

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

NEPR

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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 Submitting Eleven (11) FEMA
Approvals of Project, Request for Confidential
Treatment, and Supporting Memorandum of Law**

**MOTION SUBMITTING ELEVEN (11) FEMA APPROVALS OF PROJECT, REQUEST
FOR CONFIDENTIAL TREATMENT AND SUPPORTING MEMORANDUM OF LAW**

TO THE PUERTO RICO ENERGY BUREAU:

COME NOW LUMA Energy, LLC, and LUMA Energy ServCo, LLC, (jointly referred to as "LUMA"), through the undersigned legal counsel and, respectfully submit the following:

I. Relevant Procedural Background

1. On March 26, 2021, this Honorable Puerto Rico Energy Bureau ("Energy Bureau") issued a Resolution and Order in the instant proceeding, ordering, in pertinent part, that the Puerto Rico Electric Power Authority ("PREPA") submit to the Energy Bureau the specific transmission and distribution projects ("T&D Projects" or "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 ("COR3"), FEMA or any other federal agency ("March 26th Order"). It also directed PREPA to continue reporting to the Energy Bureau and FEMA, within the next five years, on the progress of all ongoing efforts related to the approval of the submitted Projects that have

not yet been approved by the Energy Bureau.¹ The Energy Bureau thereafter determined that this directive should be applied to PREPA and LUMA. *See* Resolution and Order of August 20, 2021.

2. On April 24, 2023, LUMA submitted a *Motion Submitting Scope of Work and Request for Confidentiality and Supporting Memorandum of Law* (“April 24th Motion”), whereby it submitted one (1) SOW for the Energy Bureau’s review and approval prior to submitting it to COR3 and FEMA (“April 24th Motion”). LUMA submitted the SOW for the “Island-Wide Vegetation Clearing” T&D Project.

3. On May 5, 2023, the Energy Bureau issued a Resolution and Order in which it approved the “Island-Wide Vegetation Clearing” SOW and determined it necessary to improve the system’s reliability (“May 5th Order”). Further, the Energy Bureau ordered LUMA to submit a copy of the approval by COR3 and/or FEMA of the projects, which shall contain the costs obligated for each project within ten (10) days of receiving such approval.

4. The “Island-Wide Vegetation Clearing” SOW is divided into separate projects by group, which include the “FAASt [38kV Line 3700 – Entire Line] (Vegetation) (HM Cost Alignment)”, the FAASt [38kV Line 4000 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 5300 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 100 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 200 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 800 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 1600 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 2000 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 2100 – Entire Line] (Vegetation) (HM Cost Alignment)”,

¹ On April 22, 2026, the Energy Bureau issued a Resolution and Order (“April 22nd Order”), in which it extended the March 26th Order’s reporting period for an additional five (5) years. *See* April 22nd Order, p.2. The Energy Bureau stated that all the other provisions of the March 26th Order would remain in full force and effect. *Id.*

the “FAASt [38kV Line 2500 – Entire Line] (Vegetation) (HM Cost Alignment)”, and the “FAASt [38kV Line 3000 – Entire Line] (Vegetation) (HM Cost Alignment)” T&D Projects.

II. Submittal of Eleven FEMA Approvals of Project

5. In compliance with the May 5th Order, LUMA hereby submits copies of the following FEMA Cost Approvals for T&D projects, each of which indicates an obligation date of October 14, 2026: “FAASt [38kV Line 3700 – Entire Line] (Vegetation) (HM Cost Alignment)”, the FAASt [38kV Line 4000 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 5300 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 100 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 200 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 800 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 1600 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 2000 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 2100 – Entire Line] (Vegetation) (HM Cost Alignment)”, the “FAASt [38kV Line 2500 – Entire Line] (Vegetation) (HM Cost Alignment)”, and the “FAASt [38kV Line 3000 – Entire Line] (Vegetation) (HM Cost Alignment)” T&D Projects. *See Exhibit 1.*²

6. As explained in prior motions,³ FEMA has clarified how it processes certain Sub-FAASt transactions involving both positive and negative cost adjustments under Section 428 Public Assistance and Section 406 Hazard Mitigation. Because FEMA’s system cannot process both adjustments in the same version, it processes the positive adjustment in the current version

² Please note that **Exhibit 1** has digitalization and table format issues, which are found on the documents as issued by FEMA.

³ See, e.g., *Motion Submitting Two (2) Amended FEMA Approvals of Project, Statement on New FEMA Guidance, Request for Confidential Treatment, and Supporting Memorandum of Law* filed by LUMA on September 1, 2026, in the present docket.

and the corresponding negative adjustment in a subsequent version. This procedure explains temporary discrepancies between project costs listed in the Consolidated Project List and amounts shown in individual FEMA versions. FEMA will address obligations that did not receive Section 406 funding in subsequent versions.

III. Request for Confidential Treatment of Exhibit 1

7. For the reasons set forth in the Memorandum of Law below, LUMA hereby requests that the Energy Bureau receive and maintain portions of **Exhibit 1** under seal of confidentiality pursuant to the Energy Bureau's Policy on management of Confidential Information, CEPR-MI-2016-0009, issued on August 31, 2016, and partially amended on September 16, 2016 ("Energy Bureau's Policy on Management of Confidential Information"). LUMA is submitting herein a redacted public version of **Exhibit 1**.

8.

IV. Memorandum of Law in Support of Request for Confidentiality

A. Applicable Laws and Regulations to Submit Information Confidentially Before the Energy Bureau

9. The bedrock provision on the management of confidential information filed before this Energy Bureau, is Section 6.15 of Act 57-2014, known as the "Puerto Rico Energy Transformation and Relief Act." It provides, in pertinent part, that: "[i]f any person who is required to submit information to the [Energy Bureau] believes that the information to be submitted has any confidentiality privilege, such person may request the [Energy Bureau] to treat such information as such" 22 LPRA § 1054n (2026). If the Energy Bureau determines, after appropriate evaluation, that the information should be protected, "it shall grant such protection in a manner that least affects the public interest, transparency, and the rights of the parties involved in the

administrative procedure in which the allegedly confidential document is submitted.” *Id.* § 1054n(a).

10. Access to confidential information shall be provided “only to the lawyers and external consultants involved in the administrative process after the execution of a confidentiality agreement.” *Id.* § 1054n(b). Finally, Act 57-2014 provides that this Energy Bureau “shall keep the documents submitted for its consideration out of public reach only in exceptional cases. In these cases, the information shall be duly safeguarded and delivered exclusively to the personnel of the [Energy Bureau] who needs to know such information under nondisclosure agreements. However, the [Energy Bureau] shall direct that a non-confidential copy be furnished for public review.” *Id.* § 1054n(c).

11. Relatedly, in connection with the duties of electric power service companies, Section 1.10 (i) of Act 17-2019 provides that electric power service companies shall provide the information requested by customers, except for confidential information in accordance with the Rules of Evidence of Puerto Rico.

12. Moreover, the Energy Bureau’s Policy on Management of Confidential Information details the procedures a party should follow to request that a document or portion thereof be afforded confidential treatment. In essence, the referenced Policy requires identifying confidential information and filing a memorandum of law explaining the legal basis and support for a request to file information confidentially. *See* CEPR-MI-2016-0009, Section A, as amended by the Resolution of September 20, 2016, CEPR-MI-2016-0009. The memorandum should also include a table that identifies the confidential information, a summary of the legal basis for the confidential designation, and why each claim or designation conforms to the applicable legal basis of confidentiality. *Id.* at ¶ 3. The party who seeks confidential treatment of information filed with the

Energy Bureau must also file both a “redacted” or “public version” and an “unredacted” or “confidential” version of the document that contains confidential information. *Id.* at ¶ 6.

13. The Energy Bureau’s Policy on Management of Confidential Information states the following with regard to access to validated CEII:

Critical Energy Infrastructure Information (“CEII”)

The information designated by the [Energy Bureau] as Validated Confidential Information on the grounds of being CEII may be accessed by the parties’ authorized representatives only after they have executed and delivered the Nondisclosure Agreement.

Those authorized representatives who have signed the Non-Disclosure Agreement may only review the documents validated as CEII at the [Energy Bureau] or the Producing Party’s offices. During the review, the authorized representatives may not copy or disseminate the reviewed information and may bring no recording device to the viewing room.

Id. at § D (on Access to Validated Confidential Information).

14. Regulation No. 8543, *Regulation on Adjudicative, Notice of Noncompliance, Rate Review, and Investigation Proceedings*, also includes a provision for filing confidential information in proceedings before this Energy Bureau. To wit, Section 1.15 provides that “a person has the duty to disclose information to the [Energy Bureau] considered to be privileged pursuant to the Rules of Evidence, said person shall identify the allegedly privileged information, request the [Energy Bureau] the protection of said information, and provide supportive arguments, in writing, for a claim of information of privileged nature. The [Energy Bureau] shall evaluate the petition and, if it understands [that] the material merits protection, proceed according to [...] Article 6.15 of Act No. 57-2015, as amended.” *See also* Energy Bureau Regulation No. 9137 on *Performance Incentive Mechanisms*, § 1.13 (addressing disclosure before the Energy Bureau of Confidential Information and directing compliance with Resolution CEPR-MI-2016-0009).

B. Request for Confidentiality

15. Portions of each of the FEMA Approvals included in **Exhibit 1** contain CEII that, under relevant federal law and regulations and the Energy Bureau's Policy on Management of Confidential Information, are protected from public disclosure. Accordingly, these portions of the FEMA Approvals warrant confidential treatment to protect critical infrastructure from threats that could undermine the system and negatively affect electric power services to the detriment of the interests of the public, customers, and citizens of Puerto Rico.

16. This Energy Bureau has granted LUMA's requests for confidential treatment of portions of the FEMA Approvals submitted for approval in the present case. For example, this Energy Bureau designated portions of submitted FEMA Approvals of Projects as confidential CEII in its Resolution and Order of March 20, 2023; *see* Table 1 on pages 1-2.

17. As mentioned above, the Energy Bureau's Policy on Management of Confidential Information provides for the management of CEII. It directs that the parties' authorized representatives access information validated as CEII only after executing and delivering a Non-Disclosure Agreement.

18. CEII or critical infrastructure information is generally exempted from public disclosure because it involves assets and information that pose public security, economic, health, and safety risks. Federal Regulations on CEII, particularly, 18 C.F.R. § 388.113, state that:

Critical energy infrastructure information means specific engineering, vulnerability, or detailed design information about proposed or existing critical infrastructure that:

- (i) Relates details about the production, generation, transportation, transmission, or distribution of energy;
- (ii) Could be useful to a person in planning an attack on critical infrastructure;
- (iii) Is exempt from mandatory disclosure under the Freedom of Information Act, 5 U.S.C. 552; and

- (iv) Does not simply give the general location of the critical infrastructure.

Id.

23. Additionally, “[c]ritical electric infrastructure means a system or asset of the bulk-power system, whether physical or virtual, the incapacity or destruction of which would negatively affect national security, economic security, public health or safety, or any combination of such matters. *Id.* Finally, “[c]ritical infrastructure means existing and proposed systems and assets, whether physical or virtual, the incapacity or destruction of which would negatively affect security, economic security, public health or safety, or any combination of those matters.” *Id.*

24. The Critical Infrastructure Information Act of 2002, 6 U.S.C. §§ 671-674 (2020), part of the Homeland Security Act of 2002, protects critical infrastructure information (“CII”).⁴

⁴ Regarding protection of voluntary disclosures of critical infrastructure information, 6 U.S.C. § 673, provides in pertinent part, that CII:

- (A) shall be exempt from disclosure under the Freedom of Information Act;
- (B) shall not be subject to any agency rules or judicial doctrine regarding *ex parte* communications with a decision-making official;
- (C) shall not, without the written consent of the person or entity submitting such information, be used directly by such agency, any other Federal, State, or local authority, or any third party, in any civil action arising under Federal or State law if such information is submitted in good faith;
- (D) shall not, without the written consent of the person or entity submitting such information, be used or disclosed by any officer or employee of the United States for purposes other than the purposes of this part, except—
 - (i) in furtherance of an investigation or the prosecution of a criminal act; or
 - (ii) when disclosure of the information would be--
 - (I) to either House of Congress, or to the extent of matter within its jurisdiction, any committee or subcommittee thereof, any joint committee thereof or subcommittee of any such joint committee; or
 - (II) to the Comptroller General, or any authorized representative of the Comptroller General, in the course of the performance of the duties of the Government Accountability Office
- (E) shall not, be provided to a State or local government or government agency; of information or records;
 - (i) be made available pursuant to any State or local law requiring disclosure of information or records;
 - (ii) otherwise be disclosed or distributed to any party by said State or local government or government agency without the written consent of the person or entity submitting such information; or
 - (iii) be used other than for the purpose of protecting critical Infrastructure or protected systems, or in furtherance of an investigation or the prosecution of a criminal act.

CII is defined as “information not customarily in the public domain and related to the security of critical infrastructure or protected systems” 6 U.S.C. § 671 (3).⁵

25. Portions of the FEMA Approvals in **Exhibit 1** qualify as CEII because each of these documents contains the express coordinates and physical addresses to power transmission and distribution facilities (18 C.F.R. § 388.113(iv)), and these specific coordinates and addresses could potentially be helpful to a person planning an attack on the energy facilities listed as part of this FEMA approval. The information is not common knowledge and is not made publicly available. Therefore, it is respectfully submitted that, on balance, the public interest in protecting CEII weighs in favor of protecting the relevant portions of the FEMA Approvals with CEII in **Exhibit 1** from disclosure, given the nature and scope of the details included in those portions of the Exhibit.

26. Based on the above, LUMA respectfully submits that portions of the FEMA Approvals should be designated as CEII. This designation is a reasonable and necessary measure to protect the specific location of the energy facilities listed or discussed in the FEMA approvals in **Exhibit 1**. Given the importance of ensuring the safe and efficient operation of the generation

(F) does not constitute a waiver of any applicable privilege or protection provided under law, such as trade secret protection.

⁵ CII includes the following types of information:

- (A) actual, potential, or threatened interference with, attack on, compromise of, or incapacitation of critical infrastructure or protected systems by either physical or computer-based attack or other similar conduct (including the misuse of or unauthorized access to all types of communications and data transmission systems) that violates Federal, State, or local law, harms interstate commerce of the United States, or threatens public health or safety;
- (B) the ability of any critical infrastructure or protected system to resist such interference, compromise, or incapacitation, including any planned or past assessment, projection, or estimate of the vulnerability of critical infrastructure or a protected system, including security testing, risk evaluation thereto, risk management planning, or risk audit; or
- (C) any planned or past operational problem or solution regarding critical infrastructure or protected systems, including repair, recovery, construction, insurance, or continuity, to the extent it is related to such interference, compromise, or incapacitation.

assets and the T&D System, LUMA respectfully submits that these materials constitute CEII that should be maintained confidentially to safeguard their integrity and protect them from external threats.

C. Identification of Confidential Information

27. In compliance with the Energy Bureau’s Policy on Management of Confidential Information (CEPR-MI-2016-0009), below, find a table summarizing the portions of the FEMA approval for which we present this request for confidential treatment.

Document	Name	Pages in which Confidential Information is Found, if applicable	Summary of Legal Basis for Confidentiality Protection, if applicable	Date Filed
Exhibit 1	FAASt [38kV Line 3700 – Entire Line] (Vegetation) (HM Cost Alignment)	Pages 1-2 (GPS Coordinates)	Critical Energy Infrastructure Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	October 22, 2026
	FAASt [38kV Line 4000 – Entire Line] (Vegetation) (HM Cost Alignment)	Pages 1, 3 (GPS Coordinates)	Critical Energy Infrastructure Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	October 22, 2026
	FAASt [38kV Line 5300 – Entire Line] (Vegetation) (HM Cost Alignment)	Pages 1, 3 (GPS Coordinates)	Critical Energy Infrastructure Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	October 22, 2026
	FAASt [38kV Line 100 – Entire Line]	Pages 1, 3	Critical Energy Infrastructure	October 22, 2026

Document	Name	Pages in which Confidential Information is Found, if applicable	Summary of Legal Basis for Confidentiality Protection, if applicable	Date Filed
	(Vegetation) (HM Cost Alignment)	(GPS Coordinates)	Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	
	FAASt [38kV Line 200 – Entire Line] (Vegetation) (HM Cost Alignment)	Pages 1, 3 (GPS Coordinates)	Critical Energy Infrastructure Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	October 22, 2026
	FAASt [38kV Line 800 – Entire Line] (Vegetation) (HM Cost Alignment)	Pages 1, 3 (GPS Coordinates)	Critical Energy Infrastructure Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	October 22, 2026
	FAASt [38kV Line 1600 – Entire Line] (Vegetation) (HM Cost Alignment)	Pages 1, 3 (GPS Coordinates)	Critical Energy Infrastructure Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	October 22, 2026
	FAASt [38kV Line 2000 – Entire Line] (Vegetation) (HM Cost Alignment)	Pages 1-2 (GPS Coordinates)	Critical Energy Infrastructure Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	October 22, 2026
	FAASt [38kV Line 2100 – Entire Line]	Pages 1, 3	Critical Energy Infrastructure Information, 18	October 22, 2026

Document	Name	Pages in which Confidential Information is Found, if applicable	Summary of Legal Basis for Confidentiality Protection, if applicable	Date Filed
	(Vegetation) (HM Cost Alignment)	(GPS Coordinates)	C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	
	[FAASt [38kV Line 2500 – Entire Line] (Vegetation) (HM Cost Alignment)	Pages 1, 3 (GPS Coordinates)	Critical Energy Infrastructure Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	October 22, 2026
	FAASt [38kV Line 3000 – Entire Line] (Vegetation) (HM Cost Alignment)	Pages 1, 3 (GPS Coordinates)	Critical Energy Infrastructure Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	October 22, 2026

WHEREFORE, LUMA respectfully requests that the Energy Bureau **take notice** of the aforementioned; **accept** the copies of the FEMA Approvals attached herein as **Exhibit 1**; and **grant** the request for confidential treatment of **Exhibit 1**.

RESPECTFULLY SUBMITTED.

We hereby certify that we filed this Motion using the electronic filing system of this Energy Bureau. We will send an electronic copy of this Motion to PREPA via Alexis Rivera, alexis.rivera@prepa.pr.gov, and through its counsel of record, Natalia Zayas Godoy, nzayas@gmlex.net, Richard Cruz Franqui, rcruzfranqui@gmlex.net, and Mirelis Valle Cancel, mvalle@gmlex.net, to Genera PR LLC, through its counsel of record, Jorge Fernández-Reboredo,

jfernandez@ecija.com, José J. Díaz Alonso, jdiaz@ecija.com, and Ernesto R. Ramos Maldonado, eramos@ecija.com.

In Guaynabo, Puerto Rico, on this 22nd day of October 2026.



