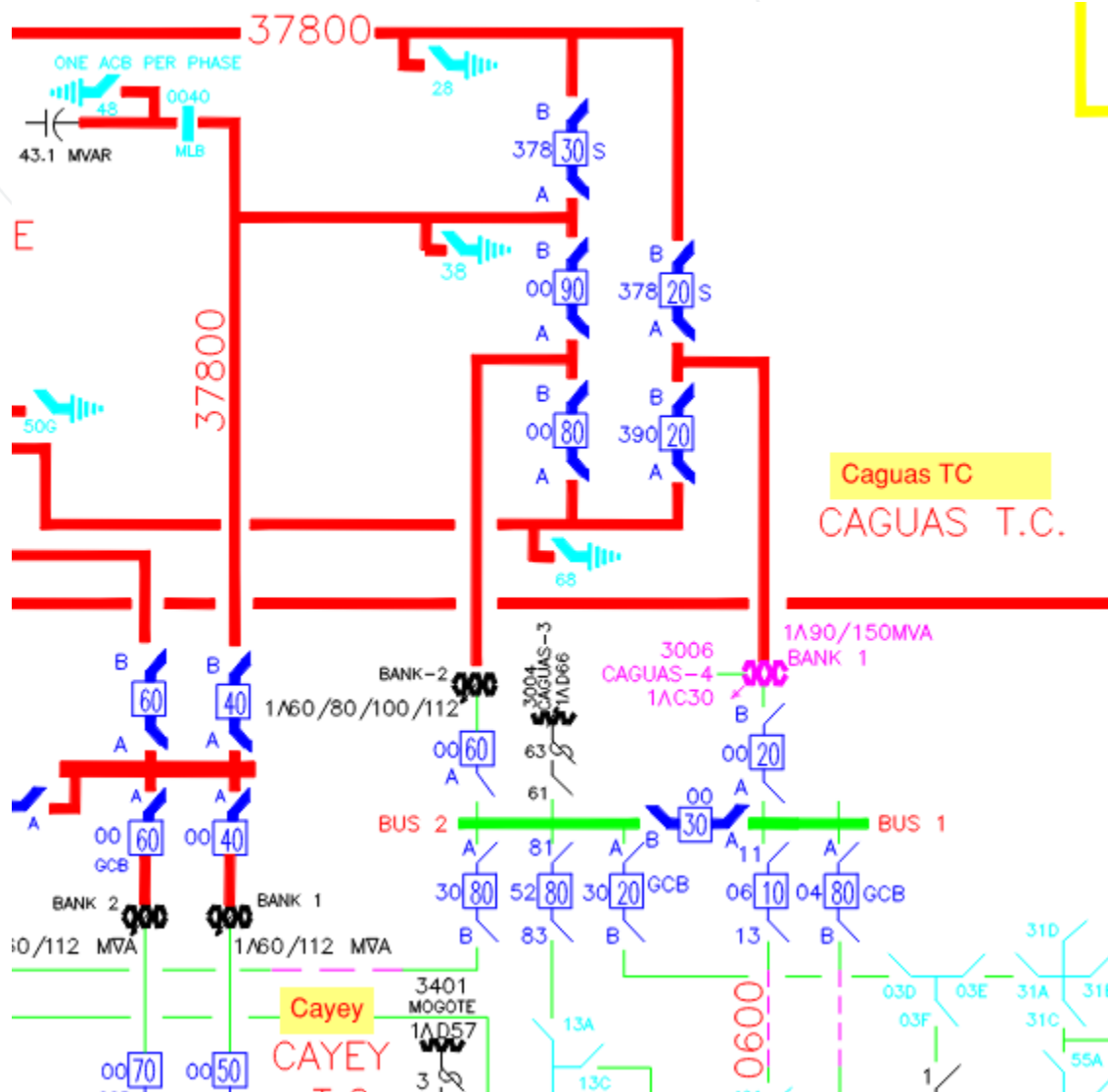
EHP considerations will be identified and evaluated during the base design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA before construction activities.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture



System One-Line



Aerial View





FEMA Project Scope of Work

Project Name:



Canas TC

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Canas TC
Region:	Ponce
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Canas Transmission Center	5002, 5018	18.012785, -66.63913

Note: GPS coordinates are required for each facility.

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves replacing damaged circuit breakers and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace circuit breakers and disconnect switches
- Replace jumper cables, conduits, and control cables as required
- Design and install equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair or replace Control House Elements as required

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024.