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Exhibit 1

(public version, confidential version to be filed under seal of confidentiality)

**Department of Homeland Security
Federal Emergency Management Agency**

v0

General Info

Project #	1070353	P/W #	108318	Project Type	Specialized
Project Category	F - Utilities	Applicant	PR Electric Power Authority (000-UA2QU-00)		
Project Title	FAASt [38kV Line 3700 – Entire Line] (Vegetation) (HM Cost Alignment)			Event	4339DR-PR (4339DR)
Project Size	Large	Declaration Date	9/20/2017		
Activity Completion Date	9/20/2027	Incident Start Date	9/17/2017		
Process Step	Obligated	Incident End Date	11/15/2017		

Damage Description and Dimensions

The Disaster # 4339DR, which occurred between 09/17/2017 and 11/15/2017, caused:

Damage #1872600; FAASt [38kV Transmission Line 3700 – Entire Line] (Vegetation)

General Facility Information:

- **Facility Type:** Power generation, transmission, and distribution facilities
- **Facility:** FAASt [38kV Transmission Line 3700 – Entire Line] (Vegetation)
- **Facility Description:** The Puerto Rico Electric Power Authority (PREPA) owns more than 19,000 miles of transmission and distribution lines, as well as more than 400 substations. The facilities addressed in this project are all the overhead transmission and distribution lines (16,000+ miles), as well as substations. To ensure the functioning of this infrastructure to the level of service needed, keeping this equipment clear from vegetation is significant.
- **Approx. Year Built:** 1950
- **GPS Latitude/Longitude:** [REDACTED]

Final Scope

1872600 FAASt [38kV Transmission Line 3700 – Entire Line] (Vegetation)

Project 136271 (hereinafter PREPA FAASt Project) authorized \$9,459,885,412.39 (Federal Share) to be awarded to the Puerto Rico Electric Power Authority (PREPA, Subrecipient) as a fixed cost estimate (FAASt FCE agreement) based on eligible work without detailed scopes of work to restore disaster-damaged facilities. Eligible work for the Transmission and Distribution (T&D) system included restoration of:

Broken structures due to high winds such as poles/towers (counted as broken when poles were inclined, bent, torn, and/or cracked); and other damages/broken components such as transformers, insulators, conductors, grounding system, jumpers, Gang Operated Air Breakers (GOABs), pole hardware, guy wires and anchors.

FEMA deferred the 406 Hazard Mitigation Proposal (HMP) fixed cost over in the PREPA FAASt Project until the Subrecipient submits its actual recovery solutions. FEMA also issued a clarification letter regarding whether hazard mitigation funding under Section 404 or Section 406 of the Stafford Act may be made available for the execution of a one-time, island-wide vegetation clearing and removal operation intended to mitigate the threat to the existing vegetation, if untended to, poses to Puerto Rico's electric T&D system. See FEMA's letter to COR3, document Signed Vegetation

Management March 24 2023.pdf. The Subrecipient's actual recovery solution seeks a one-time Island-wide vegetation clearance and removal operation intended to mitigate the threat to the existing vegetation, if untended to, poses to Puerto Rico's electric T&D system. The actual recovery solution seeks to mitigate Puerto Rico's electric T&D system, including areas without infrastructure repairs.

The actual recovery solution (scope and cost) will be captured in multiple individual projects (hereinafter Vegetation clearance HMP Sub-FAASt

projects) to provide flexibility and enable multiple programmatic reviews simultaneously. The Vegetation clearance HMP Sub-FAAST projects do not include infrastructure repair work.

This project captures a portion of the Island-wide actual recovery solution, specifically the onetime vegetation clearance and removal operation intended to mitigate the 38kV Line 3700– Entire Line (see project note #1 and #2).

FEMA 406 Hazard Mitigation (HM) team will review this actual recovery solution and issue an FCE order for the portion of the recovery solution that reduces risk of future similar damages. The Work to be Completed will be captured in the 406 HM scope section. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects will be adjusted as describe in FEMA-4339-DR-PR Public Assistance PREPA FAAST Post-Fix Estimate Obligation Vegetation HMP Approach: 38kV. See document 956345 DR4339PR FAASTVegetationHMPApproach_38kVTrans.pdf. The PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope. WTBC Cost (PA) = \$15,433.57 per mile. Therefore, the total cost (PA) for this project will be \$244,428.37.

DI#	PA Vegetation Clearance Overlap per mile	Total miles	WTBC - PA Cost with Subrecipient Management & General Conditions	A&E - PA	Total - PA
1872600	\$15,433.57	15.97	\$246,474.11	\$(2,045.74)	\$244,428.37

Work to be completed total: \$246,474.11

A&E Deduction (Global A&E FAAST 335168): -\$2,045.74

Project Total: \$244,428.37

Project Notes:

1. This is a 38kV Transmission-Vegetation clearance HMP Sub-FAAST project.
2. Vegetation clearance HMP Sub-FAAST projects will be written according to line type (Distribution 13.2kV and down, and Transmission: 38 kV, 115kV, and 230 kV) because of the different ROWs and other characteristics. Multiple projects of each type will be submitted and reviewed for eligible PA 406 HM funding. Vegetation clearing work will only be submitted for those areas that vegetation represents strike potential (may cause future similar damage to the T&D system when subject to high winds). In the submittal of this project the Subrecipient's Authorized Representative attests that only the vegetation clearance submitted is to reduce strike potential and that the ROW for these lines has been, and will be, counted only once to avoid duplication within the vegetation clearance projects.
3. For more details of the requirements and conditions for the execution of a one-time, island-wide vegetation clearance and removal operation considered as an eligible Section 406 hazard mitigation proposal (HMP), please refer to document labeled: Attachment A FEMA letter dated March 24 2023.pdf.
4. For details on the SOW, refer to filename 1070373-FAAST [38kV Line 1200 – Entire Line] (Vegetation) DSOW.pdf
5. Vegetation clearance funds will not be allocated to SubFAAST projects.
6. A&E cost included in this project will be reduced from this project and obligated under the FAAST Project #335168, A&E, as shown in the table above. The A&E project was obligated to track and account for costs associated with individual FAAST projects.
7. This project is part of Donor FAAST 136271 – MEPA078 Puerto Rico Electrical Power Authority (PREPA) Island Wide FAAST Project.

406 HMP Scope

Project number: [1070353] FAAST [38kV Line 3700 – Entire Line] (Vegetation)

Damage #: 1872600

Applicant: PR Electric Power Authority (000-UA2QU-00)

Location: Ponce, Puerto Rico

GPS Latitude/Longitude: From: [REDACTED]

Introduction:

Puerto Rico's electrical grid infrastructure has been severely compromised by extreme weather events, particularly with Hurricane Maria in September 2017. The hurricane caused widespread disruptions to transmission and distribution systems, largely due to vegetation impacts that collapsed distribution and transmission lines. Substantial infrastructure was damaged when trees downed utility power lines and poles, causing most of the transmission/distribution system to fail. Post-hurricane vegetation clearance to enable grid repair and restoration progressed slowly, considerably delaying overall electrical recovery. Remaining excess vegetation continues to cause operational outages, as ground faults occur when vegetation contacts power lines even during normal weather events. After the passage of Hurricane Maria, minimal cleaning work was carried out exclusively to clear the areas to carry out emergency repairs to the electrical system. These works were covered by Category B - Emergency Protective Measure, but excess vegetation on the electrical system remains an outstanding vulnerability.

Puerto Rico's grid modernization and mitigation one time ROW clearance strategy will prioritize effective and proactive vegetation management protocols to prevent prolonged storm-related outages, thereby increasing the reliability of the electric system. These reliability and resiliency gaps are especially impactful to Puerto Rico, which has been facing increasingly frequent natural hazards such as hurricanes. This project is part of the for Vegetation Reset Program which will impact the Transmission and Distribution systems for each of the 78 municipalities.

Hazard Mitigation Narrative:

In order to minimize damages in a future event, the Subrecipient's actual recovery solution seeks a one-time Islandwide vegetation remediation clearance for the above work included in the PREPA FAAS Project, as according to the Public Assistance Alternative Procedures (PAAP) (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (hereinafter PR PAAP Guide) and FEMA's letter to COR3, document Signed Island-Wide Vegetation Clearance March 24, 2023. Section 406 hazard mitigation are funds that can be added to projects for the restoration of disaster damaged facilities and must prevent future damage caused by the declared event. Under DR-4339-PR, Section 406 hazard mitigation funds are based on eligible, technically feasible, and cost-effective mitigation activities proposed to reduce risk to the function of the disaster-damaged facilities. The portion of the recovery solution that reduces risk of future damage may be considered as eligible 406 mitigation.

The island-wide transmission and distribution grid was significantly damaged by the strong winds and heavy rainfall during the atmospheric event hurricane Maria. This resulted in many trees and other vegetation becoming a direct hazard to the electrical grid. A one-time 406 hazard mitigation island-wide vegetation clearance will benefit the reliability and resiliency of the Puerto Rico electrical grid, including the number and duration of customer outages during and after the work to complete the repairs to the electrical grid through other PREPA 428 FAAS Projects. The scope of the global 406 Hazard Mitigation (HM) projects includes vegetation clearing across the entire width of the easement, plus a radius of 12 to 25 feet from energized conductors to directly reduce the potential for future damage to the "transmission and/or distribution" (T&D) systems. Each 406 HM Vegetation Reset project is correlated with an eligible 428 T&D project, in association with PREPA's electrical grid. Different regional projects are developed to impact all lines of the electrical system, including distribution lines and high-voltage transmission lines. Also, projects are defined in terms of line type (distribution or transmission) and population density of the area (high or low) to simplify the evaluation by the Environmental and Historical Preservation team (EHP).

The global project was divided into the following regions:

- Region 1 – San Juan
- Region 2 – Arecibo
- Region 3 – Bayamón
- Region 4 – Caguas
- Region 5 – Mayagüez
- Region 6 – Ponce

For each Region of the island, there will be two types of projects to capture the Vegetation Clearing activities within scopes of work: (1) single transmission line projects based on LUMA's priority list, capturing the lines or segments of lines affected most by vegetation interference, and (2) Regional DSOWs divided into groups (Groups A – F), as follows:

- Region 1 – San Juan
- Region 2 – Arecibo
- Group A – High/Low Density Distribution Lines
- Group B – 38 kV Transmission.

- Group C – Overlapped Distribution and Transmission Lines
- Group D - 115 kV Facilities
- Group E - Substation and Telecommunication Facilities.
- Group F – 230 Kv Facilities (Non-Region – Specific)

This 406 HM work is limited to what is necessary to directly reduce the potential of future damage to the T&D system assets, that exceeds what is necessary to clear vegetation for accessing facilities when carrying out repairs which are already established as eligible for FEMA funding utilizing the 428 FAAS Grant. Each 406 HM will correlate with an eligible 428 Transmission and/or Distribution (T&D) project in association with the PREPA power grid. There will be 7 Regional DSOW's developed capturing planned actions within scopes of work formulated with established criteria detailed for Distribution and Transmission lines/facility locations. The first DSOW is Group A - High Density areas with a low reflection of infrared light; the second DSOW is Group A Low Density locations where more vegetation density is present, which is determined by a higher level of reflection of infrared associated with Vegetation for 13.2kV and below locations; the third DSOW is Group B locations at 38kV level; the fourth DSOW is Group C - with known local environmental sensitivities at 38kv and below levels locations; the fifth DSOW is 115kV Facilities; and the sixth DSOW is Substation and Telecommunication Facilities. There will also be 230 kV Facilities (these installations have a separate Vegetation Clearance project that is not region- specific).

FAAS [38kV Line 3700 – Entire Line] (Vegetation)

This is a project for 38kV transmission lines in Region 4 Caguas. The DSOW captures the scope of work and cost estimate for Vegetation Clearing intended to mitigate the threat that the existing vegetation, along 38kV lines within Caguas (if left untended to), poses Puerto Rico's electric grid.

This SOW is aligned with and leverages FEMA's Island-Wide Benefits Cost Analysis (IWBCA), which was used for this purpose and fully supports the mitigation measures employed within this project scope of work.

The Subrecipient's authorized representative (LUMA) estimates that this 406 Hazard Mitigation proposal for island-wide vegetation clearance will have immediate and future widespread benefits, including:

- Mitigation of the hazards due to vegetation impacts and damages.
- 70% annual reduction of outages caused by vegetation.
- 35-45% annual reduction of customer interruptions.
- Faster restoration for impacted customers.
- Improved safety for utility workers and the public.
- Support the rebuilding of the grid and effective execution of large-scale construction projects.

The following terms, when used in this document, shall have the meaning described below.

Compatible Species – Compatible species are those that are congruent with the intended use of the site, and include small trees, shrubs and herbaceous vegetation that will never grow into conflict with overhead conductors.

Incompatible Species – Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors.

Clearance - The minimum distance between two conductors, between conductors and their support or other objects, or between conductors and the ground. The National Electrical Safety Code (NESC) and PREPA's Technical Communication (See 12-02 attached) determine the minimum requirements regarding distances (vertical and horizontal) between an energized conductor or device and a structure, building or surface. Vegetation Clearing will be limited to clearing any vegetation affecting these clearances. This term is not synonymous with easement. Clearances can be met without being within an easement. Clearance requirements must be complied with either when the Authority builds its facilities, as well as when a third party builds a structure. Clearances, in both cases, must be complied with by regulation, regardless of whether an easement exists. regardless of whether an easement exists.

Easement - is a line imposed on a property for the benefit of another belonging to a different owner. The property, in favor of which the easement is constituted, is called the dominant estate; the one who suffers it, servant property. An easement for electrical power lines provides PREPA and Luma as its agent various rights including reasonable access to the electric infrastructure to provide maintenance, repair, expand, operate and is established on the strips or portions of land where facilities of the T & D system are located or will be located, such as lines, poles, towers, equipment, and accessories. These acquired rights make it easier to carry out vegetation clearing work.

The PREPA distribution and transmission systems are populated with millions of plants but only some have the conditions, growth characteristics, and/or locations that make them compatible or incompatible with the safe and reliable energy delivery service. The Subrecipient's authorized representative recognizes the diversity of species in tropical ecosystems, and the general remediation strategy is to control incompatible species while encouraging the growth of compatible species. Compatible species may, on occasion, need control if their height or density impedes the necessary line of sight for inspections or access to perform resilience work. Within Appendix A and B are lists of protected flora species and incompatible flora species expected to be encountered during scope performance.

(I) Proposed 428 Public Assistance Scope of Work (SOW):

This project includes Public Assistance (PA) works; however, PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope, \$15,433.57 / mile calculation represents the PA Overlap.

PA incidental works will be deducted from the Section 406 Hazard Mitigation project costs to avoid duplication of works. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects.

FEMA performed an analysis to the PREPA FAAST documents and determined that vegetation clearing on each mile of 38 kV line requiring repair was on average 8.34%% related to the repair (428 PA) and 91.66% related to a mitigation measure (406 HM). The fixed-cost estimate for the PA scope is \$15,433.57 per **15.97 miles**, with a total project cost of **\$246,474.11**. For further details, refer to the document "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

(II) Hazard Mitigation Proposal (HMP) Scope of Work:

1872600; FAAST [38kV Transmission Line 3700 – Entire Line] (Vegetation)

As a result of DR-4339-PR, vegetation surrounding T&D assets are falling onto these facilities and interfering with the safe and reliable operation of the assets. The vegetation at present is currently causing outages when vegetation is in contact with the T&D assets. To mitigate the future damage across T&D assets and protect the 428 repairs and replacement along these facilities, clearing vegetation materials will be required. This 406 Hazard Mitigation Scope of Work is to directly reduce the potential of future, damages to the T&D system by clearing vegetative materials that pose an immediate threat to the power distribution lines, and identification for corrective actions related to clearing vegetation (consisting of shrubs, branches, limbs, stumps, bamboo, and trees that are directly impacting the resilience and productivity of the power grid) applicable to the existing PREPA electrical grid within Region 4 Caguas TL of Puerto Rico.

The extent and execution of this scope includes performing verification of facilities, assets and condition assessments for determining the most appropriate remediation, preparing work orders for executing the necessary vegetation remediation, by ways of tree felling, vegetation remediation, mechanical vegetation remediation, vegetative debris disposal via chipping, mulching, hauling, and recycling where applicable in easement of the PREPA power Distribution lines. LUMA is not planning to construct access roads. If the work to be done is not adjacent to an existing road, our contractor tree crews will minimize environmental disturbance by utilizing vegetation crews hiking by foot in and out of our existing easement.

Parameters for Performing 406 Hazard Mitigation Vegetation Clearing

Regulation 7282 requires that only shrubs and plants (no trees) be planted within the easement under power lines. Climbing plants and vines, as well as bamboo, are prohibited from being planted within an easement. The branches of trees planted outside the easement must not obstruct free passage of the power lines. The National Electrical Safety Code (NESC) and PREPA's Technical Communication establish the minimum required distances, both vertical and horizontal, between an energized conductor or device and any structure, building, or surface. Vegetation clearing will be restricted to removing any vegetation that interferes with these clearances. For power distribution lines, NESC and Regulation 7282 define the vertical distance from vegetation as 12-15 feet. By law, any trees, shrubs, or plants planted in violation of Regulation 7282 may be uprooted, removed, or cut down in accordance with the provisions of Regulation 7282 – for both compatible and incompatible species.

Industry standard practices will determine how the work will be performed. A healthy tree is less likely to fall over in a storm and damage overhead lines; therefore, vegetation will be pruned according to ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Vegetation that is improperly pruned could become susceptible to disease and decay, resulting in a hazard to both the line and public safety. ANSI A300 is the tree care industry standard of care in the USA. It was developed by Tree Care Industry Association and maintained by a consensus of various industry stakeholders through periodically reviewing and updating the guidelines. These standards provide guidance on how and where to prune vegetation to achieve clearances and maintain a healthy plant. In all cases, Subrecipient's authorized representative's vegetation clearing contractors will be required to perform clearing activities in a manner consistent with ANSI A300, NESC, and Regulation 7282 alignment with Resolution 4987, Organic Law 83 (amended version), Communication 12-02, and PREPA 's Comprehensive Management Plan establishing standard Distribution easement widths. Easement Clearance widths for distribution lines are given in the table below:

Recommended Easement width for overhead Transmission & Sub-Transmission Lines (feet)				
Construction type	Area	Voltage(Kv)		
		38	115	230
Single Circuit	Urban	25 ft	30 ft	40 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Same Structure	Urban	25 ft	40 ft	60 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Different Structures	Rural	50 ft	100 ft	100 ft

Scope of Work Inside Easement – Incompatible Species

Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors. For the power distribution lines, all Incompatible Species will be cleared from the full width of the easement. "Clearing" in this context includes the following activities: tree removal, severing of vines, cutting, vegetation mastication.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified working at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter Incompatible Species by hand.
- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

Scope of Work Inside Easement – Compatible Species:

Compatible vegetation species will be cleared consistent with the distances identified in Regulation 7282, which means that any species with the potential to encroach within 12 feet of the conductors at full size will be removed using the same methods discussed above. Even though the distances identified in Regulation 7282 are vertical clearances, Compatible Species encroaching on the conductors from any direction can pose a hazard to the distribution system, with the maximum edge of the conductors to be 12 feet wide centered on the pole. Therefore, the 12-foot clearance is being applied to both vertical and horizontal clearances. For areas with overhead distribution systems located in the backyard or side yard, the certified easement width from LUMA Land Records office will use for clearing.

In rare cases where Subrecipient's authorized representative encounters significant resistance from landowners or stakeholders to remediate vegetation, Subrecipient's authorized representative will work with landowners or stakeholders to determine if Incompatible and Compatible Species can be pruned to mitigate the hazard to the lines instead of being completely removed

Vegetation with the potential to encroach within 12 feet of conductor — Compatible or Incompatible.

Any vegetation species—whether Compatible or Incompatible—that have the potential (when at full size) to encroach within 20 feet of the conductor will be cleared using one of the methods discussed below:

- **Tree Removal:** Removing above-ground portions of trees while leaving stumps in place.
- **Severing of Vines:** Cutting vines at the base to create an air gap between the root system and the structure.
- **Cutting:** Hand removal of small-diameter incompatible species.
- **Vegetation Mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch. Using heavy equipment to reduce standing trees to woody debris.

All Other Incompatible Species within the Recommended Easement Width:

- All other Incompatible Species will be cleared from the full width of the recommended easement width. The clearing methods described above (tree removal, severing of vines, cutting, and vegetation mastication) will be utilized.

Scope of Work Outside Easement – Species Growing into the Easement

There is the potential for vegetation outside or along the boundary of the easement to interfere with the operation of power distribution lines. Appropriate clearances around the conductors must be achieved to protect the lines from future damage. For distribution lines, Subrecipient's authorized representative has established a minimum clearance distance of 12 feet from all conductors, with the maximum edge of the conductors to be 12 feet wide centered on the pole. This distance is consistent with the vertical distance established in Regulation 7282. If there are species encroaching on the 12-foot clearance outside or along the boundary of the easement, these species will be pruned to obtain at least 20 feet of clearance from the conductors at the time clearance work occurs. In cases where following ANSI A300 best practices require clearance beyond 12 feet, the maximum distance cleared will not exceed an additional 3 feet from set clearing distance. Diagrams illustrating these clearing distances are provided as attachments within Grants Portal. The following clearing methods will be provided as Attachment B-*“FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf”*

- **Tree pruning:** Qualified personnel work from an aerial platform or while climbing within a crown of trees to prune the tree. All pruning work wounds the tree. Done poorly, pruning can result in an exaggerated regrowth response by adversely altering tree architecture and increasing exposure to decay organisms that can weaken the tree. These adverse consequences increase the likelihood of tree-initiated faults causing system interruptions and customer outages. Proper arboriculture techniques will be utilized.
- **Tree removal:** Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- **Severing of vines:** Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified worker at ground level. The upper portion of the vine remains attached and is not removed.
- **Cutting:** Cutting typically involves the removal of small diameter species by hand.
- **Vegetation mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

FEMA 38kV Assessment & Methodology:

LUMA documentation claims a 100% clearance for the entire project segment based on the total length of the feeder. This analysis would not be considered as the method for validation purposes.

Consequently, FEMA perform a 100% evaluation of each feeder to determine the quantity of miles of vegetation non-compatible. The

tools used for this analysis are Google Earth, that allows a street view evaluation where the HM Specialist uses the imagery data for analyze the feeder lines adjacent to roads. Where the feeder is through mountains FEMA use top and 3D view maps that allows determine the elevations for mountains, forested areas (assess vegetation), and the topography of the land. When poles are at the top of mountains and lines run between mountains, only the vegetation around the poles will be considered. The total percentage of each line is the result of compiling all the sections analyzed. It is important to emphasize that after work completed, the subrecipient can submit additional eligible vegetation clearance distance not included in this vegetation clearance percent analysis.

FEMA Analysis:

The total miles to be addressed in the Hazard Mitigation Proposal (HMP) is **20.17 miles**, which includes a 10% buffer due the method of assessment (desktop review), providing sufficient funds to ensure vegetation works are covered. This amount is estimated value, that will be adjusted based on the amount of actual work performed.

The cost estimate is based on two vegetation clearance scenarios, (1) the full clearance represents those lines that at both side sides of the right of way have vegetation that needs to be cleared. (2) is the half clearance represented for those circuits alongside roadways and only needs clearance at one side of the right of way. As a result, the total miles used for the cost estimate is **15.97 miles**, which reflects these adjustments for segments that do not require full clearing. This amount is estimated value, based on a desktop review that will be adjusted based on the amount of actual work performed and evidence of the actual work performed.

	HMP	Cost Estimate
Total Project Miles:	43.68	43.68
Vegetation Miles at 100% of Work	10.71	10.71
Vegetation Miles at 50% of Work	7.63	3.82
Total Miles to Clean	18.34	14.52
Buffer Acceptance:	0.10	10%
Vegetation Miles at 100% + Buffer	11.78	11.78
Vegetation Miles at 50% + Buffer	8.39	4.20
Total Miles to Clean with Buffer	20.17	15.97
% of Miles to Clean with Buffer	46%	37%

(III) Hazard Mitigation Proposal (HMP) Cost:

¹ Vegetation Clearance Cost per Mile (Base Cost) =	\$176,173.47 / mile
Risk Factor approved by the DR4339-PR leadership (5%) =	<u>\$8,808.67 / mile</u>

Vegetation Clearance Cost per Mile (w/Soft Cost) =	<u>\$184,982.14 /mile</u>
² PA Vegetation Clearance Overlap per Mile (Deduction) =	<u>(\$15,433.57/ mile)</u>
Hazard Mitigation Total Cost per Mile =	\$169,548.57 / mile
Project Total Miles with Vegetation:	14.52-miles
Buffer Acceptance:	10%
Project Total Miles with Vegetation:	<u>15.97 miles</u>
Hazard Mitigation Total Cost =	\$2,707,690.66

Note: The \$169,548.57 / mile calculation represents the total cost (base costs + soft costs – PA Overlap). For this project, breaking down that total cost further yields the approximate figures below. For additional information please see the attached document.³

Total Net Hazard Mitigation Cost (Base Cost) =	\$2,578,753.04
+ HM (Management & General Conditions Factors) =	<u>\$128,937.62</u>
Hazard Mitigation Total Cost =	\$2,707,690.66

(IV) Hazard Mitigation Proposal (HMP) Cost Distribution:

Architecture and Engineering (A&E) =	\$22,473.83	
Remaining Vegetation Clearance Cost =	<u>\$2,685,216.83</u>	
Hazard Mitigation Total Cost =	\$2,707,690.66	

(V) HMP Cost-Effectiveness Calculations:

FEMA's Benefit-Cost Analysis, BCA, methodology evaluates the expected risk reduction benefits of a hazard mitigation project and compares those benefits to the cost of the mitigation project. FEMA Public Assistance Program and Policy Guide, PAPPG, Version 3.1, April 2018, Chapter 2, Section VII.C, page 98, considers mitigation measures to be cost-effective when they are demonstrated through an acceptable BCA using FEMA's BCA methodologies and have a resulting Benefit-Cost Ratio, or BCR, equal to or greater than 1.0.

For PREPA infrastructure under FEMA DR-4339-PR, FEMA developed an Island Wide Benefit Cost Analysis, or IWBCA, to evaluate cost-effectiveness at the electrical system level rather than through separate project-specific BCAs. The IWBCA characterizes the PREPA/LUMA system as a single project for mitigation purposes, focuses on system-wide resiliency, and supports the development of cost-effective mitigation projects while avoiding double counting, or duplication, of benefits. The IWBCA applies one BCA to the entire FAASt project and includes benefits based on future costs avoided from physical damage to infrastructure, costs related to the response and reconnection effort, and loss of function for electric service caused by the storm.

The IWBCA established a maximum potential mitigation benefit for the PREPA system of \$7.6 billion. This figure represents the estimated total potential mitigation benefit with the highest confidence and was developed using the incurred costs of the PREPA FEMA Accelerated Award Strategy, FAASt, fixed cost estimate, FCE, the mission assignments used for the reconnection effort, and costs associated with loss of service. The IWBCA results were developed by the PA Mitigation team using the best available data and were further refined and concurred with by FEMA Region 2 PA Mitigation team members and FEMA HQ groups, including the Community Infrastructure Resilience, CIR, Branch and Disaster Implementation, DI, Branch. This maximum potential benefit must be tracked to ensure that the combined cost of all approved mitigation proposals does not exceed the maximum potential benefit.

The Hazard Mitigation Proposal, HMP, described herein has a total Hazard Mitigation cost of **\$2,707,690.66**. In accordance with FEMA's internal IWBCA benefit tracking, the maximum potential benefit remaining in the IWBCA is **\$4,976,903,423.77**. The cost of this HMP, when combined with all other approved IWBCA-related proposals funded, does not exceed the remaining available IWBCA benefit. Therefore, this HMP is deemed cost-effective under the FEMA PAPPG Version 3.1, April 2018, Chapter 2, Section VII.C, BCA Rule, because the IWBCA demonstrates an acceptable BCA with a Benefit-Cost Ratio equal to or greater than 1.0.

For validation, reviewers should refer to the attached IWBCA Package, including the IWBCA narrative and backup documentation, which define the IWBCA methodology, inputs, and supporting calculations. Reviewers should also confirm that the project has been included in the current IWBCA benefit tracking record to verify that the total approved IWBCA-related mitigation costs remain below the maximum potential benefit and that no duplication of benefits has occurred.

This Hazard Mitigation Proposal meets the eligible repair and restoration cost-effectiveness requirements. See the Mitigation Profile Documents Tab in Grants Manager for the complete supporting documentation, including the HMP cost estimate and supporting documents file.

(VI) Compliance and Assurance Requirements:

A) HMP GENERAL NOTES:

By agreeing to implement the hazard mitigation measures in this HMP, the Applicant/Sub-Applicant is bound by the specific guidelines listed within this document.

COSTS AND GENERAL CONDITIONS: The vegetation removal cost is established according to the average base cost of **\$176,173.47 / mile**. Additionally, DR4339-PR leadership has approved the application of a 5% risk factor to the average cost per mile, resulting in **\$184,982.14 / mile**. After deducting Public Assistance (PA) \$15,433.57 amount (incidental work- refer to document FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf), the final total obligated amount through PA 406 is **\$169,548.57 / mile**.

DOCUMENTATION REQUIREMENTS: The subrecipient shall document all vegetation removal work, including but not limited to the following:

- Before and after photographs of the total distance included in the HMP Scope of work that clearly show the condition of the area before and after the vegetation clearance.
- A digital map in ArcGIS format showing all areas where vegetation removal was performed. Location information must be provided, including the physical address, GPS coordinates from start to finish of clearance work, and contact information for private property (when applicable).
- Work orders must account for the entire feeder length distance and include a description of the sections both with and without vegetation. Material disposal documentation must specify whether the material was chipped and removed, left on-site, or transported to a landfill.

Note: All vegetation clearance projects must include the above documentation to define the work completed prior to project closeout.

COST DISTRIBUTION: Recognizing that the established cost is an average per mile, it is understood that actual expenses for each feeder or area may deviate (either underrun or overrun) from the estimated project amount. The 406 HMP scope and cost agreement sets an average cost per mile for vegetation clearance, allowing the subrecipient to manage funds across the various projects that comprise the vegetation asset. The *Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, January 1, 2022 (PR PAAP Guide)*, states that if funds for 406 Mitigation are included in the fixed-cost subaward, the subrecipient must complete the approved Scope of Work (SOW) of the Hazard Mitigation Proposal (HMP) in order to retain the 406 Mitigation funding. Consequently, only completed distance in the HM Scope of work, supported by the necessary back-up documentation (e.g., verified mitigated clearance distance), will be eligible for fund retention. Any uncompleted work from the HM SOW (e.g., miles not documented with mitigated clearance distance) will be de-obligated during the closeout process.

SCOPE OF WORK DEVELOPMENT OF HAZARD MITIGATION: FEMA will evaluate each mitigation opportunity to first determine what measures or portions of solutions could be funded through Section 406 mitigation. FEMA analyzes the proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and Eos. FEMA, the Applicant, Recipient, and Sub-recipients will develop and agree to scopes of work (SOW) and cost estimates to repair, restore, or replace eligible facilities including 406 Hazard Mitigation" (Page 6).

COMPLETION OF HAZARD MITIGATION SCOPE OF WORK: If this HMP is approved and the mitigation is not performed, the Applicant must apply for a change in the Scope of Work and a de-obligation of the HMP funding. Failure to complete the work of the HMP may limit future FEMA funding of repairs at the site in the event that a similar disaster event results in similar damage at the site.

CHANGES TO THE HAZARD MITIGATION SCOPE OF WORK FOR LARGE PROJECTS:

Per PAAP PA Process (Section 428), Guide for Permanent Work, February 10, 2020, "A Subrecipient may alter the 406-hazard mitigation SOW (HMP) after FEMA, the Recipient, and Subrecipient agree on the cost estimate for the initial proposal. After the project is obligated, the SOW for the HMP can be changed only once and the timeline for this change will be established based on a facility-by-facility basis. The proposed change will require evaluation by FEMA for eligibility and EHP. As part of the eligibility review, FEMA will evaluate the SOW, technical feasibility, the level of protection, the revised cost estimate, and cost effectiveness of the new hazard mitigation proposal, and, if approved, will adjust the scope and cost estimate accordingly." (Page 14)

HAZARD MITIGATION DESIGN: This HMP is for estimating purposes only and not to be construed as a project design. If the site's final placement and configuration are different than the preliminary estimate, the Applicant should submit a change in scope request. This HMP is subject to further review prior to award.

HAZARD MITIGATION CONSTRUCTION: The Applicant must provide & maintain competent & adequate engineering design & supervision during the construction phase to ensure that the completed work conforms to the approved plans & specifications & all applicable material & construction standards.

As a condition of the FEMA mitigation grant, the Applicant is responsible for the determination of and compliance with all applicable requirements, codes, standards and specifications in connection with the project, including but not limited to the Puerto Rico Building Code of 2018 (2018 PRBC), IBC, IRBC, NFIP Floodplain Management Regulations outlined in 44 C.F.R 60.3, ASCE 24, ASCE 7, and receiving all applicable permits & approvals prior to construction.

MAINTENANCE OF HAZARD MITIGATION: The Applicant shall ensure proper maintenance of the installed mitigation measures, per manufacturer and designer specifications. Any adaptations or installations not approved or that renders the hazard mitigation measure ineffective shall be removed by the Applicant. Examples include, but are not limited to, improper installation of roof-mounted equipment or installation of window-mounted air-conditioning units.

ENVIRONMENTAL AND HISTORIC PRESERVATION: Eligibility and funding for the mitigation at this site on this project will be subject to the compliance of all environmental laws, regulations, and executive orders applicable to the site. This project will undergo a EHP compliance review, after obligation any changes to the SOW will likely trigger an additional EHP compliance review of the revised SOW.

ATTACHMENTS:

Please refer to the following documents.

1. "Island-Wide Vegetation Clearance - FEMA letter dated March 24, 2023.pdf"
2. "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"
3. "Appendix A and B - Protected Flora and Incompatible Flora Species.pdf"
4. "IWBCA HMP Package.pdf"
5. "PN1070353 TL3700 38KV Caguas.kmz"

6. "PN1070353-DR4339PR-HMCE-IEP-20260910-RFP.xlsm"
7. "PN1070353-DR4339PR-HMP-20260910-RFP.pdf"

Cost

Code	Quantity	Unit	Total Cost	Section
9001	1	Lump Sum	\$246,474.11	Uncompleted
3510	1	Lump Sum	(\$2,045.74)	Uncompleted

CRC Gross Cost	\$244,428.37
Total 406 HMP Cost	\$0.00
Total Insurance Reductions	\$0.00
CRC Net Cost	\$244,428.37
Federal Share (90.00%)	\$219,985.54
Non-Federal Share (10.00%)	\$24,442.83

Subgrant Conditions

- Applicants must retain all source documentation for each large project for three years after the date the Recipient submits to FEMA certification of completion of the project and all source documentation for small projects for three years after the Recipient submits to FEMA certification of the applicant's last small project. See Title 2 Code of Federal Regulations (C.F.R.) § 200.334. Recipients may require longer retention periods. Real property and equipment disposition, audits, and litigation may also require longer retention periods. If requested, Applicants must provide documentation to FEMA. Recipients may require documentation not otherwise required by FEMA (such as actual cost documentation for Small Projects). In such cases, the Applicant must provide the documentation to the Recipient.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance in effect at the time of the declaration. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise. DHS Standard Terms and Conditions are viewable at <https://www.dhs.gov/publication/dhs-standard-terms-and-conditions>.
- The applicant acknowledges that the Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 200.110.
- The applicant acknowledges that PA funding must be used exclusively for the work specified in the approved project. If a change to the approved scope of work is needed, the applicant must submit a written request through the Recipient to FEMA before it commences work associated with a change.
- Applicants must inform FEMA of each purchased equipment item with a fair market value over \$10,000 after it is no longer needed for federally funded programs or projects. Applicants must also inform FEMA of any unused residual supplies when the aggregate total exceeds \$10,000. See Title 2 C.F.R. §§ 200.313 and 200.314. FEMA reduces eligible funding by this amount.
- The Recipient must submit its certification of the subrecipient's completion of all of its small projects and compliance with all environmental and historic preservation requirements within 180 days of the applicant's completion of its last small project, or the latest approved deadline, whichever is sooner.
- The Applicant certifies that all work claimed was or will be delivered in an impartial manner without discrimination as required by Title VI of the Civil Rights Act, Section 308 of the Stafford Act, 42 U.S.C. § 5151, and applicable provisions of laws and authorities prohibiting discrimination.
- The Applicant certifies that all impacts/damage claimed was a direct result of the Presidential declaration, was not pre-existing damage, and did not result from a lack of maintenance.
- The applicant certifies that all work claimed was required as a direct result of the major disaster declaration, is located within the designated area, and is the Applicant's legal responsibility.
- The applicant certifies that all costs claimed are reasonable and of a type recognized as ordinary and necessary for the type of work as required by 44 C.F.R. § 206.228 and 2 C.F.R. § 200.404.
- The applicant certifies that no work or costs claimed are covered by another funding source. Pursuant to section 312 of the Stafford Act, 42 U.S.C. § 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The applicant acknowledges it is required to notify FEMA through the recipient if it receives assistance for the same work or costs from another Federal agency, insurance, or any other source and return any duplicated funds to FEMA.
- The applicant certifies that all facilities are being restored in accordance with all federal and SLTT code and standard requirements.
- The applicant acknowledges it must comply with EHP laws, regulations, and Executive Orders (EO), including but not limited to, the Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA). The applicant must afford FEMA the opportunity to perform EHP reviews prior to starting any work that has potential to impact the environment or historic properties, including archaeological resources. If the applicant starts work prior to FEMA's completion of

the EHP review, it jeopardizes PA funding for the entire project.

- The applicant acknowledges that under 2 C.F.R. Part 200, it must follow their documented procurement procedures, provided they conform to federal procurement and contracting requirements. The applicant certifies that it is using the most restrictive of either its own documented policies and procedures for procurement or federal procurement and contracting laws in accordance with 2 C.F.R. §§ 200.317 - 200.327. The Applicant is following Environmental Protection Agency guidelines for procurement of recovered materials; and including all applicable required contract provisions.
- The applicant certifies that all information provided is true and correct. Upon submittal this project application becomes a legal document. The False Claims Act (31 U.S.C. §§ 3729-3733) prohibits the submission of false or fraudulent claims for payment to the federal government. It is a violation of federal law to intentionally make false statements or hide information when applying for Public Assistance. This can carry severe criminal and civil penalties including a fine of up to \$250,000, imprisonment, or both (18 U.S.C. §§ 287, 1001, 1040, and 3571).
- The applicant acknowledges that it must obtain and maintain insurance coverage for all buildings, contents, equipment, and vehicles in an amount equal to or greater than the total cost, prior to any reductions as required by the Stafford Act § 311, 42 U.S.C. § 5154, 44 C.F.R §§ 206.251 - 206.253, and in accordance with FEMA Policy 206-086-1 Public Assistance Policy on Insurance.

Insurance

Additional Information

9/16/2026

Does the Applicant have a Commercial Policy: Yes.

Does the Applicant's Commercial Policy extend coverage for the damage described in this project: No.

Property insurance coverage for the electrical distribution facilities represented on this project are not insured or insurable. No insurance relief is anticipated. No Obtain and Maintain requirement will be made.