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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



Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$0.15M
Estimated Budget for Construction & Procurement:	\$1.55M
Estimated Overall Budget for the Project:	\$1.70M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation (EHP) Requirements

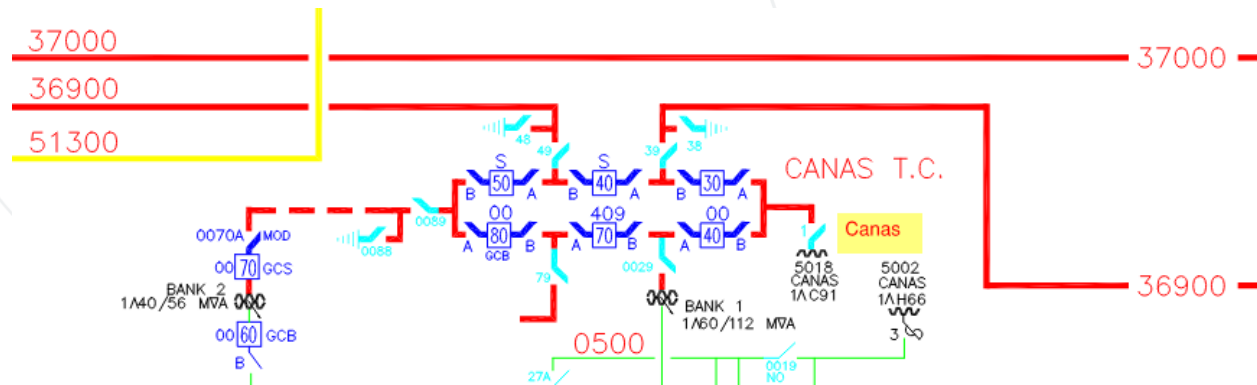
EHP considerations will be identified and evaluated during the base design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA before construction activities.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture



System One-Line



Aerial View





FEMA Project Scope of Work

Project Name:



Acacias 6801 TC Relocation

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Acacias 6801 TC Relocation
Region:	Mayaguez
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Numbers	GPS Location
Acacias Transmission Center	6801, 6802	18.128654, -67.136047

Facility Description

This facility includes transformers, circuit breakers, disconnect switches, a control house, steel structures, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged the existing control house, structures, distribution switchgear, lighting fixtures, fence, and other components.

This project aims to rebuild the entire facility at a new greenfield site outside of a flooded zone based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves the design and construction of a new substation with the required components to replace the functionality of the existing flooded facility. Following is a high-level list of anticipated tasks and components:

- **New Greenfield Substation Yard:**
 - Power transformer with SPCC (oil containment).
 - Distribution transformers.
 - Circuit breakers and circuit switchers.
 - Transmission & distribution switchgear
 - Prefabricated control enclosure with new protection, control, SCADA, telecom, battery bank, and other auxiliary equipment pre-installed and tested.
 - Steel structures, bus work, disconnect switches, surge arresters, and potential transformers as required.
 - Remote Metering Unit Transformer and corresponding control cabinet
 - Capacitor Bank System.
 - Site development, perimeter fence, drainage, grounding, trenching, yard lights, and other components as required.
 - Perform soil electrical resistivity measurements and Grounding Grid Design. The design shall include the use of theft-deterrent grounding wires and methods.
- **Cross-Coordination:**
 - Relocation of transmission lines (Transmission Line Scope, not included here)
 - Relocation of distribution feeder circuits (Distribution Scope, not included here)
 - Installation or modification of remote end site(s), including telecommunication (not included here).

Perform system reliability and planning studies to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q3 2022 and construction work will be completed by 2024.

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$ 1.5M
Estimated Budget for Construction & Procurement:	\$27.6M
Estimated Overall Budget for the Project:	\$29.1M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation (EHP) Requirements

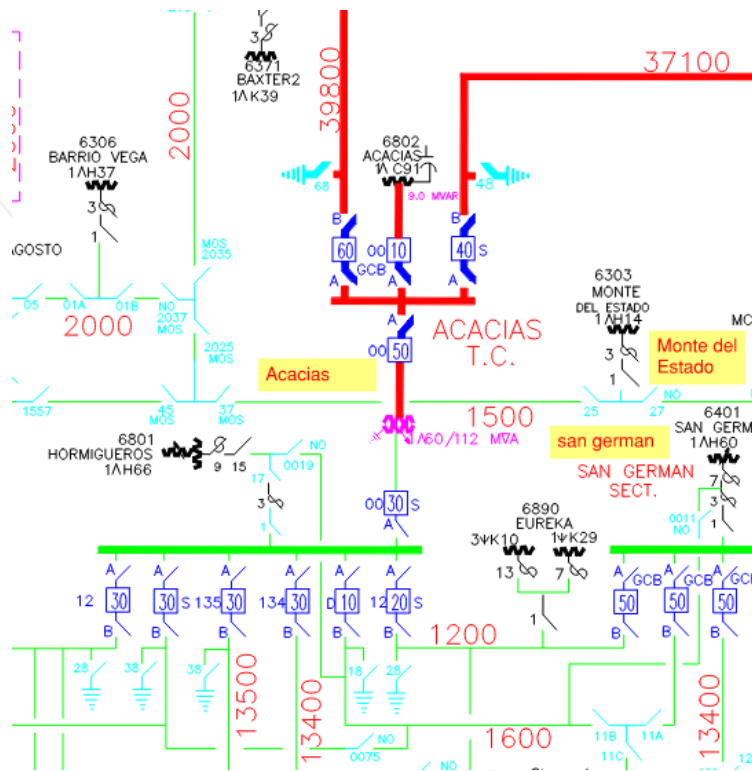
EHP considerations will be identified and evaluated during the base design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA before construction activities.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture



System One-Line



Existing Acacias Transmission Center







FEMA Project Scope of Work

Project Name:
Cambalache TC Relocation
Revision: 0
Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Cambalache TC Relocation
Region:	Arecibo
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Cambalache Transmission Center	N/A	18.454479, -66.700600

Facility Description

This facility includes transformers, circuit breakers, disconnect switches, a control house, steel structures, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged the existing control house, structures, distribution switchgear, lighting fixtures, fence, and other components.

This project aims to rebuild the entire facility at a new greenfield site outside of a flooded zone based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves the design and construction of a new substation with the required components to replace the functionality of the existing flooded facility. Following is a high-level list of anticipated tasks and components:

- **New Greenfield Substation Yard:**
 - Power transformer with SPCC (oil containment).
 - Distribution transformers.
 - Circuit breakers and circuit switchers.
 - Transmission & distribution switchgear
 - Prefabricated control enclosure with new protection, control, SCADA, telecom, battery bank, and other auxiliary equipment pre-installed and tested.
 - Steel structures, bus work, disconnect switches, surge arresters, and potential transformers as required.
 - Remote Metering Unit Transformer and corresponding control cabinet
 - Capacitor Bank System.
 - Site development, perimeter fence, drainage, grounding, trenching, yard lights, and other components as required.
 - Perform soil electrical resistivity measurements and Grounding Grid Design. The design shall include the use of theft-deterrent grounding wires and methods.
- **Cross-Coordination:**
 - Relocation of transmission lines (Transmission Line Scope, not included here)
 - Relocation of distribution feeder circuits (Distribution Scope, not included here)
 - Installation or modification of remote end site(s), including telecommunication (not included here).

Perform system reliability and planning studies to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q3 2022 and construction work will be completed by 2024.

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$ 1.5M
Estimated Budget for Construction & Procurement:	\$ 29.2M
Estimated Overall Budget for the Project:	\$ 30.7M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

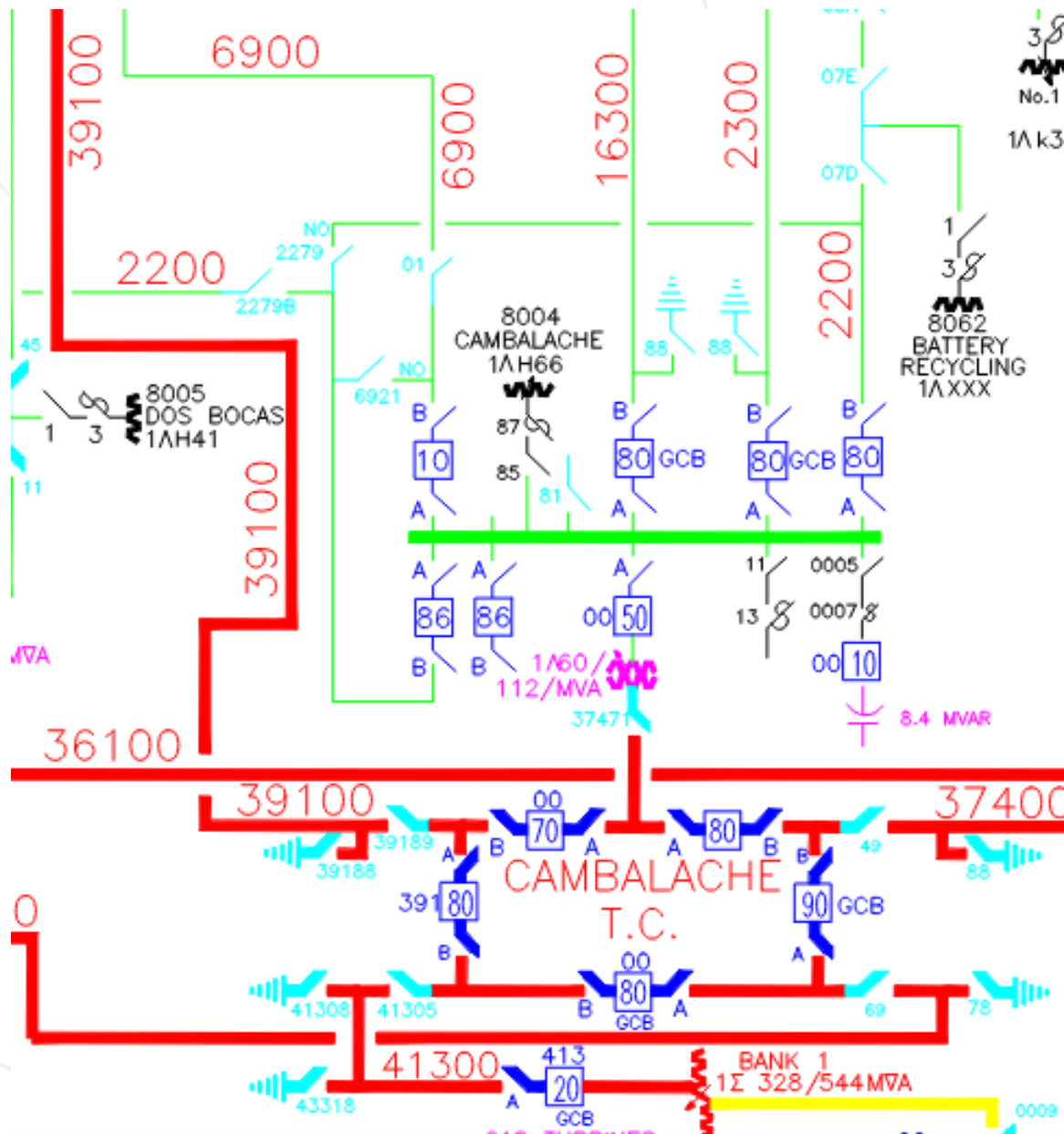
Environmental & Historic Preservation (EHP) Requirements