FEMA requires the applicant to take reasonable efforts to pursue claims to recover insurance proceeds that it is entitled to receive from its insurer(s). In the event that any insurance proceeds are received for these expenses those proceeds must be reduced from FEMA Public Assistance funding to ensure no duplication of benefits has occurred.

No duplication of benefits from insurance is anticipated for work described in this application. In the event any part or all costs are paid by an insurance policy, a duplication of benefits from insurance will occur. Applicant must notify grantee and FEMA of such recoveries and the Sub-Grant award amount must be reduced by actual insurance proceeds.

No insurance requirements will be required for this project. Insurance requirements are specific to permanent work to replace, restore, repair, reconstruct, or construct buildings, contents, equipment, or vehicles. (FEMA Recovery Policy FP 206-086-1).

No insurance narrative will be produced or uploaded into documents or attachments.

Jean-Carlo Echevarria, PA Insurance Specialist, CRC Atlantic, Guaynabo, PR

O&M Requirements

There are no Obtain and Maintain Requirements on **FAAST [38kV Line 3700 – Entire Line] (Vegetation) (HM Cost Alignment)**.

406 Mitigation

There is no additional mitigation information on **FAAST [38kV Line 3700 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and executive orders?

Yes

EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- On May 16, 2025, the Secretary of the U.S. Department of Energy (DOE) issued Order 202-25-2 (Order), pursuant to the authority vested in him by section 202(c) of the Federal Power Act (FPA), 16 U.S.C. § 824a(c), and section 301(b) of the Department of Energy Organization Act, 42 U.S.C. § 7151(b). The Order sought to expedite repair and maintenance efforts to the electrical grid of Puerto Rico by directing the Puerto Rico Electric Power Authority (PREPA) to perform vegetation management, including vegetation clearing to reestablish a right-of-way, for particular transmission and distribution facilities in the Territory as specified in the Order. The Order required PREPA to identify certain parameters by which the directed work would be performed, and required that all work be performed, to the maximum extent practicable, in a manner consistent with all applicable Federal, State, or local environmental laws or regulations and minimize any adverse environmental impacts. However, pursuant to Section 202(c)(3) of the FPA, to the extent any omission or action taken by PREPA that was necessary to comply with the Order, including any omission or action taken to voluntarily comply with the Order, caused PREPA to not comply with any Federal, State, or local environmental law or regulation, including any environmental conditions in this REC's "Standard Conditions," such omission or action shall not be considered a violation of such environmental law or regulation, or subject PREPA to any requirement, civil or criminal liability, or citizen suit under such environmental law or regulation. On August 15, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. To renew/reissue the Order, DOE was required to consult with the primary Federal agency with expertise in the environmental interest protected by such law or regulation and include in the Order conditions necessary to minimize any adverse environmental impacts to the extent practicable. Pursuant to Section 202(c)(4)(B) of the FPA, DOE provided the relevant agencies the opportunity to submit conditions for work performed under the Order, to be included in the Order. According to DOE, no conditions were submitted by the agencies for inclusion in the Order. On November 12, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. DOE and FEMA have agreed that DOE is the lead agency for activities that fall under the prior and any future DOE 202(c) orders issued under the Federal Power Act to resolve the current and related emergencies in Puerto Rico. FEMA has requested that DOE provide FEMA with all documentation relating to their EHP compliance. FEMA will review and incorporate all available information and data for this project pertaining to applicable environmental laws and regulations into this REC when it is received from DOE. On February 10, 2026, and again on May 7, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities. On August 07, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities.
- If ground disturbing activities occur during construction, the applicant will monitor ground disturbance, and if any previously unidentified historic properties, including archeological resources, are discovered, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA. Should any unanticipated effects to previously identified historic properties, including archaeological resources, be identified during construction activities, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA.

EHP Additional Info

There is no additional environmental historical preservation on **FAASt [38kV Line 3700 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Final Reviews

Final Review

Reviewed By LEFRANC-GARCIA, CARLOS L.

Reviewed On 09/25/2026 8:07 PM PDT

Review Comments

Version 0 contemplates \$219,985.54 (federal share) for incidental vegetation clearance associated with 15.97 miles of the 38kV Line 3700 – Entire Line. No permanent infrastructure repairs are included in the approved Scope of Work. The Work to Be Completed cost is \$246,474.11, based on \$15,433.57 per mile, and the final PA project cost is \$244,428.37.

Recipient Review

Reviewed By Mulero, Noel

Reviewed On 10/06/2026 2:39 PM PDT

Review Comments

Recipient review completed. Applicant must ensure to compliance with all regulatory requirements, Record of Environmental Consideration (REC) Special Conditions and PA policy. This project applies to the Department of Energy's executive order. This means that DOE is the lead agency for environmental matters. Project is ready for applicant review.

Project Signatures

Reviewed By Unsigned

Reviewed On Unsigned

Award Information

EMMIE Imported Version Information

Version #	Eligibility Status	Current Location	Bundle Number	Project Amount	Cost Share	Federal Share Obligated	Date Obligated
No Records							

Drawdown History

EMMIE Drawdown Status As of Date	IFMIS Obligation #	Expenditure Number	Expended Date	Expended Amount
No Records				

Obligation History

Version #	Date Obligated	Obligated Cost	Cost Share	IFMIS Status	IFMIS Obligation #
0	10/14/2026	\$219,985.54	90%	Accepted	4339DRPRP01083181

**Department of Homeland Security
Federal Emergency Management Agency**

v0

General Info

Project #	1070360	P/W #	108325	Project Type	Specialized
Project Category	F - Utilities	Applicant	PR Electric Power Authority (000-UA2QU-00)		
Project Title	FAASt [38kV Line 4000 – Entire Line] (Vegetation) (HM Cost Alignment)			Event	4339DR-PR (4339DR)
Project Size	Small	Declaration Date	9/20/2017		
Activity Completion Date	9/20/2027	Incident Start Date	9/17/2017		
Process Step	Obligated	Incident End Date	11/15/2017		

Damage Description and Dimensions

The Disaster # 4339DR, which occurred between **09/17/2017** and **11/15/2017**, caused:

Damage #1872602; FAASt [38kV Transmission Line 4000 – Entire Line] (Vegetation)

General Facility Information:

- **Facility Type:** Power generation, transmission, and distribution facilities
- **Facility:** FAASt [38kV Transmission Line 4000 – Entire Line] (Vegetation)
- **Facility Description:** The Puerto Rico Electric Power Authority (PREPA) owns more than 19,000 miles of transmission and distribution lines, as well as more than 400 substations. The facilities addressed in this project are all the overhead transmission and distribution lines (16,000+ miles), as well as substations. To ensure the functioning of this infrastructure to the level of service needed, keeping this equipment clear from vegetation is significant.
- **Approx. Year Built:** 1950
- **GPS Latitude/Longitude:** [REDACTED]

Final Scope

1872602 FAASt [38kV Transmission Line 4000 – Entire Line] (Vegetation)

Project 136271 (hereinafter PREPA FAASt Project) authorized \$9,459,885,412.39 (Federal Share) to be awarded to the Puerto Rico Electric Power Authority (PREPA, Subrecipient) as a fixed cost estimate (FAASt FCE agreement) based on eligible work without detailed scopes of work to restore disaster-damaged facilities. Eligible work for the Transmission and Distribution (T&D) system included restoration of:

Broken structures due to high winds such as poles/towers (counted as broken when poles were inclined, bent, torn, and/or cracked); and other damages/broken components such as transformers, insulators, conductors, grounding system, jumpers, Gang Operated Air Breakers (GOABs), pole hardware, guy wires and anchors.

FEMA deferred the 406 Hazard Mitigation Proposal (HMP) fixed cost offer in the PREPA FAASt Project until the Subrecipient submits its actual recovery solutions. FEMA also issued a clarification letter regarding whether hazard mitigation funding under Section 404 or Section 406 of the Stafford Act may be made available for the execution of a one-time, island-wide vegetation clearing and removal operation intended to mitigate the threat to the existing vegetation, if untended to, poses to Puerto Rico's electric T&D system. See FEMA's letter to COR3, document Signed Vegetation

Management March 24 2023.pdf. The Subrecipient's actual recovery solution seeks a one-time Island-wide vegetation clearance and removal operation intended to mitigate the threat to the existing vegetation, if untended to, poses to Puerto Rico's electric T&D system. The actual recovery solution seeks to mitigate Puerto Rico's electric T&D system, including areas without infrastructure repairs.

The actual recovery solution (scope and cost) will be captured in multiple individual projects (hereinafter Vegetation clearance HMP Sub-FAASt projects) to provide flexibility and enable multiple programmatic reviews simultaneously. The Vegetation clearance HMP Sub-

FAAST projects do not include infrastructure repair work.

This project captures a portion of the Island-wide actual recovery solution, specifically the onetime vegetation clearance and removal operation intended to mitigate the 38kV Line 4000– Entire Line (see project note #1 and #2).

FEMA 406 Hazard Mitigation (HM) team will review this actual recovery solution and issue an FCE offer for the portion of the recovery solution that reduces risk of future similar damages. The Work to be Completed will be captured in the 406 HM scope section. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects will be adjusted as describe in FEMA-4339-DR-PR Public Assistance PREPA FAAST Post-Fixed Cost Estimate Obligation Vegetation HMP Approach: 38kV. See document 956345 DR4339PR FAASTVegetationHMPApproach_38kVTrans.pdf. The PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope. WTBC Cost (PA) = \$15,433.57 per mile. Therefore, the total cost (PA) for this project will be \$46,684.08.

D#	PA Vegetation Clearance Overlap per mile	Total miles	WTBC - PA Cost with Subrecipient Management & General Conditions	A&E - PA	Total - PA
1872602	\$15,433.57	3.12	\$48,152.74	(\$1,468.66)	\$46,684.08

Work to be completed total: \$48,152.74

A&E Deduction (Global A&E FAAST 335168): -\$1,468.66

Project Total: \$46,684.08

Project Notes:

1. This is a 38kV Transmission-Vegetation clearanceHMP Sub-FAAST project.
2. Vegetation clearance HMP Sub-FAAST projects will be written according to line type (Distribution: 13.2kV and down, and Transmission: 38 kV, 115kV, and 230 kV) because of the different ROWs and other characteristics. Multiple projects of each type will be submitted and reviewed for eligible PA 406 HM funding. Vegetation clearing work will only be submitted for those areas that vegetation represents strike potential (may cause future similar damage to the T&D system when subject to high winds). In the submittal of this project the Subrecipient's Authorized Representative attests that only the vegetation clearance submitted is to reduce strike potential and that the ROW for these lines has been, and will be, counted only once to avoid duplication within the vegetation clearance projects.
3. For more details of the requirements and conditions for the execution of a one-time, island-wide vegetation clearance and removal operation considered as an eligible Section406 hazard mitigation proposal (HMP), please refer to document labeled: Attachment A FEMA letter dated March 24 2023.pdf.
4. For details on the SOW, refer to filename 1070360 -FAAST [38kV Line 4000 – Entire Line] (Vegetation) DSOW.pdf
5. Vegetation clearance funds will not be allocated to SubFAAST projects.
6. A&E cost included in this project will be reduced from this project and obligated under the FAAST Project #335168, A&E, as shown in the table above. The A&E project was obligated to track and account for costs associated with individual FAAST projects.
7. This project is part of Donor FAAST 136271 – MEPA078 Puerto Rico Electrical Power Authority (PREPA) Island Wide FAAST Project.

406 HMP Scope

Project number: [1070360] FAAST [38kV Transmission Line 4000 – Entire Line] (Vegetation)

(vegetation)

Damage #: 1872602

Applicant: PR Electric Power Authority (000-UA2QU-00)

Location: Bayamon, Puerto Rico

GPS Latitude/Longitude: From: [REDACTED]

Introduction:

Puerto Rico's electrical grid infrastructure has been severely compromised by extreme weather events, particularly with Hurricane Maria in September 2017. The hurricane caused widespread disruptions to transmission and distribution systems, largely due to vegetation impacts that collapsed distribution and transmission lines. Substantial infrastructure was damaged when trees downed utility power lines and poles, causing most of the transmission/distribution system fail. Post-hurricane vegetation clearance to enable grid repair and restoration progressed slowly, considerably delaying overall electrical recovery. Remaining excess vegetation continues to cause operational outages, as ground faults occur when vegetation contacts power lines even during normal weather events. After the passage of Hurricane Maria, minimal cleaning work was carried out exclusively to clear the areas to carry out emergency repairs to the electrical system. These works were covered by Category B - Emergency Protective Measure, but excess vegetation on the electrical system remains an outstanding vulnerability.

Puerto Rico's grid modernization and mitigation one time ROW clearance strategy will prioritize effective and proactive vegetation management protocols to prevent prolonged storm-related outages, thereby increasing the reliability of the electric system. These reliability and resiliency gaps are especially impactful to Puerto Rico, which has been facing increasingly frequent natural hazards such as hurricanes. This project is part of the for Vegetation Reset Program which will impact the Transmission and Distribution systems for each of the 78 municipalities.

Hazard Mitigation Narrative:

In order to minimize damages in a future event, the Subrecipient's actual recovery solution seeks a one-time Islandwide vegetation remediation clearance for the above work included in the PREPA FAASSt Project, as according to the Public Assistance Alternative Procedures (PAAP) (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (hereinafter PR PAAP Guide) and FEMA's letter to COR3, document Signed Island-Wide Vegetation Clearance March 24, 2023. Section 406 hazard mitigation are funds that can be added to projects for the restoration of disaster damaged facilities and must prevent future damage caused by the declared event. Under DR-4339-PR, Section 406 hazard mitigation funds are based on eligible, technically feasible, and cost-effective mitigation activities proposed to reduce risk to the function of the disaster-damaged facilities. The portion of the recovery solution that reduces risk of future damage may be considered as eligible 406 mitigation.

The island-wide transmission and distribution grid was significantly damaged by the strong winds and heavy rainfall during the atmospheric event hurricane Maria. This resulted in many trees and other vegetation becoming a direct hazard to the electrical grid. A one-time 406 hazard mitigation island-wide vegetation clearance will benefit the reliability and resiliency of the Puerto Rico electrical grid, including the number and duration of customer outages during and after the work to complete the repairs to the electrical grid through other PREPA 428 FAASSt Projects. The scope of the global 406 Hazard Mitigation (HM) projects includes vegetation clearing across the entire width of the easement, plus a radius of 12 to 25 feet from energized conductors to directly reduce the potential for future damage to the "transmission and/or distribution" (T&D) systems. Each 406 HM Vegetation Reset project is correlated with an eligible 428 T&D project, in association with PREPA's electrical grid. Different regional projects are developed to impact all lines of the electrical system, including distribution lines and high-voltage transmission lines. Also, projects are defined in terms of line type (distribution or transmission) and population density of the area (high or low) to simplify the evaluation by the Environmental and Historical Preservation team (EHP).

The global project was divided into the following regions:

- Region 1 – San Juan
- Region 2 – Arecibo
- Region 3 – Bayamón
- Region 4 – Caguas
- Region 5 – Mayagüez
- Region 6 – Ponce

For each Region of the island, there will be two types of projects to capture the Vegetation Clearing activities within scopes of work: (1) single transmission line projects based on LUMA's priority list, capturing the lines or segments of lines affected most by vegetation interference, and (2) Regional DSOWs divided into groups (Groups A – F), as follows:

- Region 1 – San Juan
- Region 2 – Arecibo

- Group A – High/Low Density Distribution Lines
- Group B – 38 kV Transmission.
- Group C – Overlapped Distribution and Transmission Lines
- Group D - 115 kV Facilities
- Group E - Substation and Telecommunication Facilities.
- Group F – 230 Kv Facilities (Non-Region – Specific)

This 406 HM work is limited to what is necessary to directly reduce the potential of future damage to the T&D system assets, that exceeds what is necessary to clear vegetation for accessing facilities when carrying out repairs which are already established as eligible for FEMA funding utilizing the 428 FAAS Grant. Each 406 HM will correlate with an eligible 428 Transmission and/or Distribution (T&D) project in association with the PREPA power grid. There will be 7 Regional DSOW's developed capturing planned actions within scopes of work formulated with established criteria detailed for Distribution and Transmission lines/facility locations. The first DSOW is Group A - High Density areas with a low reflection of infrared light; the second DSOW is Group A Low Density locations where more vegetation density is present, which is determined by a higher level of reflection of infrared associated with Vegetation for 13.2kV and below locations; the third DSOW is Group B locations at 38kV level; the fourth DSOW is Group C - with known local environmental sensitivities at 38kv and below levels locations; the fifth DSOW is 115kV Facilities; and the sixth DSOW is Substation and Telecommunication Facilities. There will also be 230 kV Facilities (these installations have a separate Vegetation Clearance project that is not region- specific).

FAAST [38kV Transmission Line 4000 – Entire Line] (Vegetation)

This is a project for 38kV transmission lines in Region 3 Bayamon. The DSOW captures the scope of work and cost estimate for Vegetation Clearing intended to mitigate the threat that the existing vegetation, along 38kV lines within Ponce (if left untended to), poses Puerto Rico's electric grid.

This SOW is aligned with and leverages FEMA's Island-Wide Benefits Cost Analysis (IWBCA), which was used for this purpose and fully supports the mitigation measures employed within this project scope of work.

The Subrecipient's authorized representative (LUMA) estimates that this 406 Hazard Mitigation proposal for island-wide vegetation clearance will have immediate and future widespread benefits, including:

- Mitigation of the hazards due to vegetation impacts and damages.
- 70% annual reduction of outages caused by vegetation.
- 35-45% annual reduction of customer interruptions.
- Faster restoration for impacted customers.
- Improved safety for utility workers and the public.
- Support the rebuilding of the grid and effective execution of large-scale construction projects.

The following terms, when used in this document, shall have the meaning described below.

Compatible Species – Compatible species are those that are congruent with the intended use of the site, and include small trees, shrubs and herbaceous vegetation that will never grow into conflict with overhead conductors.

Incompatible Species – Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors.

Clearance - The minimum distance between two conductors, between conductors and their support or other objects, or between conductors and the ground. The National Electrical Safety Code (NESC) and PREPA's Technical Communication (See 12-02 attached) determine the minimum requirements regarding distances (vertical and horizontal) between an energized conductor or device and a structure, building or surface. Vegetation Clearing will be limited to clearing any vegetation affecting these clearances. This term is not synonymous with easement. Clearances can be met without being within an easement. Clearance requirements must be complied with either when the Authority builds its facilities, as well as when a third party builds a structure. Clearances, in both cases, must be complied with by regulation, regardless of whether an easement exists. regardless of whether an easement exists.

Easement - is a line imposed on a property for the benefit of another belonging to a different owner. The property, in favor of which the easement is constituted, is called the dominant estate; the one who suffers it, servant property. An easement for electrical power lines provides PREPA and Luma as its agent various rights including reasonable access to the electric infrastructure to provide maintenance, repair, expand, operate and is established on the strips or portions of land where facilities of the T & D system are located or will be

located, such as lines, poles, towers, equipment, and accessories. These acquired rights make it easier to carry out vegetation clearing work.

The PREPA distribution and transmission systems are populated with millions of plants but only some have the conditions, growth characteristics, and/or locations that make them compatible or incompatible with the safe and reliable energy delivery service. The Subrecipient's authorized representative recognizes the diversity of species in tropical ecosystems, and the general remediation strategy is to control incompatible species while encouraging the growth of compatible species. Compatible species may, on occasion, need control if their height or density impedes the necessary line of sight for inspections or access to perform resilience work. Within Appendix A and B are lists of protected flora species and incompatible flora species expected to be encountered during scope performance.

(I) Proposed 428 Public Assistance Scope of Work (SOW):

This project includes Public Assistance (PA) works; however, PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope, \$15,433.57 / mile calculation represents the PA Overlap.

PA incidental works will be deducted from the Section 406 Hazard Mitigation project costs to avoid duplication of works. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects.

FEMA performed an analysis to the PREPA FAAST documents and determined that vegetation clearing on each mile of 38 kV line requiring repair was on average 8.34%% related to the repair (428 PA) and 91.66% related to a mitigation measure (406 HM). The fixed-cost estimate for the PA scope is \$15,433.57 per **3.12 miles**, with a total project cost of **\$48,152.74**. For further details, refer to the document "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

(II) Hazard Mitigation Proposal (HMP) Scope of Work:

[1872602] FAAST [38kV Transmission Line 4000 – Entire Line] (Vegetation)

As a result of DR-4339-PR, vegetation surrounding T&D assets are falling onto these facilities and interfering with the safe and reliable operation of the assets. The vegetation at present is currently causing outages when vegetation is in contact with the T&D assets. To mitigate the future damage across T&D assets and protect the 428 repairs and replacement along these facilities, clearing vegetation materials will be required. This 406 Hazard Mitigation Scope of Work is to directly reduce the potential of future, damages to the T&D system by clearing vegetative materials that pose an immediate threat to the power distribution lines, and identification for corrective actions related to clearing vegetation (consisting of shrubs, branches, limbs, stumps, bamboo, and trees that are directly impacting the resilience and productivity of the power grid) applicable to the existing PREPA electrical grid within Region 3 Bayamon TL of Puerto Rico.

The extent and execution of this scope includes performing verification of facilities, assets and condition assessments for determining the most appropriate remediation, preparing work orders for executing the necessary vegetation remediation, by ways of tree felling, vegetation remediation, mechanical vegetation remediation, vegetative debris disposal via chipping, mulching, hauling, and recycling where applicable in easement of the PREPA power Distribution lines. LUMA is not planning to construct access roads. If the work to be done is not adjacent to an existing road, our contractor tree crews will minimize environmental disturbance by utilizing vegetation crews hiking by foot in and out of our existing easement.

Parameters for Performing 406 Hazard Mitigation Vegetation Clearing

Regulation 7282 requires that only shrubs and plants (no trees) be planted within the easement under power lines. Climbing plants and vines, as well as bamboo, are prohibited from being planted within an easement. The branches of trees planted outside the easement must not obstruct free passage of the power lines. The National Electrical Safety Code (NESC) and PREPA's Technical Communication establish the minimum required distances, both vertical and horizontal, between an energized conductor or device and any structure, building, or surface. Vegetation clearing will be restricted to removing any vegetation that interferes with these clearances. For power distribution lines, NESC and Regulation 7282 define the vertical distance from vegetation as 12-15 feet. By law, any trees, shrubs, or plants planted in violation of Regulation 7282 may be uprooted, removed, or cut down in accordance with the provisions of Regulation 7282 – for both compatible and incompatible species.

Industry standard practices will determine how the work will be performed. A healthy tree is less likely to fall over in a storm and damage overhead lines; therefore, vegetation will be pruned according to ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Vegetation that is improperly pruned could become susceptible to disease and decay, resulting in a hazard to both the line and public safety. ANSI A300 is the tree care industry standard of care in the USA. It was developed by Tree Care Industry Association and maintained by a consensus of various industry stakeholders through periodically reviewing and updating the guidelines. These standards provide guidance on how and where to prune vegetation to achieve clearances and maintain a healthy plant. In all cases, Subrecipient's authorized representative's vegetation clearing contractors will be required to perform clearing activities in a manner consistent with ANSI A300, NESC, and Regulation 7282 alignment with Resolution 4987, Organic Law 83

(amended version), Communication 12-02, and PREPA 's Comprehensive Management Plan establishing standard Distribution easement widths. Easement Clearance widths for distribution lines are given in the table below:

Recommended Easement width for overhead Transmission & Sub-Transmission Lines (feet)				
Construction type	Area	Voltage(Kv)		
		38	115	230
Single Circuit	Urban	25 ft	30 ft	40 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Same Structure	Urban	25 ft	40 ft	60 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Different Structures	Rural	50 ft	100 ft	100 ft

Scope of Work Inside Easement – Incompatible Species

Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors. For the power distribution lines, all Incompatible Species will be cleared from the full width of the easement. "Clearing" in this context includes the following activities: tree removal, severing of vines, cutting, vegetation mastication.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified working at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter Incompatible Species by hand.
- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

Scope of Work Inside Easement – Compatible Species:

Compatible vegetation species will be cleared consistent with the distances identified in Regulation 7282, which means that any species with the potential to encroach within 12 feet of the conductors at full size will be removed using the same methods discussed above. Even though the distances identified in Regulation 7282 are vertical clearances, Compatible Species encroaching on the conductors from any

direction can pose a hazard to the distribution system, with the maximum edge of the conductors to be 12 feet wide centered on the pole. Therefore, the 12-foot clearance is being applied to both vertical and horizontal clearances. For areas with overhead distribution systems located in the backyard or side yard, the certified easement width from LUMA Land Records office will use for clearing.

In rare cases where Subrecipient's authorized representative encounters significant resistance from landowners or stakeholders to remediate vegetation, Subrecipient's authorized representative will work with landowners or stakeholders to determine if Incompatible and Compatible Species can be pruned to mitigate the hazard to the lines instead of being completely removed

Vegetation with the potential to encroach within 12 feet of conductor — Compatible or Incompatible.

Any vegetation species—whether Compatible or Incompatible—that have the potential (when at full size) to encroach within 20 feet of the conductor will be cleared using one of the methods discussed below:

- **Tree Removal:** Removing above-ground portions of trees while leaving stumps in place.
- **Severing of Vines:** Cutting vines at the base to create an air gap between the root system and the structure.
- **Cutting:** Hand removal of small-diameter incompatible species.
- **Vegetation Mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch. Using heavy equipment to reduce standing trees to woody debris.

All Other Incompatible Species within the Recommended Easement Width:

- All other Incompatible Species will be cleared from the full width of the recommended easement width. The clearing methods described above (tree removal, severing of vines, cutting, and vegetation mastication) will be utilized.

Scope of Work Outside Easement – Species Growing into the Easement

There is the potential for vegetation outside or along the boundary of the easement to interfere with the operation of power distribution lines. Appropriate clearances around the conductors must be achieved to protect the lines from future damage. For distribution lines, Subrecipient's authorized representative has established a minimum clearance distance of 12 feet from all conductors, with the maximum edge of the conductors to be 12 feet wide centered on the pole. This distance is consistent with the vertical distance established in Regulation 7282. If there are species encroaching on the 12-foot clearance outside or along the boundary of the easement, these species will be pruned to obtain at least 20 feet of clearance from the conductors at the time clearance work occurs. In cases where following ANSI A300 best practices require clearance beyond 12 feet, the maximum distance cleared will not exceed an additional 3 feet from set clearing distance. Diagrams illustrating these clearing distances are provided as attachments within Grants Portal. The following clearing methods will be provided as Attachment B-*“FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf”*

- **Tree pruning:** Qualified personnel work from an aerial platform or while climbing within a crown of trees to prune the tree. All pruning work wounds the tree. Done poorly, pruning can result in an exaggerated regrowth response by adversely altering tree architecture and increasing exposure to decay organisms that can weaken the tree. These adverse consequences increase the likelihood of tree-initiated faults causing system interruptions and customer outages. Proper arboriculture techniques will be utilized.
- **Tree removal:** Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- **Severing of vines:** Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified worker at ground level. The upper portion of the vine remains attached and is not removed.
- **Cutting:** Cutting typically involves the removal of small diameter species by hand.
- **Vegetation mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

FEMA 38kV Assessment & Methodology:

LUMA documentation claims a 100% clearance for the entire project segment based on the total length of the feeder. This analysis would not be considered as the method for validation purposes.

Consequently, FEMA perform a 100% evaluation of each feeder to determine the quantity of miles of vegetation non-compatible. The tools used for this analysis are Google Earth, that allows a street view evaluation where the HM Specialist uses the imagery data for analyze the feeder lines adjacent to roads. Where the feeder is through mountains FEMA use top and 3D view maps that allows determine the elevations for mountains, forested areas (assess vegetation), and the topography of the land. When poles are at the top of mountains and lines run between mountains, only the vegetation around the poles will be considered. The total percentage of each line is the result of compiling all the sections analyzed. It is important to emphasize that after work completed, the subrecipient can submit additional eligible vegetation clearance distance not included in this vegetation clearance percent analysis.

FEMA Analysis:

The total miles to be addressed in the Hazard Mitigation Proposal (HMP) is **5.79 miles**, which includes a 10% buffer due the method of assessment (desktop review), providing sufficient funds to ensure vegetation works are covered. This amount is estimated value, that will be adjusted based on the amount of actual work performed.

The cost estimate is based on two vegetation clearance scenarios, (1) the full clearance represents those lines that at both side sides of the right of way have vegetation that needs to be cleared. (2) is the half clearance represented for those circuits alongside roadways and only needs clearance at one side of the right of way. As a result, the total miles used for the cost estimate is **3.12 miles**, which reflects these adjustments for segments that do not require full clearing. This amount is estimated value, based on a desktop review that will be adjusted based on the amount of actual work performed and evidence of the actual work performed.

	HMP	Cost Estimate
Total Project Miles:	10.51	10.51
Vegetation Miles at 100% of Work	0.41	0.41
Vegetation Miles at 50% of Work	4.86	2.43
Total Miles to Clean	5.27	2.84
Buffer Acceptance:	0.10	10%
Vegetation Miles at 100% + Buffer	0.45	0.45
Vegetation Miles at 50% + Buffer	5.34	2.67
Total Miles to Clean with Buffer	5.79	3.12
% of Miles to Clean with Buffer	55%	30%

(III) Hazard Mitigation Proposal (HMP) Cost:

¹ Vegetation Clearance Cost per Mile (Base Cost) =	\$176,173.47 / mile
Risk Factor approved by the DR4339-PR leadership (5%) =	<u>\$8,808.67 / mile</u>
Vegetation Clearance Cost per Mile (w/Soft Cost) =	<u>\$184,982.14 /mile</u>
² PA Vegetation Clearance Overlap per Mile (Deduction) =	<u>(\$15,433.57/ mile)</u>
Hazard Mitigation Total Cost per Mile =	\$169,548.57 / mile
Project Total Miles with Vegetation:	2.84-miles
Buffer Acceptance:	10%
Project Total Miles with Vegetation:	<u>3.12 miles</u>
Hazard Mitigation Total Cost =	\$528,991.54

Note: The \$169,548.57 / mile calculation represents the total cost (base costs + soft costs – PA Overlap). For this project, breaking down that total cost further yields the approximate figures below. For additional information please see the attached document.³

Total Net Hazard Mitigation Cost (Base Cost) =	\$503,801.47
+ HM (Management & General Conditions Factors) =	<u>\$ 25,190.07</u>
Hazard Mitigation Total Cost =	\$ 528,991.54

(IV) Hazard Mitigation Proposal (HMP) Cost Distribution:

Architecture and Engineering (A&E) =	\$16,134.24	
Remaining Vegetation Clearance Cost =	<u>\$512,857.30</u>	

Hazard Mitigation Total Cost =	\$528,991.54	
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(V) HMP Cost-Effectiveness Calculations:

FEMA's Benefit-Cost Analysis, BCA, methodology evaluates the expected risk reduction benefits of a hazard mitigation project and compares those benefits to the cost of the mitigation project. FEMA Public Assistance Program and Policy Guide, PAPP, Version 3.1, April 2018, Chapter 2, Section VII.C, page 98, considers mitigation measures to be cost-effective when they are demonstrated through an acceptable BCA using FEMA's BCA methodologies and have a resulting Benefit-Cost Ratio, or BCR, equal to or greater than 1.0.

For PREPA infrastructure under FEMA DR-4339-PR, FEMA developed an Island Wide Benefit Cost Analysis, or IWBCA, to evaluate cost-effectiveness at the electrical system level rather than through separate project-specific BCAs. The IWBCA characterizes the PREPA/LUMA system as a single project for mitigation purposes, focuses on system-wide resiliency, and supports the development of cost-effective mitigation projects while avoiding double counting, or duplication, of benefits. The IWBCA applies one BCA to the entire FFAST project and includes benefits based on future costs avoided from physical damage to infrastructure, costs related to the response and reconnection effort, and loss of function for electric service caused by the storm.

The IWBCA established a maximum potential mitigation benefit for the PREPA system of \$7.6 billion. This figure represents the estimated total potential mitigation benefit with the highest confidence and was developed using the incurred costs of the PREPA FEMA Accelerated Award Strategy, FFAST, fixed cost estimate, FCE, the mission assignments used for the reconnection effort, and costs associated with loss of service. The IWBCA results were developed by the PA Mitigation team using the best available data and were further refined and concurred with by FEMA Region 2 PA Mitigation team members and FEMA HQ groups, including the Community Infrastructure Resilience, CIR, Branch and Disaster Implementation, DI, Branch. This maximum potential benefit must be tracked to ensure that the combined cost of all approved mitigation proposals does not exceed the maximum potential benefit.

The Hazard Mitigation Proposal, HMP, described herein has a total Hazard Mitigation cost of **[528,991.54]**. In accordance with FEMA's internal IWBCA benefit tracking, the maximum potential benefit remaining in the IWBCA is **[\$4,983,906,177.98]**. The cost of this HMP, when combined with all other approved IWBCA-related proposals funded, does not exceed the remaining available IWBCA benefit. Therefore, this HMP is deemed cost-effective under the FEMA PAPP Version 3.1, April 2018, Chapter 2, Section VII.C, BCA Rule, because the IWBCA demonstrates an acceptable BCA with a Benefit-Cost Ratio equal to or greater than 1.0.

For validation, reviewers should refer to the attached IWBCA Package, including the IWBCA narrative and backup documentation, which define the IWBCA methodology, inputs, and supporting calculations. Reviewers should also confirm that the project has been included in the current IWBCA benefit tracking record to verify that the total approved IWBCA-related mitigation costs remain below the maximum potential benefit and that no duplication of benefits has occurred.

This Hazard Mitigation Proposal meets the eligible repair and restoration cost-effectiveness requirements. See the Mitigation Profile Documents tab in Grants Manager for the complete supporting documentation, including the HMP cost estimate and supporting documents file.

(VI) Compliance and Assurance Requirements:

A) HMP GENERAL NOTES:

By agreeing to implement the hazard mitigation measures in this HMP, the Applicant/Sub-Applclicant is bound by the specific guidelines listed within this document.

COSTS AND GENERAL CONDITIONS: The vegetation removal cost is established according to the average base cost of **\$176,173.47 / mile**. Additionally, DR4339-PR leadership has approved the application of a 5% risk factor to the average cost per mile, resulting in **\$184,982.14 / mile**. After deducting Public Assistance (PA) \$15,433.57 amount (incidental work- refer to document FFASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf), the final total obligated amount through PA 406 is **\$169,548.57 / mile**.

DOCUMENTATION REQUIREMENTS: The subrecipient shall document all vegetation removal work, including but not limited to the following:

- Before and after photographs of the total distance included in the HMP Scope of work that clearly show the condition of the area before and after the vegetation clearance.

- A digital map in ArcGIS format showing all areas where vegetation removal was performed. Location information must be provided, including the physical address, GPS coordinates from start to finish of clearance work, and contact information for private property (when applicable).

- Work orders must account for the entire feeder length distance and include a description of the sections both with and without vegetation. Material disposal documentation must specify whether the material was chipped and removed, left on-site, or transported to a landfill.

Note: All vegetation clearance projects must include the above documentation to define the work completed prior to project closeout.

COST DISTRIBUTION: Recognizing that the established cost is an average per mile, it is understood that actual expenses for each feeder or area may deviate (either underrun or overrun) from the estimated project amount. The 406 HMP scope and cost agreement sets an average cost per mile for vegetation clearance, allowing the subrecipient to manage funds across the various projects that comprise the vegetation asset. The *Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, January 1, 2022 (PR PAAP Guide)*, states that if funds for 406 Mitigation are included in the fixed-cost subaward, the subrecipient must complete the approved Scope of Work (SOW) of the Hazard Mitigation Proposal (HMP) in order to retain the 406 Mitigation funding. Consequently, only completed distance in the HM Scope of work, supported by the necessary back-up documentation (e.g., verified mitigated clearance distance), will be eligible for fund retention. Any uncompleted work from the HM SOW (e.g., miles not documented with mitigated clearance distance) will be de-obligated during the closeout process.

SCOPE OF WORK DEVELOPMENT OF HAZARD MITIGATION: FEMA will evaluate each mitigation opportunity to first determine what measures or portions of solutions could be funded through Section 406 mitigation. FEMA analyzes the proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and Eos. FEMA, the Applicant, Recipient, and Sub-recipients will develop and agree to scopes of work (SOW) and cost estimates to repair, restore, or replace eligible facilities including 406 Hazard Mitigation" (Page 6).

COMPLETION OF HAZARD MITIGATION SCOPE OF WORK: If this HMP is approved and the mitigation is not performed, the Applicant must apply for a change in the Scope of Work and a de-obligation of the HMP funding. Failure to complete the work of the HMP may limit future FEMA funding of repairs at the site in the event that a similar disaster event results in similar damage at the site.

CHANGES TO THE HAZARD MITIGATION SCOPE OF WORK FOR LARGE PROJECTS:

Per PAAP PA Process (Section 428), Guide for Permanent Work, February 10, 2020, "A Subrecipient may alter the 406-hazard mitigation SOW (HMP) after FEMA, the Recipient, and Subrecipient agree on the cost estimate for the initial proposal. After the project is obligated, the SOW for the HMP can be changed only once and the timeline for this change will be established based on a facility-by-facility basis. The proposed change will require evaluation by FEMA for eligibility and EHP. As part of the eligibility review, FEMA will evaluate the SOW, technical feasibility, the level of protection, the revised cost estimate, and cost effectiveness of the new hazard mitigation proposal, and, if approved, will adjust the scope and cost estimate accordingly." (Page 14)

HAZARD MITIGATION DESIGN: This HMP is for estimating purposes only and not to be construed as a project design. If the site's final placement and configuration are different than the preliminary estimate, the Applicant should submit a change in scope request. This HMP is subject to further review prior to award.

HAZARD MITIGATION CONSTRUCTION: The Applicant must provide & maintain competent & adequate engineering design & supervision during the construction phase to ensure that the completed work conforms to the approved plans & specifications & all applicable material & construction standards.

As a condition of the FEMA mitigation grant, the Applicant is responsible for the determination of and compliance with all applicable requirements, codes, standards and specifications in connection with the project, including but not limited to the Puerto Rico Building Code of 2018 (2018 PRBC), IBC, IRBC, NFIP Floodplain Management Regulations outlined in 44 C.F.R 60.3, ASCE 24, ASCE 7, and receiving all applicable permits & approvals prior to construction.

MAINTENANCE OF HAZARD MITIGATION: The Applicant shall ensure proper maintenance of the installed mitigation measures, per manufacturer and designer specifications. Any adaptations or installations not approved or that renders the hazard mitigation measure ineffective shall be removed by the Applicant. Examples include, but are not limited to, improper installation of roof-mounted equipment or installation of window-mounted air-conditioning units.