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

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line





Existing Cambalache





FEMA Project Scope of Work

Project Name:



Dorado TC Relocation

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Dorado TC Relocation
Region:	Bayamon
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

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. COR3 and FEMA will review the completed document to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace the eligible facility, including Section 406 hazard mitigation for a specific project.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Dorado Transmission Center	9203, 9207	18.417686, -66.265404
La Virgencita Substation	9404	18.40984, -66.256569

Facility Description

These facilities include transformers, circuit breakers, disconnect switches, a control house, steel structures, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged the existing control house, structures, distribution switchgear, lighting fixtures, fence, and other components.

This project aims to rebuild and combine these two facilities at a new greenfield site outside of a flooded zone based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.

Project Scope

Scope of Work Description

The work mainly involves the design and construction of a new substation with the required components to replace the functionality of the existing flooded facility. Following is a high-level list of anticipated tasks and components:

- **New Greenfield Substation Yard:**
 - Power transformer with SPCC (oil containment).
 - Distribution transformers.
 - Circuit breakers and circuit switchers.
 - Transmission & distribution switchgear
 - Prefabricated control enclosure with new protection, control, SCADA, telecom, battery bank, and other auxiliary equipment pre-installed and tested.
 - Steel structures, bus work, disconnect switches, surge arresters, and potential transformers as required.
 - Remote Metering Unit Transformer and corresponding control cabinet
 - Capacitor Bank System.
 - Site development, perimeter fence, drainage, grounding, trenching, yard lights, and other components as required.
 - Perform soil electrical resistivity measurements and Grounding Grid Design. The design shall include the use of theft-deterrent grounding wires and methods.
- **Cross-Coordination:**
 - Relocation of transmission lines (Transmission Line Scope, not included here)
 - Relocation of distribution feeder circuits (Distribution Scope, not included here)
 - Installation or modification of remote end site(s), including telecommunication (not included here).

Perform system reliability and planning studies to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q3 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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

Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.



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.

Estimated Budget for Architectural & Engineering Design:	\$1.5M
Estimated Budget for Construction & Procurement:	\$38.6M
Estimated Overall Budget for the Project:	\$40.1M