ENVIRONMENTAL AND HISTORIC PRESERVATION: Eligibility and funding for the mitigation at this site on this project will be subject to the compliance of all environmental laws, regulations, and executive orders applicable to the site. This project will undergo a EHP compliance review, after obligation any changes to the SOW will likely trigger an additional EHP compliance review of the revised SOW.

ATTACHMENTS:

Please refer to the following documents.

1. "Island-Wide Vegetation Clearance - FEMA letter dated March 24, 2023.pdf"

2. "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"
3. "Appendix A and B - Protected Flora and Incompatible Flora Species.pdf"
4. "IWBCA HMP Package.pdf"
5. "PN1070360-TL4000_38KV.kmz"
6. "PN1070360-DR4339PR-HMCE-IEP-20260914-RIBR.xslm"
7. "PN1070360-DR4339PR-HMP-20260914-RIBR.pdf"

Cost

Code	Quantity	Unit	Total Cost	Section
9001	1	Lump Sum	\$48,152.74	Uncompleted
3510	1	Lump Sum	(\$1,468.66)	Uncompleted

CRC Gross Cost \$46,684.08

Total 406 HMP Cost \$0.00

Total Insurance Reductions \$0.00

CRC Net Cost \$46,684.08

Federal Share (90.00%) \$42,015.68

Non-Federal Share (10.00%) \$4,668.40

Subgrant Conditions

- Applicants must retain all source documentation for each large project for three years after the date the Recipient submits to FEMA certification of completion of the project and all source documentation for small projects for three years after the Recipient submits to FEMA certification of the applicant's last small project. See Title 2 Code of Federal Regulations (C.F.R.) § 200.334. Recipients may require longer retention periods. Real property and equipment disposition, audits, and litigation may also require longer retention periods. If requested, Applicants must provide documentation to FEMA. Recipients may require documentation not otherwise required by FEMA (such as actual cost documentation for Small Projects). In such cases, the Applicant must provide the documentation to the Recipient.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance in effect at the time of the declaration. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise. DHS Standard Terms and Conditions are viewable at <https://www.dhs.gov/publication/dhs-standard-terms-and-conditions>.
- The applicant acknowledges that the Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 200.110.
- The applicant acknowledges that PA funding must be used exclusively for the work specified in the approved project. If a change to the approved scope of work is needed, the applicant must submit a written request through the Recipient to FEMA before it commences work associated with a change.
- Applicants must inform FEMA of each purchased equipment item with a fair market value over \$10,000 after it is no longer needed for federally funded programs or projects. Applicants must also inform FEMA of any unused residual supplies when the aggregate total exceeds \$10,000. See Title 2 C.F.R. §§ 200.313 and 200.314. FEMA reduces eligible funding by this amount.
- The Recipient must submit its certification of the subrecipient's completion of all of its small projects and compliance with all environmental and historic preservation requirements within 180 days of the applicant's completion of its last small project, or the latest approved deadline, whichever is sooner.
- The Subrecipient provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.
- The Applicant certifies that all work claimed was or will be delivered in an impartial manner without discrimination as required by Title VI of the Civil Rights Act, Section 308 of the Stafford Act, 42 U.S.C. § 5151, and applicable provisions of laws and authorities prohibiting discrimination.
- The Applicant certifies that all impacts/damage claimed was a direct result of the Presidential declaration, was not pre-existing damage, and did not result from a lack of maintenance.
- The applicant certifies that all work claimed was required as a direct result of the major disaster declaration, is located within the designated area, and is the Applicant's legal responsibility.
- The applicant certifies that all costs claimed are reasonable and of a type recognized as ordinary and necessary for the type of work as required by 44 C.F.R. § 206.228 and 2 C.F.R. § 200.404.
- The applicant certifies that no work or costs claimed are covered by another funding source. Pursuant to section 312 of the Stafford Act, 42 U.S.C. § 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The applicant acknowledges it is required to notify FEMA through the recipient if it receives assistance for the same work or costs from another Federal agency, insurance, or any other source and return any duplicated funds to FEMA.
- The applicant certifies that all facilities are being restored in accordance with all federal and SLTT code and standard requirements.
- The applicant acknowledges it must comply with EHP laws, regulations, and Executive Orders (EO), including but not limited to, the

Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA). The applicant must afford FEMA the opportunity to perform EHP reviews prior to starting any work that has potential to impact the environment or historic properties, including archaeological resources. If the applicant starts work prior to FEMA's completion of the EHP review, it jeopardizes PA funding for the entire project.

- The applicant acknowledges that under 2 C.F.R. Part 200, it must follow their documented procurement procedures, provided they conform to federal procurement and contracting requirements. The applicant certifies that it is using the most restrictive of either its own documented policies and procedures for procurement or federal procurement and contracting laws in accordance with 2 C.F.R. §§ 200.317 - 200.327. The Applicant is following Environmental Protection Agency guidelines for procurement of recovered materials; and including all applicable required contract provisions.
- The applicant certifies that all information provided is true and correct. Upon submittal this project application becomes a legal document. The False Claims Act (31 U.S.C. §§ 3729-3733) prohibits the submission of false or fraudulent claims for payment to the federal government. It is a violation of federal law to intentionally make false statements or hide information when applying for Public Assistance. This can carry severe criminal and civil penalties including a fine of up to \$250,000, imprisonment, or both (18 U.S.C. §§ 287, 1001, 1040, and 3571).
- The applicant acknowledges that it must obtain and maintain insurance coverage for all buildings, contents, equipment, and vehicles in an amount equal to or greater than the total cost, prior to any reductions as required by the Stafford Act § 311, 42 U.S.C. §5154, 44 C.F.R §§ 206.251 - 206.253, and in accordance with FEMA Policy 206-086-1 Public Assistance Policy on Insurance.

Insurance

Additional Information

9/16/2026

Does the Applicant have a Commercial Policy: Yes.

Does the Applicant's Commercial Policy extend coverage for the damage described in this project: No.

Property insurance coverage for the electrical distribution facilities represented on this project are not insured or insurable. No insurance relief is anticipated. No Obtain and Maintain requirement will be made.

FEMA requires the applicant to take reasonable efforts to pursue claims to recover insurance proceeds that it is entitled to receive from its insurer(s). In the event that any insurance proceeds are received for these expenses those proceeds must be reduced from FEMA Public Assistance funding to ensure no duplication of benefits has occurred.

No duplication of benefits from insurance is anticipated for work described in this application. In the event any part or all costs are paid by an insurance policy, a duplication of benefits from insurance will occur. Applicant must notify grantee and FEMA of such recoveries and the Sub-Grant award amount must be reduced by actual insurance proceeds.

No insurance requirements will be required for this project. Insurance requirements are specific to permanent work to replace, restore, repair, reconstruct, or construct buildings, contents, equipment, or vehicles. (FEMA Recovery Policy FP 206-086-1).

No insurance narrative will be produced or uploaded into documents or attachments.

Jean-Carlo Echevarria, PA Insurance Specialist, CRC Atlantic, Guaynabo, PR

O&M Requirements

There are no Obtain and Maintain Requirements on **FAAST [38kV Line 4000 – Entire Line] (Vegetation) (HM Cost Alignment)**.

406 Mitigation

Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and executive orders?

Yes

EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- On May 16, 2025, the Secretary of the U.S. Department of Energy (DOE) issued Order 202-25-2 (Order), pursuant to the authority vested in him by section 202(c) of the Federal Power Act (FPA), 16 U.S.C. § 824a(c), and section 301(b) of the Department of Energy Organization Act, 42 U.S.C. § 7151(b). The Order sought to expedite repair and maintenance efforts to the electrical grid of Puerto Rico by directing the Puerto Rico Electric Power Authority (PREPA) to perform vegetation management, including vegetation clearing to reestablish a right-of-way, for particular transmission and distribution facilities in the Territory as specified in the Order. The Order required PREPA to identify certain parameters by which the directed work would be performed, and required that all work be performed, to the maximum extent practicable, in a manner consistent with all applicable Federal, State, or local environmental laws or regulations and minimize any adverse environmental impacts. However, pursuant to Section 202(c)(3) of the FPA, to the extent any omission or action taken by PREPA that was necessary to comply with the Order, including any omission or action taken to voluntarily comply with the Order, caused PREPA to not comply with any Federal, State, or local environmental law or regulation, including any environmental conditions in this REC's "Standard Conditions," such omission or action shall not be considered a violation of such environmental law or regulation, or subject PREPA to any requirement, civil or criminal liability, or citizen suit under such environmental law or regulation. On August 15, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. To renew/reissue the Order, DOE was required to consult with the primary Federal agency with expertise in the environmental interest protected by such law or regulation and include in the Order conditions necessary to minimize any adverse environmental impacts to the extent practicable. Pursuant to Section 202(c)(4)(B) of the FPA, DOE provided the relevant agencies the opportunity to submit conditions for worked performed under the Order, to be included in the Order. According to DOE, no conditions were submitted by the agencies for inclusion in the Order. On November 12, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. DOE and FEMA have agreed that DOE is the lead agency for activities that fall under the prior and any future DOE 202(c) orders issued under the Federal Power Act to resolve the current and related emergencies in Puerto Rico. FEMA has requested that DOE provide FEMA with all documentation relating to their EHP compliance. FEMA will review and incorporate all available information and data for this project pertaining to applicable environmental laws and regulations into this REC when it is received from DOE. On February 10, 2026, and again on May 7, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities. On August 07, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities.
- If ground disturbing activities occur during construction, the applicant will monitor ground disturbance, and if any previously unidentified historic properties, including archeological resources, are discovered, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA. Should any unanticipated effects to previously identified historic properties, including archaeological resources, be identified during construction activities, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA.

EHP Additional Info

There is no additional environmental historical preservation on **FAASt [38kV Line 4000 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Final Reviews

Final Review

Reviewed By LEFRANC-GARCIA, CARLOS L.

Reviewed On 09/25/2026 8:07 PM PDT

Review Comments

Version 0 contemplates \$42,015.68 (federal share) for incidental vegetation clearance associated with 3.12 miles of the 38kV Line 4000 – Entire Line. No permanent infrastructure repairs are included in the approved Scope of Work. The Work to Be Completed cost is \$48,152.74, based on \$15,433.57 per mile, and the final PA project cost is \$46,684.08.

Recipient Review

Reviewed By Mulero, Noel

Reviewed On 10/06/2026 2:52 PM PDT

Review Comments

Recipient review completed. Applicant must ensure to compliance with all regulatory requirements, Record of Environmental Consideration (REC) Special Conditions and PA policy. This project applies to the Department of Energy's executive order. This means that DOE is the lead agency for environmental matters. Project is ready for applicant review.

Project Signatures

Reviewed By Unsigned

Reviewed On Unsigned

Award Information

EMMIE Imported Version Information

Version #	Eligibility Status	Current Location	Bundle Number	Project Amount	Cost Share	Federal Share Obligated	Date Obligated
No Records							

Drawdown History

EMMIE Drawdown Status As of Date	IFMIS Obligation #	Expenditure Number	Expended Date	Expended Amount
No Records				

Obligation History

Version #	Date Obligated	Obligated Cost	Cost Share	IFMIS Status	IFMIS Obligation #
0	10/14/2026	\$42,015.68	90%	Accepted	4339DRPRP01083251

**Department of Homeland Security
Federal Emergency Management Agency**

v0

General Info

Project #	1070362	P/W #	108326	Project Type	Specialized
Project Category	F - Utilities	Applicant	PR Electric Power Authority (000-UA2QU-00)		
Project Title	FAASt [38kV Line 5300 – Entire Line] (Vegetation) (HM Cost Alignment)			Event	4339DR-PR (4339DR)
Project Size	Small	Declaration Date	9/20/2017		
Activity Completion Date	9/20/2027	Incident Start Date	9/17/2017		
Process Step	Obligated	Incident End Date	11/15/2017		

Damage Description and Dimensions

The Disaster # 4339DR, which occurred between 09/17/2017 and 11/15/2017, caused:

Damage #1872604; FAASt [38kV Transmission Line 5300 – Entire Line] (Vegetation)

General Facility Information:

- **Facility Type:** Power generation, transmission, and distribution facilities
- **Facility:** FAASt [38kV Transmission Line 5300 – Entire Line] (Vegetation)
- **Facility Description:** The Puerto Rico Electric Power Authority (PREPA) owns more than 19,000 miles of transmission and distribution lines, as well as more than 400 substations. The facilities addressed in this project are all the overhead transmission and distribution lines (16,000+ miles), as well as substations. To ensure the functioning of this infrastructure to the level of service needed, keeping this equipment clear from vegetation is significant.
- **Approx. Year Built:** 1950
- **GPS Latitude/Longitude:** [REDACTED]

Final Scope

1872604 FAASt [38kV Transmission Line 5300 – Entire Line] (Vegetation)

Project 136271 (hereinafter PREPA FAASt Project) authorized \$9,459,885,412.39 (Federal Share) to be awarded to the Puerto Rico Electric Power Authority (PREPA, Subrecipient) as a fixed cost estimate (FAASt FCE agreement) based on eligible work without detailed scopes of work to restore disaster-damaged facilities. Eligible work for the Transmission and Distribution (T&D) system included restoration of:

Broken structures due to high winds such as poles/towers (counted as broken when poles were inclined, bent, torn, and/or cracked); and other damages/broken components such as transformers, insulators, conductors, grounding system, jumpers, Gang Operated Air Breakers (GOABs), pole hardware, guy wires and anchors.

FEMA deferred the 406 Hazard Mitigation Proposal (HMP) fixed cost offer in the PREPA FAASt Project until the Subrecipient submits its actual recovery solutions. FEMA also issued a clarification letter regarding whether hazard mitigation funding under Section 404 or Section 406 of the Stafford Act may be made available for the execution of a one-time, island-wide vegetation clearing and removal operation intended to mitigate the threat to the existing vegetation, if unintended to, poses to Puerto Rico's electric T&D system. See FEMA's letter to COR3, document Signed Vegetation

Management March 24 2023.pdf. The Subrecipient's actual recovery solution seeks a one-time Island-wide vegetation clearance and

removal operation intended to mitigate the threat to the existing vegetation, if untended to, poses to Puerto Rico's electric T&D system. The actual recovery solution seeks to mitigate Puerto Rico's electric T&D system, including areas without infrastructure repairs.

The actual recovery solution (scope and cost) will be captured in multiple individual projects (hereinafter Vegetation clearance HMP Sub-FAAST projects) to provide flexibility and enable multiple programmatic reviews simultaneously. The Vegetation clearance HMP Sub-FAAST projects do not include infrastructure repair work.

This project captures a portion of the Island-wide actual recovery solution, specifically the onetime vegetation clearance and removal operation intended to mitigate the 38kV Line 5300— Entire Line (see project note #1 and #2).

FEMA 406 Hazard Mitigation (HM) team will review this actual recovery solution and issue an FCE offer for the portion of the recovery solution that reduces risk of future similar damages. The Work to be Completed will be captured in the 406 HM scope section. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects will be adjusted as describe in FEMA-4339-DR-PR Public Assistance PREPA FAAST Post-Fix Cost Estimate Obligation Vegetation HMP Approach: 38kV. See document 956345 DR4339PR FAASTVegetationHMPApproach_38kVTrans.pdf. The PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope. WTBC Cost (PA) = \$15,433.57 per mile. Therefore, the total cost (PA) for this project will be \$51,921.08

D#	PA Vegetation Clearance Overlap per mile	Total miles	WTBC - PA Cost with Subrecipient Management & General Conditions	A&E - PA	Total - PA
1872604	\$15,433.57	3.47	\$53,554.49	(\$1,633.41)	\$51,921.08

Work to be completed total: \$53,554.49

A&E Deduction (Global A&E FAAST 335168): -\$1,633.41

Project Total: \$51,921.08

Project Notes:

1. This is a 38kV Transmission-Vegetation clearanceHMP Sub-FAAST project.
2. Vegetation clearance HMP Sub-FAAST projects will be written according to line type (Distribution: 13.2kV and down, and Transmission: 38 kV, 115kV, and 230 kV) because of the different ROWs and other characteristics. Multiple projects of each type will be submitted and reviewed for eligible PA 406 HM funding. Vegetation clearing work will only be submitted for those areas that vegetation represents strike potential (may cause future similar damage to the T&D system when subject to high winds). In the submittal of this project the Subrecipient's Authorized Representative attests that only the vegetation clearance submitted is to reduce strike potential and that the ROW for these lines has been, and will be, counted only once to avoid duplication within the vegetation clearance projects.
3. For more details of the requirements and conditions for the execution of a one-time, island-wide vegetation clearance and removal operation considered as an eligible Section 406 hazard mitigation proposal (HMP), please refer to document labeled: Attachment A FEMA letter dated March 24 2023.pdf.
4. For details on the SOW, refer to filename 1070362 -FAAST [38kV Line 5300 – Entire Line] (Vegetation) DSOW.pdf
5. Vegetation clearance funds will not be allocated to SubFAAST projects.
6. A&E cost included in this project will be reduced from this project and obligated under the FAAST Project #335168, A&E, as shown in the table above. The A&E project was obligated to track and account for costs associated with individual FAAST projects.
7. This project is part of Donor FAAST 136271 – MEPA078 Puerto Rico Electrical Power Authority (PREPA) Island Wide FAAST Project.

406 HMP Scope

Project number: [1070362] FAASSt [38kV Line 5300 – Entire Line] (Vegetation)

(vegetation)

Damage #: 1872604

Applicant: PR Electric Power Authority (000-UA2QU-00)

Location: Caguas, Puerto Rico

GPS Latitude/Longitude: From: [REDACTED]

Introduction:

Puerto Rico's electrical grid infrastructure has been severely compromised by extreme weather events, particularly with Hurricane Maria in September 2017. The hurricane caused widespread disruptions to transmission and distribution systems, largely due to vegetation impacts that collapsed distribution and transmission lines. Substantial infrastructure was damaged when trees downed utility power lines and poles, causing most of the transmission/distribution system to fail. Post-hurricane vegetation clearance to enable grid repair and restoration progressed slowly, considerably delaying overall electrical recovery. Remaining excess vegetation continues to cause operational outages, as ground faults occur when vegetation contacts power lines even during normal weather events. After the passage of Hurricane Maria, minimal cleaning work was carried out exclusively to clear the areas to carry out emergency repairs to the electrical system. These works were covered by Category B - Emergency Protective Measure, but excess vegetation on the electrical system remains an outstanding vulnerability.

Puerto Rico's grid modernization and mitigation one-time ROW clearance strategy will prioritize effective and proactive vegetation management protocols to prevent prolonged storm-related outages, thereby increasing the reliability of the electric system. These reliability and resiliency gaps are especially impactful to Puerto Rico, which has been facing increasingly frequent natural hazards such as hurricanes. This project is part of the Vegetation Reset Program which will impact the Transmission and Distribution systems for each of the 78 municipalities.

Hazard Mitigation Narrative:

In order to minimize damages in a future event, the Subrecipient's actual recovery solution seeks a one-time Islandwide vegetation remediation clearance for the above work included in the PREPA FAASSt Project, as according to the Public Assistance Alternative Procedures (PAAP) (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (hereinafter PR PAAP Guide) and FEMA's letter to COR3, document Signed Island-Wide Vegetation Clearance March 24, 2023. Section 406 hazard mitigation are funds that can be added to projects for the restoration of disaster damaged facilities and must prevent future damage caused by the declared event. Under DR-4339-PR, Section 406 hazard mitigation funds are based on eligible, technically feasible, and cost-effective mitigation activities proposed to reduce risk to the function of the disaster-damaged facilities. The portion of the recovery solution that reduces risk of future damage may be considered as eligible 406 mitigation.