406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

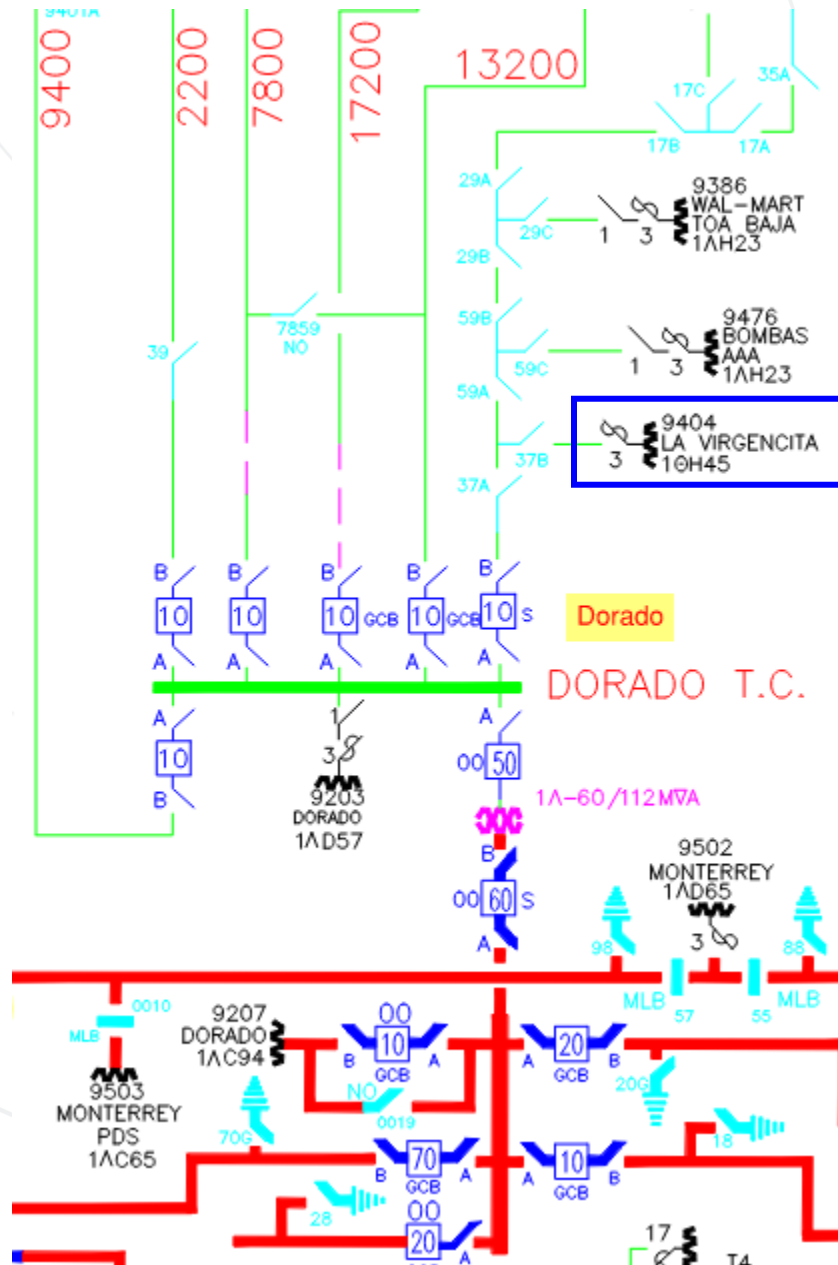
Environmental & Historic Preservation (EHP) Requirements

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

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line





Existing Dorado Transmission Center



Existing Virgencita Substation





FEMA Project Scope of Work

Project Name:



Monacillo TC

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

This table contains a history of the revisions made to this document

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Overview

Project Name:	Monacillo TC
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Monacillo Transmission Center	N/A	18.373077, -66.072937

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves replacing damaged circuit breakers and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace circuit breakers and disconnect switches as required
- Replace jumper cables, conduits, and control cables as required
- Design and install equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Counter measure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station
- Repair or replace Control House Elements as required

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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



Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$0.1M
Estimated Budget for Construction & Procurement:	\$0.9M
Estimated Overall Budget for the Project:	\$1.0M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation (EHP) Requirements