The island-wide transmission and distribution grid was significantly damaged by the strong winds and heavy rainfall during the atmospheric event hurricane Maria. This resulted in many trees and other vegetation becoming a direct hazard to the electrical grid. A one-time 406 hazard mitigation island-wide vegetation clearance will benefit the reliability and resiliency of the Puerto Rico electrical grid, including the number and duration of customer outages during and after the work to complete the repairs to the electrical grid through other PREPA 428 FAASSt Projects. The scope of the global 406 Hazard Mitigation (HM) projects includes vegetation clearing across the entire width of the easement, plus a radius of 12 to 25 feet from energized conductors to directly reduce the potential for future damage to the "transmission and/or distribution" (T&D) systems. Each 406 HM Vegetation Reset project is correlated with an eligible 428 T&D project, in association with PREPA's electrical grid. Different regional projects are developed to impact all lines of the electrical system, including distribution lines and high-voltage transmission lines. Also, projects are defined in terms of line type (distribution or transmission) and population density of the area (high or low) to simplify the evaluation by the Environmental and Historical Preservation team (EHP).

The global project was divided into the following regions:

- Region 1 – San Juan
- Region 2 – Arecibo
- Region 3 – Bayamón
- Region 4 – Caguas
- Region 5 – Mayagüez
- Region 6 – Ponce

For each Region of the island, there will be two types of projects to capture the Vegetation Clearing activities within scopes of work: (1) single transmission line projects based on LUMA's priority list, capturing the lines or segments of lines affected most by vegetation interference, and (2) Regional DSOWs divided into groups (Groups A – F), as follows:

- Region 1 – San Juan
- Region 2 – Arecibo
- Group A – High/Low Density Distribution Lines
- Group B – 38 kV Transmission.
- Group C – Overlapped Distribution and Transmission Lines
- Group D - 115 kV Facilities
- Group E - Substation and Telecommunication Facilities.
- Group F – 230 Kv Facilities (Non-Region – Specific)

This 406 HM work is limited to what is necessary to directly reduce the potential of future damage to the T&D system assets, that exceeds what is necessary to clear vegetation for accessing facilities when carrying out repairs which are already established as eligible for FEMA funding utilizing the 428 FAAS Grant. Each 406 HM will correlate with an eligible 428 Transmission and/or Distribution (T&D) project in association with the PREPA power grid. There will be 7 Regional DSOW's developed capturing planned actions within scopes of work formulated with established criteria detailed for Distribution and Transmission lines/facility locations. The first DSOW is Group A - High Density areas with a low reflection of infrared light; the second DSOW is Group A Low Density locations where more vegetation density is present, which is determined by a higher level of reflection of infrared associated with Vegetation for 13.2kV and below locations; the third DSOW is Group B locations at 38kV level; the fourth DSOW is Group C - with known local environmental sensitivities at 38kv and below levels locations; the fifth DSOW is 115kV Facilities; and the sixth DSOW is Substation and Telecommunication Facilities. There will also be 230 kV Facilities (these installations have a separate Vegetation Clearance project that is not region- specific).

FAAST [38kV Line 5300 – Entire Line] (Vegetation)

This is a project for 38kV transmission lines in region 4 Caguas. The DSOW captures the scope of work and cost estimate for Vegetation Clearing intended to mitigate the threat that the existing vegetation, along 38kV lines within Caguas (if left untended to), poses Puerto Rico's electric grid.

This SOW is aligned with and leverages FEMA's Island-Wide Benefits Cost Analysis (IWBCA), which was used for this purpose and fully supports the mitigation measures employed within this project scope of work.

The Subrecipient's authorized representative (LUMA) estimates that this 406 Hazard Mitigation proposal for island-wide vegetation clearance will have immediate and future widespread benefits, including:

- Mitigation of the hazards due to vegetation impacts and damages.
- 70% annual reduction of outages caused by vegetation.
- 35-45% annual reduction of customer interruptions.
- Faster restoration for impacted customers.
- Improved safety for utility workers and the public.
- Support the rebuilding of the grid and effective execution of large-scale construction projects.

The following terms, when used in this document, shall have the meaning described below.

Compatible Species – Compatible species are those that are congruent with the intended use of the site, and include small trees, shrubs and herbaceous vegetation that will never grow into conflict with overhead conductors.

Incompatible Species – Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors.

Clearance - The minimum distance between two conductors, between conductors and their support or other objects, or between conductors and the ground. The National Electrical Safety Code (NESC) and PREPA's Technical Communication (See 12-02 attached) determine the minimum requirements regarding distances (vertical and horizontal) between an energized conductor or device and a structure, building or surface. Vegetation Clearing will be limited to clearing any vegetation affecting these clearances. This term is not

synonymous with easement. Clearances can be met without being within an easement. Clearance requirements must be complied with either when the Authority builds its facilities, as well as when a third party builds a structure. Clearances, in both cases, must be complied with by regulation, regardless of whether an easement exists. regardless of whether an easement exists.

Easement - is a line imposed on a property for the benefit of another belonging to a different owner. The property, in favor of which the easement is constituted, is called the dominant estate; the one who suffers it, servant property. An easement for electrical power lines provides PREPA and Luma as its agent various rights including reasonable access to the electric infrastructure to provide maintenance, repair, expand, operate and is established on the strips or portions of land where facilities of the T & D system are located or will be located, such as lines, poles, towers, equipment, and accessories. These acquired rights make it easier to carry out vegetation clearing work.

The PREPA distribution and transmission systems are populated with millions of plants but only some have the conditions, growth characteristics, and/or locations that make them compatible or incompatible with the safe and reliable energy delivery service. The Subrecipient's authorized representative recognizes the diversity of species in tropical ecosystems, and the general remediation strategy is to control incompatible species while encouraging the growth of compatible species. Compatible species may, on occasion, need control if their height or density impedes the necessary line of sight for inspections or access to perform resilience work. Within Appendix A and B are lists of protected flora species and incompatible flora species expected to be encountered during scope performance.

(I) Proposed 428 Public Assistance Scope of Work (SOW):

This project includes Public Assistance (PA) works; however, PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope, \$15,433.57 / mile calculation represents the PA Overlap.

PA incidental works will be deducted from the Section 406 Hazard Mitigation project costs to avoid duplication of works. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects.

FEMA performed an analysis to the PREPA FAAST documents and determined that vegetation clearing on each mile of 38 kV line requiring repair was on average 8.34%% related to the repair (428 PA) and 91.66% related to a mitigation measure (406 HM). The fixed-cost estimate for the PA scope is \$15,433.57 per **3.47 miles**, with a total project cost of **\$53,554.49**. For further details, refer to the document "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

(II) Hazard Mitigation Proposal (HMP) Scope of Work:

[1872604]; FAAST [38kV Transmission Line 5300 – Entire Line] (Vegetation)

As a result of DR-4339-PR, vegetation surrounding T&D assets are falling onto these facilities and interfering with the safe and reliable operation of the assets. The vegetation at present is currently causing outages when vegetation is in contact with the T&D assets. To mitigate the future damage across T&D assets and protect the 428 repairs and replacement along these facilities, clearing vegetation materials will be required. This 406 Hazard Mitigation Scope of Work is to directly reduce the potential of future, damages to the T&D system by clearing vegetative materials that pose an immediate threat to the power distribution lines, and identification for corrective actions related to clearing vegetation (consisting of shrubs, branches, limbs, stumps, bamboo, and trees that are directly impacting the resilience and productivity of the power grid) applicable to the existing PREPA electrical grid within Region 4 Caguas TL of Puerto Rico.

The extent and execution of this scope includes performing verification of facilities, assets and condition assessments for determining the most appropriate remediation, preparing work orders for executing the necessary vegetation remediation, by ways of tree felling, vegetation remediation, mechanical vegetation remediation, vegetative debris disposal via chipping, mulching, hauling, and recycling where applicable in easement of the PREPA power Distribution lines. LUMA is not planning to construct access roads. If the work to be done is not adjacent to an existing road, our contractor tree crews will minimize environmental disturbance by utilizing vegetation crews hiking by foot in and out of our existing easement.

Parameters for Performing 406 Hazard Mitigation Vegetation Clearing

Regulation 7282 requires that only shrubs and plants (no trees) be planted within the easement under power lines. Climbing plants and vines, as well as bamboo, are prohibited from being planted within an easement. The branches of trees planted outside the easement must not obstruct free passage of the power lines. The National Electrical Safety Code (NESC) and PREPA's Technical Communication establish the minimum required distances, both vertical and horizontal, between an energized conductor or device and any structure, building, or surface. Vegetation clearing will be restricted to removing any vegetation that interferes with these clearances. For power distribution lines, NESC and Regulation 7282 define the vertical distance from vegetation as 12-15 feet. By law, any trees, shrubs, or plants planted in violation of Regulation 7282 may be uprooted, removed, or cut down in accordance with the provisions of Regulation 7282 – for both compatible and incompatible species.

Industry standard practices will determine how the work will be performed. A healthy tree is less likely to fall over in a storm and damage overhead lines; therefore, vegetation will be pruned according to ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Vegetation that is improperly pruned could become susceptible to disease and decay, resulting in a hazard to both the line and public safety. ANSI A300 is the tree care industry standard of care in the USA. It was developed by Tree Care Industry Association and maintained by a consensus of various industry stakeholders through periodically reviewing and updating the guidelines. These standards provide guidance on how and where to prune vegetation to achieve clearances and maintain a healthy plant. In all cases, Subrecipient's authorized representative's vegetation clearing contractors will be required to perform clearing activities in a manner consistent with ANSI A300, NESC, and Regulation 7282 alignment with Resolution 4987, Organic Law 83 (amended version), Communication 12-02, and PREPA 's Comprehensive Management Plan establishing standard Distribution easement widths. Easement Clearance widths for distribution lines are given in the table below:

Recommended Easement width for overhead Transmission & Sub-Transmission Lines (feet)				
Construction type	Area	Voltage(Kv)		
		38	115	230
Single Circuit	Urban	25 ft	30 ft	40 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Same Structure	Urban	25 ft	40 ft	60 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Different Structures	Rural	50 ft	100 ft	100 ft

Scope of Work Inside Easement – Incompatible Species

Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors. For the power distribution lines, all Incompatible Species will be cleared from the full width of the easement. "Clearing" in this context includes the following activities: tree removal, severing of vines, cutting, vegetation mastication.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified working at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter Incompatible Species by hand.
- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

Scope of Work Inside Easement – Compatible Species:

Compatible vegetation species will be cleared consistent with the distances identified in Regulation 7282, which means that any species with the potential to encroach within 12 feet of the conductors at full size will be removed using the same methods discussed above. Even though the distances identified in Regulation 7282 are vertical clearances, Compatible Species encroaching on the conductors from any direction can pose a hazard to the distribution system, with the maximum edge of the conductors to be 12 feet wide centered on the pole. Therefore, the 12-foot clearance is being applied to both vertical and horizontal clearances. For areas with overhead distribution systems located in the backyard or side yard, the certified easement width from LUMA Land Records office will use for clearing.

In rare cases where Subrecipient's authorized representative encounters significant resistance from landowners or stakeholders to remediate vegetation, Subrecipient's authorized representative will work with landowners or stakeholders to determine if Incompatible and Compatible Species can be pruned to mitigate the hazard to the lines instead of being completely removed

Vegetation with the potential to encroach within 12 feet of conductor — Compatible or Incompatible.

Any vegetation species—whether Compatible or Incompatible—that have the potential (when at full size) to encroach within 20 feet of the conductor will be cleared using one of the methods discussed below:

- **Tree Removal:** Removing above-ground portions of trees while leaving stumps in place.
- **Severing of Vines:** Cutting vines at the base to create an air gap between the root system and the structure.
- **Cutting:** Hand removal of small-diameter incompatible species.
- **Vegetation Mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch. Using heavy equipment to reduce standing trees to woody debris.

All Other Incompatible Species within the Recommended Easement Width:

- All other Incompatible Species will be cleared from the full width of the recommended easement width. The clearing methods described above (tree removal, severing of vines, cutting, and vegetation mastication) will be utilized.

Scope of Work Outside Easement – Species Growing into the Easement

There is the potential for vegetation outside or along the boundary of the easement to interfere with the operation of power distribution lines. Appropriate clearances around the conductors must be achieved to protect the lines from future damage. For distribution lines, Subrecipient's authorized representative has established a minimum clearance distance of 12 feet from all conductors, with the maximum edge of the conductors to be 12 feet wide centered on the pole. This distance is consistent with the vertical distance established in Regulation 7282. If there are species encroaching on the 12-foot clearance outside or along the boundary of the easement, these species will be pruned to obtain at least 20 feet of clearance from the conductors at the time clearance work occurs. In cases where following ANSI A300 best practices require clearance beyond 12 feet, the maximum distance cleared will not exceed an additional 3 feet from set clearing distance. Diagrams illustrating these clearing distances are provided as attachments within Grants Portal. The following clearing methods will be provided as Attachment B-*“FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf”*

- **Tree pruning:** Qualified personnel work from an aerial platform or while climbing within a crown of trees to prune the tree. All pruning work wounds the tree. Done poorly, pruning can result in an exaggerated regrowth response by adversely altering tree architecture and increasing exposure to decay organisms that can weaken the tree. These adverse consequences increase the likelihood of tree-initiated faults causing system interruptions and customer outages. Proper arboriculture techniques will be utilized.
- **Tree removal:** Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- **Severing of vines:** Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified worker at ground level. The upper portion of the vine remains attached and is not removed.
- **Cutting:** Cutting typically involves the removal of small diameter species by hand.

· Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

FEMA 38kV Assessment & Methodology:

LUMA documentation claims a 100% clearance for the entire project segment based on the total length of the feeder. This analysis would not be considered as the method for validation purposes.

Consequently, FEMA perform a 100% evaluation of each feeder to determine the quantity of miles of vegetation non-compatible. The tools used for this analysis are Google Earth, that allows a street view evaluation where the HM Specialist uses the imagery data for analyze the feeder lines adjacent to roads. Where the feeder is through mountains FEMA use top and 3D view maps that allows determine the elevations for mountains, forested areas (assess vegetation), and the topography of the land. When poles are at the top of mountains and lines run between mountains, only the vegetation around the poles will be considered. The total percentage of each line is the result of compiling all the sections analyzed. It is important to emphasize that after work completed, the subrecipient can submit additional eligible vegetation clearance distance not included in this vegetation clearance percent analysis.

FEMA Analysis:

The total miles to be addressed in the Hazard Mitigation Proposal (HMP) is **4.71 miles**, which includes a 10% buffer due the method of assessment (desktop review), providing sufficient funds to ensure vegetation works are covered. This amount is estimated value, that will be adjusted based on the amount of actual work performed.

The cost estimate is based on two vegetation clearance scenarios, (1) the full clearance represents those lines that at both side sides of the right of way have vegetation that needs to be cleared. (2) is the half clearance represented for those circuits alongside roadways and only needs clearance at one side of the right of way. As a result, the total miles used for the cost estimate is **3.47 miles**, which reflects these adjustments for segments that do not require full clearing. This amount is estimated value, based on a desktop review that will be adjusted based on the amount of actual work performed and evidence of the actual work performed.

	HMP	Cost Estimate
Total Project Miles:	15.42	15.42
Vegetation Miles at 100% of Work	2.03	2.03
Vegetation Miles at 50% of Work	2.25	1.12
Total Miles to Clean	4.28	3.16
Buffer Acceptance:	0.10	10%
Vegetation Miles at 100% + Buffer	2.23	2.23
Vegetation Miles at 50% + Buffer	2.47	1.24
Total Miles to Clean with Buffer	4.71	3.47
% of Miles to Clean with Buffer	31%	23%

(III) Hazard Mitigation Proposal (HMP) Cost:

¹ Vegetation Clearance Cost per Mile (Base Cost) =	\$176,173.47 / mile
Risk Factor approved by the DR4339-PR leadership (5%) =	<u>\$8,808.67 / mile</u>
Vegetation Clearance Cost per Mile (w/Soft Cost) =	<u>\$184,982.14 /mile</u>
² PA Vegetation Clearance Overlap per Mile (Deduction) =	<u>(\$15,433.57/ mile)</u>
Hazard Mitigation Total Cost per Mile =	\$169,548.57 / mile
Project Total Miles with Vegetation:	3.16-miles
Buffer Acceptance:	10%
Project Total Miles with Vegetation:	<u>3.47 miles</u>
Hazard Mitigation Total Cost =	\$588,333.54

Note: The \$169,548.57 / mile calculation represents the total cost (base costs + soft costs – PA Overlap). For this project, breaking down that total cost further yields the approximate figures below. For additional information please see the attached document.³

Total Net Hazard Mitigation Cost (Base Cost) =	\$560,317.66
+ HM (Management & General Conditions Factors) =	<u>\$28,015.88</u>
Hazard Mitigation Total Cost =	\$588,333.54

(IV) Hazard Mitigation Proposal (HMP) Cost Distribution:

Architecture and Engineering (A&E) =	\$17,944.17	
Remaining Vegetation Clearance Cost =	<u>\$570,389.37</u>	

Hazard Mitigation Total Cost =	\$588,333.54	
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(V) HMP Cost-Effectiveness Calculations:

FEMA's Benefit-Cost Analysis, BCA, methodology evaluates the expected risk reduction benefits of a hazard mitigation project and compares those benefits to the cost of the mitigation project. FEMA Public Assistance Program and Policy Guide, PAPPG, Version 3.1, April 2018, Chapter 2, Section VII.C, page 98, considers mitigation measures to be cost-effective when they are demonstrated through an acceptable BCA using FEMA's BCA methodologies and have a resulting Benefit-Cost Ratio, or BCR, equal to or greater than 1.0.

For PREPA infrastructure under FEMA DR-4339-PR, FEMA developed an Island Wide Benefit Cost Analysis, or IWBCA, to evaluate cost-effectiveness at the electrical system level rather than through separate project-specific BCAs. The IWBCA characterizes the PREPA/LUMA system as a single project for mitigation purposes, focuses on system-wide resiliency, and supports the development of cost-effective mitigation projects while avoiding double counting, or duplication, of benefits. The IWBCA applies one BCA to the entire FAASt project and includes benefits based on future costs avoided from physical damage to infrastructure, costs related to the response and reconnection effort, and loss of function for electric service caused by the storm.

The IWBCA established a maximum potential mitigation benefit for the PREPA system of \$7.6 billion. This figure represents the estimated total potential mitigation benefit with the highest confidence and was developed using the incurred costs of the PREPA FEMA Accelerated Award Strategy, FAASt, fixed cost estimate, FCE, the mission assignments used for the reconnection effort, and costs associated with loss of service. The IWBCA results were developed by the PA Mitigation team using the best available data and were further refined and concurred with by FEMA Region 2 PA Mitigation team members and FEMA HQ groups, including the Community Infrastructure Resilience, CIR, Branch and Disaster Implementation, DI, Branch. This maximum potential benefit must be tracked to ensure that the combined cost of all approved mitigation proposals does not exceed the maximum potential benefit.

The Hazard Mitigation Proposal, HMP, described herein has a total Hazard Mitigation cost of **\$588,333.54**. In accordance with FEMA's internal IWBCA benefit tracking, the maximum potential benefit remaining in the IWBCA is **\$4,989,959,061.93**. The cost of this HMP, when combined with all other approved IWBCA-related proposals funded, does not exceed the remaining available IWBCA benefit. Therefore, this HMP is deemed cost-effective under the FEMA PAPPG Version 3.1, April 2018, Chapter 2, Section VII.C, BCA Rule, because the IWBCA demonstrates an acceptable BCA with a Benefit-Cost Ratio equal to or greater than 1.0.