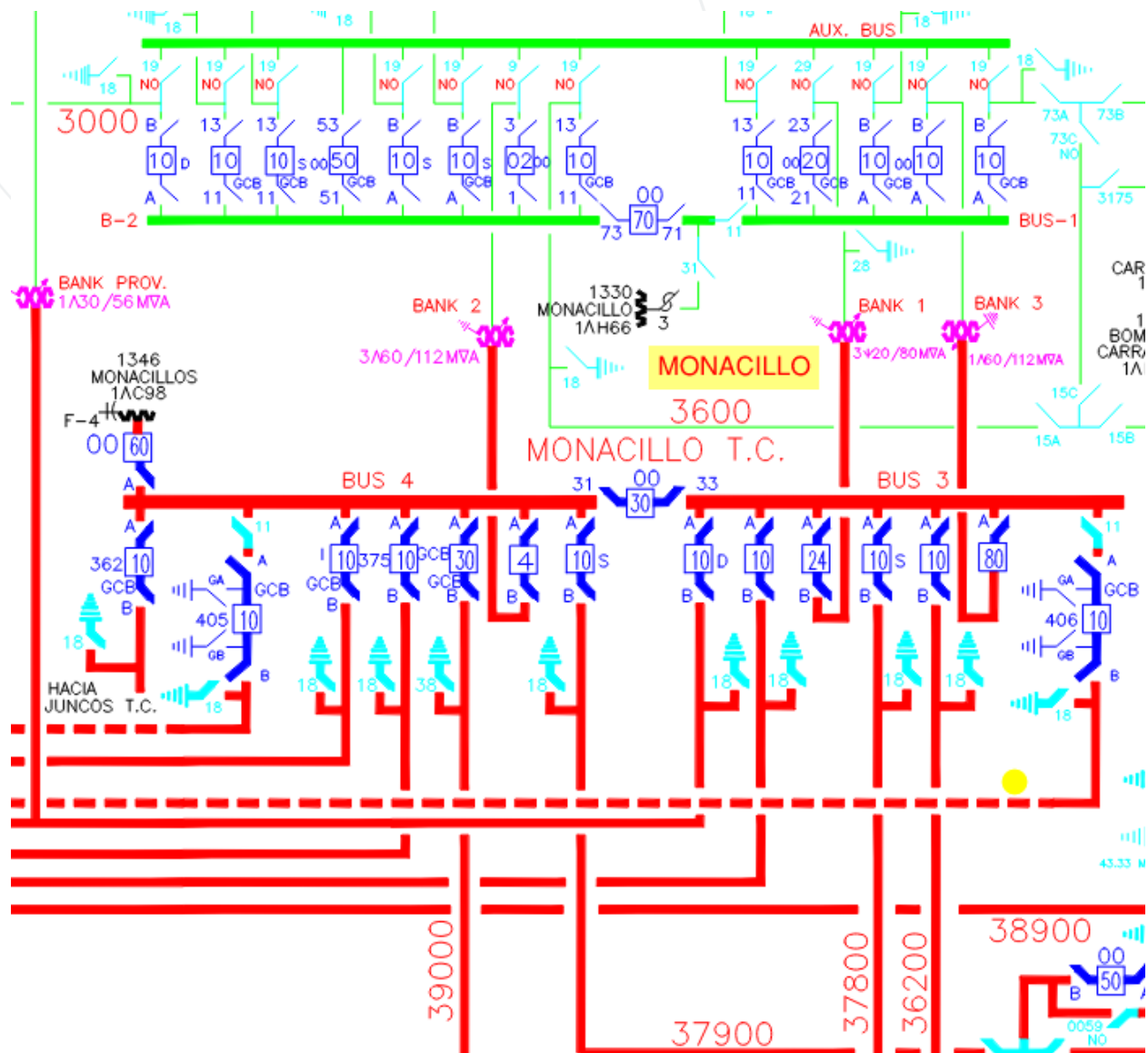
EHP considerations will be identified and evaluated during the base design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA before construction activities.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture



System One-Line



Aerial View





FEMA Project Scope of Work

Project Name:



Victoria TC 7008

Revision: 0

Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

This table contains a history of the revisions made to this document

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Overview

Project Name:	Victoria TC 7008
Region:	Mayagüez
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
Victoria Transmission Center	7008	18.40427, -67.15398

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves replacing the damaged control house and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace control house with a prefabricated control enclosure including new protection, control, SCADA, Telecom, battery bank, and other auxiliary equipment pre-installed and tested.
- Replace oil circuit breaker as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024.

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.
Restores to Codes/Standards
This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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



Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$0.4M
Estimated Budget for Construction & Procurement:	\$5.1M
Estimated Overall Budget for the Project:	\$5.5M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation (EHP) Requirements

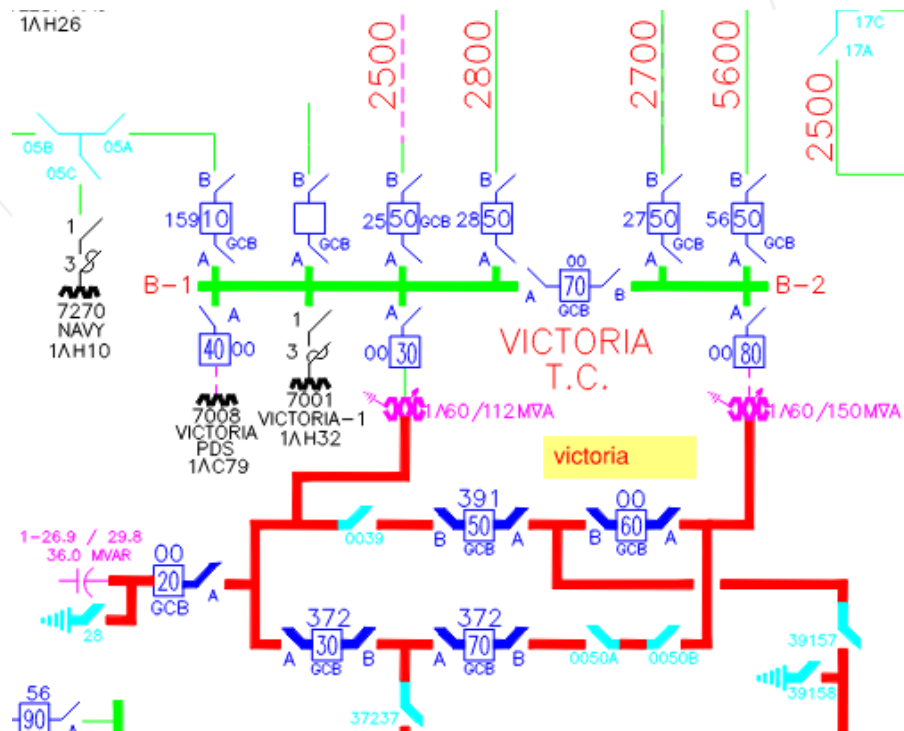
EHP considerations will be identified and evaluated during the base design phase and submitted to FEMA for review. Requirements will be incorporated into the final design and construction documents to be approved by FEMA before construction activities.

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture



System One-Line







FEMA Project Scope of Work

Project Name:
Conquistador - CH
Revision: 0
Date: 13SEP2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee, IEM		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/23/21



Document Change Control

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Overview

Project Name:	Conquistador - CH
Region:	San Juan
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(Formerly Project Worksheet)</i>	<Provided by FEMA>

Introduction

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

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facility, sites, and systems identified in this Scope of Work that is eligible as a critical services facility as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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



Facilities

Facilities List

This line is a Near-Term priority identified by LUMA.

Name	Substation Number	GPS Location
El Conquistador Urb Substation	1204	18.343557, -66.012596

Facility Description

This facility comprises transformers, circuit breakers, disconnect switches, a control house, steel structures, poles, lights, and other components enclosed with a perimeter fence.

Hurricane Maria's flood currents, high force winds, and flying debris damaged many of these components and other related equipment.

This project aims to restore this facility for safe and reliable operation based on LUMA and industry standards, improve system resiliency, and mitigate safety hazards and environmental concerns.



Project Scope

Scope of Work Description

The work mainly involves replacing the damaged control house and functionally dependent elements. Following is a high-level list of anticipated items to be replaced or repaired:

- Replace control house with a prefabricated control enclosure including new protection, control, SCADA, Telecom, battery bank, and other auxiliary equipment pre-installed and tested.
- Replace oil circuit breaker as required
- Design and install new equipment foundations
- Vegetation removal, earth leveling, restoration of yard gravel
- Perform a grounding grid system study to verify that the ground grid system's ability to dissipate energy and personnel safety is adequate and secure.
- Repair and replace the grounding grid as required. Repairs shall include theft-deterrent grounding wires and methods.
- Add Spill Prevention, Control, and Countermeasure (SPCC) to transformers as required
- Replace broken perimeter fence and gates
- Replace external lights of the outdoor structures
- Replace leaning or broken poles
- Replace eyewash and shower station

System reliability and planning studies will also be performed to identify improvements at this facility, including transmission lines sectionalizing, transformer protection, reactive power compensation, and reconfiguring the switchyard's electrical bus.

The final SOW (plans and specifications) will be completed by Q2 2022 and construction work will be completed by 2024.

Type of Project

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and 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 the rationale for the recommendation.

Restores to Codes/Standards

This work is to comply with FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020)

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



Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR February 2020).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$0.5M
Estimated Budget for Construction & Procurement:	\$4.6M
Estimated Overall Budget for the Project:	\$5.1M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

LUMA will develop and propose 406 Hazard Mitigation proposals consistent with the damages. The proposal will be documented and supported with a Benefic-Cost Analysis (BCA).

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

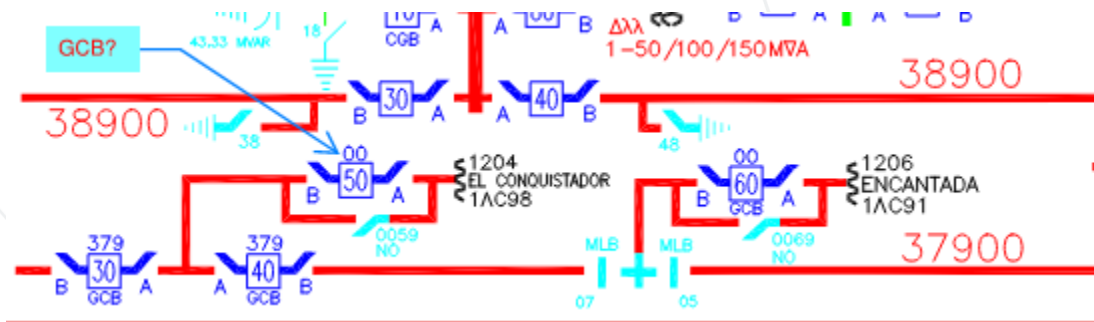
Environmental & Historic Preservation (EHP) Requirements

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

Attachments

Document Name	Description
<N/A>	Project Cost Estimates
<N/A>	Engineering Studies and Designs
Referenced Below	Location Maps and Site Picture

System One-Line



Aerial View





FEMA Project Scope of Work



Project Name:
Physical Security

Revision: 0

Date: 08SEPT2021

Approvals

The signatures below formally approve the FEMA Project Scope of Work Template.

Grant Manager's Name	Signature	Date
Hernando Gee		9/21/2021
Department VP's Name	Signature	Date
Don Cortez		9/27/21



Document Change Control

This table contains a history of the revisions made to this document

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Overview

Project Name:	Physical Security
Region:	All
Damage Number:	223189
Damaged Inventory/Asset Category:	Island Wide Substations
FEMA Project Number: <i>(formerly Project Worksheet)</i>	<Provided by FEMA>

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.

LUMA Energy provides the Operations and Maintenance of the electric service to the entire island of Puerto Rico. Puerto Rico Electric Power Authority (PREPA) is the agency that owns the facilities, sites, and systems identified in this Scope of Work that are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents.

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

Facilities

Facilities List

While assessing government owned facilities under LUMA's Operation and Maintenance Agreement that are critical to the operation of the Puerto Rico electric grid power system from transmission, distribution, customer service or maintenance perspective, it is anticipated that issues with physical security will be identified that need immediate repair to avoid safety hazards, violations of federal or local ordinance, and imminent equipment failures that could cause wide-spread power outages. The physical security will not only limit access to qualified personnel but also alleviate or minimize theft, vandalism, or weather-related damages. Specifics on the types of hazards will be identified during field assessments and work may be completed in an accelerated manner to allow for faster processing and repair. The facilities addressed in this project are the transmission and distribution substations in the Puerto Rico grid power system.

GPS Coordinates will be provided after High Level Assessments (HLA) are completed.

Facilities Description

The above facilities are composed of 230/115/38 kV critical substations, transmission substations, distribution substations, control centers, warehouses, business offices and administration offices which requires an effectively physical security improvement applying a comprehensive risk-based security strategies and developing cost-effective security solution to alleviate the risks. The physical security practices includes facilities perimeter protection, facilities access control, and company property and assets. The objective is to replace these components based on LUMA and industry standards, improve system resiliency, and alleviate safety hazards and environmental concerns.



Project Scope

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

Scope of work will vary per facility and may include the following:

- Replace perimeter fences and gates.
- Install proper and clear signage.
- Repair/Replace ground grid .
- Replace any other variety of barriers to help reinforce security.
- Replace security lighting, external lights of control room and outdoor structures.
- Replace and modernize facilities access control with electronic access system.
- Install alarms system, intrusion detector systems and or closed-circuit television system (CCTV).
- Remove vegetation, clean yard, and replace yard gravel.
- Install adequate locks on customer metering points.
- Install padlocks on gates and equipments.
- Detailed facilities assessments and develop long-term capital investment plan (future state). The intent is to bring the facilities to the minimum viability and operability in compliance with the new LUMA standards.

This SOW will apply to the Substations that are not part of another project or program, such as Minor/Major Repairs, Upgrades, and Relocations.

The final SOW (plans and specifications) and construction dates will be completed as assessments are completed. Dates will be finalized upon the preparation of detailed project schedules.

Type of Project

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

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.

Restoration to Codes and Standards

This work will be in compliance with the latest approved version of the FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR)

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



Preliminary Engineering

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

Yes

Codes and Standards

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

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

1. Consensus-based codes, per FEMA (Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, latest approved version).
2. Industry standards per FEMA Recovery Policy FP-104-009-5, latest approved version, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
3. FEMA Recovery Interim Policy FP-104-009-11, latest approved version, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
4. LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of the vast majority of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).

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.

Industry Standards

Yes If yes, describe how incorporated below.

Applicable industry standards will be identified and incorporated into the plans and specifications.

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.

Estimated Budget for Architectural & Engineering Design:	\$5.38M
Estimated Budget for Construction & Procurement:	\$48.42M
Estimated Overall Budget for the Project:	\$53.8M



406 Hazard Mitigation Proposal

406 Mitigation Opportunity Scope of Work

During the preliminary design phase, LUMA will develop 406 Hazard Mitigation proposals consistent with the damages. These proposals will be supported with BCAs.

406 Mitigation Opportunity Cost Estimate

Estimated Budget for Architectural & Engineering to Design:	Unknown at this time
Estimated Budget for Procurement:	Unknown at this time
Estimated Budget for Construction:	Unknown at this time
Estimated Overall Budget for the Project:	Unknown at this time

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

Environmental & Historic Preservation Requirements

EHP considerations will be identified and evaluated during the base 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.

Attachments

Attachments will be provided after High Level Assessments (HLA) are completed.

Document Name	Description
N/A	Project Cost Estimates
N/A	Engineering Studies and Designs
N/A	Location Maps and Site Picture