For validation, reviewers should refer to the attached IWBCA Package, including the IWBCA narrative and backup documentation, which define the IWBCA methodology, inputs, and supporting calculations. Reviewers should also confirm that the project has been included in the current IWBCA benefit tracking record to verify that the total approved IWBCA-related mitigation costs remain below the maximum potential benefit and that no duplication of benefits has occurred.

This Hazard Mitigation Proposal meets the eligible repair and restoration cost-effectiveness requirements. See the Mitigation Profile Documents Tab in Grants Manager for the complete supporting documentation, including the HMP cost estimate and supporting documents file.

(VI) Compliance and Assurance Requirements:

A) HMP GENERAL NOTES:

By agreeing to implement the hazard mitigation measures in this HMP, the Applicant/Sub-Applicant is bound by the specific guidelines listed within this document.

COSTS AND GENERAL CONDITIONS: The vegetation removal cost is established according to the average base cost of **\$176,173.47 / mile**. Additionally, DR4339-PR leadership has approved the application of a 5% risk factor to the average cost per mile, resulting in **\$184,982.14 / mile**. After deducting Public Assistance (PA) \$15,433.57 amount (incidental work- refer to document FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf), the final total obligated amount through PA 406 is **\$169,548.57 / mile**.

DOCUMENTATION REQUIREMENTS: The subrecipient shall document all vegetation removal work, including but not limited to the following:

- Before and after photographs of the total distance included in the HMP Scope of work that clearly show the condition of the area before and after the vegetation clearance.

- A digital map in ArcGIS format showing all areas where vegetation removal was performed. Location information must be provided, including the physical address, GPS coordinates from start to finish of clearance work, and contact information for private property (when applicable).

- Work orders must account for the entire feeder length distance and include a description of the sections both with and without vegetation. Material disposal documentation must specify whether the material was chipped and removed, left on-site, or transported to a landfill.

Note: All vegetation clearance projects must include the above documentation to define the work completed prior to project closeout.

COST DISTRIBUTION: Recognizing that the established cost is an average per mile, it is understood that actual expenses for each feeder or area may deviate (either underrun or overrun) from the estimated project amount. The 406 HMP scope and cost agreement sets an average cost per mile for vegetation clearance, allowing the subrecipient to manage funds across the various projects that comprise the vegetation asset. The *Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, January 1, 2022 (PR PAAP Guide)*, states that if funds for 406 Mitigation are included in the fixed-cost subaward, the subrecipient must complete the approved Scope of Work (SOW) of the Hazard Mitigation Proposal (HMP) in order to retain the 406 Mitigation funding. Consequently, only completed distance in the HM Scope of work, supported by the necessary back-up documentation (e.g., verified mitigated clearance distance), will be eligible for fund retention. Any uncompleted work from the HM SOW (e.g., miles not documented with mitigated clearance distance) will be de-obligated during the closeout process.

SCOPE OF WORK DEVELOPMENT OF HAZARD MITIGATION: FEMA will evaluate each mitigation opportunity to first determine what measures or portions of solutions could be funded through Section 406 mitigation. FEMA analyzes the proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and Eos. FEMA, the Applicant, Recipient, and Sub-recipients will develop and agree to scopes of work (SOW) and cost estimates to repair, restore, or replace eligible facilities including 406 Hazard Mitigation" (Page 6).

COMPLETION OF HAZARD MITIGATION SCOPE OF WORK: If this HMP is approved and the mitigation is not performed, the Applicant must apply for a change in the Scope of Work and a de-obligation of the HMP funding. Failure to complete the work of the HMP may limit future FEMA funding of repairs at the site in the event that a similar disaster event results in similar damage at the site.

CHANGES TO THE HAZARD MITIGATION SCOPE OF WORK FOR LARGE PROJECTS:

Per PAAP PA Process (Section 428), Guide for Permanent Work, February 10, 2020, "A Subrecipient may alter the 406-hazard mitigation SOW (HMP) after FEMA, the Recipient, and Subrecipient agree on the cost estimate for the initial proposal. After the project is obligated, the SOW for the HMP can be changed only once and the timeline for this change will be established based on a facility-by-facility basis. The proposed change will require evaluation by FEMA for eligibility and EHP. As part of the eligibility review, FEMA will evaluate the SOW, technical feasibility, the level of protection, the revised cost estimate, and cost effectiveness of the new hazard mitigation proposal, and, if approved, will adjust the scope and cost estimate accordingly." (Page 14)

HAZARD MITIGATION DESIGN: This HMP is for estimating purposes only and not to be construed as a project design. If the site's final placement and configuration are different than the preliminary estimate, the Applicant should submit a change in scope request. This HMP is subject to further review prior to award.

HAZARD MITIGATION CONSTRUCTION: The Applicant must provide & maintain competent & adequate engineering design & supervision during the construction phase to ensure that the completed work conforms to the approved plans & specifications & all applicable material & construction standards.

As a condition of the FEMA mitigation grant, the Applicant is responsible for the determination of and compliance with all applicable requirements, codes, standards and specifications in connection with the project, including but not limited to the Puerto Rico Building Code of 2018 (2018 PRBC), IBC, IRBC, NFIP Floodplain Management Regulations outlined in 44 C.F.R 60.3, ASCE 24, ASCE 7, and receiving all applicable permits & approvals prior to construction.

MAINTENANCE OF HAZARD MITIGATION: The Applicant shall ensure proper maintenance of the installed mitigation measures, per manufacturer and designer specifications. Any adaptations or installations not approved or that renders the hazard mitigation measure ineffective shall be removed by the Applicant. Examples include, but are not limited to, improper installation of roof-mounted equipment or installation of window-mounted air-conditioning units.

ENVIRONMENTAL AND HISTORIC PRESERVATION: Eligibility and funding for the mitigation at this site on this project will be subject to the compliance of all environmental laws, regulations, and executive orders applicable to the site. This project will undergo a EHP compliance review, after obligation any changes to the SOW will likely trigger an additional EHP compliance review of the revised SOW.

ATTACHMENTS:

Please refer to the following documents.

1. "Island-Wide Vegetation Clearance - FEMA letter dated March 24, 2023.pdf"

2. "FAASVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"
3. "Appendix A and B - Protected Flora and Incompatible Flora Species.pdf"
4. "WBCA HMP Package.pdf"
5. "PN1070362-TL5300_38KV_Caguas.kmz"
6. "PN1070362-DR4339PR-HMCE-IEP-20260914-RGL.xlsm"
7. "PN1070362-DR4339PR-HMP-20260914-RGL.pdf"

Cost

Code	Quantity	Unit	Total Cost	Section
9001	1	Lump Sum	\$53,554.49	Uncompleted
3510	1	Lump Sum	(\$1,633.41)	Uncompleted

CRC Gross Cost \$51,921.08

Total 406 HMP Cost \$0.00

Total Insurance Reductions \$0.00

CRC Net Cost \$51,921.08

Federal Share (90.00%) \$46,728.98

Non-Federal Share (10.00%) \$5,192.10

Subgrant Conditions

- Applicants must retain all source documentation for each large project for three years after the date the Recipient submits to FEMA certification of completion of the project and all source documentation for small projects for three years after the Recipient submits to FEMA certification of the applicant's last small project. See Title 2 Code of Federal Regulations (C.F.R.) § 200.334. Recipients may require longer retention periods. Real property and equipment disposition, audits, and litigation may also require longer retention periods. If requested, Applicants must provide documentation to FEMA. Recipients may require documentation not otherwise required by FEMA (such as actual cost documentation for Small Projects). In such cases, the Applicant must provide the documentation to the Recipient.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance in effect at the time of the declaration. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise. DHS Standard Terms and Conditions are viewable at <https://www.dhs.gov/publication/dhs-standard-terms-and-conditions>.
- The applicant acknowledges that the Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 200.110.
- The applicant acknowledges that PA funding must be used exclusively for the work specified in the approved project. If a change to the approved scope of work is needed, the applicant must submit a written request through the Recipient to FEMA before it commences work associated with a change.
- Applicants must inform FEMA of each purchased equipment item with a fair market value over \$10,000 after it is no longer needed for federally funded programs or projects. Applicants must also inform FEMA of any unused residual supplies when the aggregate total exceeds \$10,000. See Title 2 C.F.R. §§ 200.313 and 200.314. FEMA reduces eligible funding by this amount.
- The Subrecipient provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.
- The Recipient must submit its certification of the subrecipient's completion of all of its small projects and compliance with all environmental and historic preservation requirements within 180 days of the applicant's completion of its last small project, or the latest approved deadline, whichever is sooner.
- The Applicant certifies that all work claimed was or will be delivered in an impartial manner without discrimination as required by Title VI of the Civil Rights Act, Section 308 of the Stafford Act, 42 U.S.C. § 5151, and applicable provisions of laws and authorities prohibiting discrimination.
- The Applicant certifies that all impacts/damage claimed was a direct result of the Presidential declaration, was not pre-existing damage, and did not result from a lack of maintenance.
- The applicant certifies that all work claimed was required as a direct result of the major disaster declaration, is located within the designated area, and is the Applicant's legal responsibility.
- The applicant certifies that all costs claimed are reasonable and of a type recognized as ordinary and necessary for the type of work as required by 44 C.F.R. § 206.228 and 2 C.F.R. § 200.404.
- The applicant certifies that no work or costs claimed are covered by another funding source. Pursuant to section 312 of the Stafford Act, 42 U.S.C. § 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The applicant acknowledges it is required to notify FEMA through the recipient if it receives assistance for the same work or costs from another Federal agency, insurance, or any other source and return any duplicated funds to FEMA.
- The applicant certifies that all facilities are being restored in accordance with all federal and SLTT code and standard requirements.
- The applicant acknowledges it must comply with EHP laws, regulations, and Executive Orders (EO), including but not limited to, the

Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA). The applicant must afford FEMA the opportunity to perform EHP reviews prior to starting any work that has potential to impact the environment or historic properties, including archaeological resources. If the applicant starts work prior to FEMA's completion of the EHP review, it jeopardizes PA funding for the entire project.

- The applicant acknowledges that under 2 C.F.R. Part 200, it must follow their documented procurement procedures, provided they conform to federal procurement and contracting requirements. The applicant certifies that it is using the most restrictive of either its own documented policies and procedures for procurement or federal procurement and contracting laws in accordance with 2 C.F.R. §§ 200.317 - 200.327. The Applicant is following Environmental Protection Agency guidelines for procurement of recovered materials; and including all applicable required contract provisions.
- The applicant certifies that all information provided is true and correct. Upon submittal this project application becomes a legal document. The False Claims Act (31 U.S.C. §§ 3729-3733) prohibits the submission of false or fraudulent claims for payment to the federal government. It is a violation of federal law to intentionally make false statements or hide information when applying for Public Assistance. This can carry severe criminal and civil penalties including a fine of up to \$250,000, imprisonment, or both (18 U.S.C. §§ 287, 1001, 1040, and 3571).
- The applicant acknowledges that it must obtain and maintain insurance coverage for all buildings, contents, equipment, and vehicles in an amount equal to or greater than the total cost, prior to any reductions as required by the Stafford Act § 311, 42 U.S.C. §5154, 44 C.F.R §§ 206.251 - 206.253, and in accordance with FEMA Policy 206-086-1 Public Assistance Policy on Insurance.

Insurance

Additional Information

9/14/2026

Does the Applicant have a Commercial Policy: Yes.

Does the Applicant's Commercial Policy extend coverage for the damage described in this project: No.

Property insurance coverage for the electrical distribution facilities represented on this project are not insured or insurable. No insurance relief is anticipated. No Obtain and Maintain requirement will be made.

FEMA requires the applicant to take reasonable efforts to pursue claims to recover insurance proceeds that it is entitled to receive from its insurer(s). In the event that any insurance proceeds are received for these expenses those proceeds must be reduced from FEMA Public Assistance funding to ensure no duplication of benefits has occurred.

No duplication of benefits from insurance is anticipated for work described in this application. In the event any part or all costs are paid by an insurance policy, a duplication of benefits from insurance will occur. Applicant must notify grantee and FEMA of such recoveries and the Sub-Grant award amount must be reduced by actual insurance proceeds.

No insurance requirements will be required for this project. Insurance requirements are specific to permanent work to replace, restore, repair, reconstruct, or construct buildings, contents, equipment, or vehicles. (FEMA Recovery Policy FP 206-086-1).

No insurance narrative will be produced or uploaded into documents or attachments.

Jesus M. Vela Ayala, PA Senior Insurance Specialist - CRC Atlantic, Guaynabo, PR

O&M Requirements

There are no Obtain and Maintain Requirements on **FAAST [38kV Line 5300 – Entire Line] (Vegetation) (HM Cost Alignment)**.

406 Mitigation

There is no additional mitigation information on **FAAST [38kV Line 5300 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and executive orders?

Yes

EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- On May 16, 2025, the Secretary of the U.S. Department of Energy (DOE) issued Order 202-25-2 (Order), pursuant to the authority vested in him by section 202(c) of the Federal Power Act (FPA), 16 U.S.C. § 824a(c), and section 301(b) of the Department of Energy Organization Act, 42 U.S.C. § 7151(b). The Order sought to expedite repair and maintenance efforts to the electrical grid of Puerto Rico by directing the Puerto Rico Electric Power Authority (PREPA) to perform vegetation management, including vegetation clearing to reestablish a right-of-way, for particular transmission and distribution facilities in the Territory as specified in the Order. The Order required PREPA to identify certain parameters by which the directed work would be performed, and required that all work be performed, to the maximum extent practicable, in a manner consistent with all applicable Federal, State, or local environmental laws or regulations and minimize any adverse environmental impacts. However, pursuant to Section 202(c)(3) of the FPA, to the extent any omission or action taken by PREPA that was necessary to comply with the Order, including any omission or action taken to voluntarily comply with the Order, caused PREPA to not comply with any Federal, State, or local environmental law or regulation, including any environmental conditions in this REC's "Standard Conditions," such omission or action shall not be considered a violation of such environmental law or regulation, or subject PREPA to any requirement, civil or criminal liability, or citizen suit under such environmental law or regulation. On August 15, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. To renew/reissue the Order, DOE was required to consult with the primary Federal agency with expertise in the environmental interest protected by such law or regulation and include in the Order conditions necessary to minimize any adverse environmental impacts to the extent practicable. Pursuant to Section 202(c)(4)(B) of the FPA, DOE provided the relevant agencies the opportunity to submit conditions for work performed under the Order, to be included in the Order. According to DOE, no conditions were submitted by the agencies for inclusion in the Order. On November 12, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. DOE and FEMA have agreed that DOE is the lead agency for activities that fall under the prior and any future DOE 202(c) orders issued under the Federal Power Act to resolve the current and related emergencies in Puerto Rico. FEMA has requested that DOE provide FEMA with all documentation relating to their EHP compliance. FEMA will review and incorporate all available information and data for this project pertaining to applicable environmental laws and regulations into this REC when it is received from DOE. On February 10, 2026, and again on May 7, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities. On August 07, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities.
- If ground disturbing activities occur during construction, the applicant will monitor ground disturbance, and if any previously unidentified historic properties, including archeological resources, are discovered, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA. Should any unanticipated effects to previously identified historic properties, including archaeological resources, be identified during construction activities, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA.

EHP Additional Info

There is no additional environmental historical preservation on **FAAST [38kV Line 5300 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Final Reviews

Final Review

Reviewed By LEFRANC-GARCIA, CARLOS L.

Reviewed On 09/25/2026 8:07 PM PDT

Review Comments

Version 0 contemplates \$46,728.98 (federal share) for incidental vegetation clearance associated with 3.47 miles of the 38kV Line 5300 – Entire Line. No permanent infrastructure repairs are included in the approved Scope of Work. The Work to Be Completed cost is \$53,554.49, based on \$15,433.57 per mile, and the final PA project cost is \$51,921.08.

Recipient Review

Reviewed By Mulero, Noel

Reviewed On 10/06/2026 1:48 PM PDT

Review Comments

Recipient review completed. Applicant must ensure to compliance with all regulatory requirements, Record of Environmental Consideration (REC) Special Conditions and PA policy. This project applies to the Department of Energy's executive order. This means that DOE is the lead agency for environmental matters. Project is ready for applicant review.

Project Signatures

Reviewed By Unsigned

Reviewed On Unsigned

Award Information

EMMIE Imported Version Information

Version #	Eligibility Status	Current Location	Bundle Number	Project Amount	Cost Share	Federal Share Obligated	Date Obligated
No Records							

Drawdown History

EMMIE Drawdown Status As of Date	IFMIS Obligation #	Expenditure Number	Expended Date	Expended Amount
No Records				

Obligation History

Version #	Date Obligated	Obligated Cost	Cost Share	IFMIS Status	IFMIS Obligation #
0	10/14/2026	\$46,728.98	90%	Accepted	4339DRPRP01083261

**Department of Homeland Security
Federal Emergency Management Agency**

v0

General Info

Project #	1070366	P/W #	108330	Project Type	Specialized
Project Category	F - Utilities	Applicant	PR Electric Power Authority (000-UA2QU-00)		
Project Title	FAASt [38kV Line 100 – Entire Line] (Vegetation) (HM Cost Alignment)			Event	4339DR-PR (4339DR)
Project Size	Small	Declaration Date	9/20/2017		
Activity Completion Date	9/20/2027	Incident Start Date	9/17/2017		
Process Step	Obligated	Incident End Date	11/15/2017		

Damage Description and Dimensions

The Disaster # 4339DR, which occurred between 09/17/2017 and 11/15/2017, caused:

Damage #1872582; FAASt [38kV Transmission Line 100 – Entire Line] (Vegetation)

General Facility Information:

- **Facility Type:** Power generation, transmission, and distribution facilities
- **Facility:** FAASt [38kV Transmission Line 100 – Entire Line] (Vegetation)
- **Facility Description:** The Puerto Rico Electric Power Authority (PREPA) owns more than 19,000 miles of transmission and distribution lines, as well as more than 400 substations. The facilities addressed in this project are all the overhead 38kV transmission lines. To ensure the functioning of this infrastructure to the level of service needed, keeping this equipment clear from vegetation is significant.
- **Approx. Year Built:** 1950
- **GPS Latitude/Longitude:** [REDACTED]

Final Scope

1872582 FAASt [38kV Transmission Line 100 – Entire Line] (Vegetation)

Project 136271 (hereinafter PREPA FAASt Project) authorized \$9,459,885,412.39 (Federal Share) to be awarded to the Puerto Rico Electric Power Authority (PREPA, Subrecipient) as a fixed cost estimate (FAASt FCE agreement) based on eligible work without detailed scopes of work to restore disaster-damaged facilities. Eligible work for the Transmission and Distribution (T&D) system included restoration of:

Broken structures due to high winds such as poles/towers (counted as broken when poles were inclined, bent, torn, and/or cracked); and other damages/broken components such as transformers, insulators, conductors, grounding system, jumpers, Gang Operated Air Breakers (GOABs), pole hardware, guy wires and anchors.

FEMA deferred the 406 Hazard Mitigation Proposal (HMP) fixed cost over in the PREPA FAASt Project until the Subrecipient submits its actual recovery solutions. FEMA also issued a clarification letter regarding whether hazard mitigation funding under Section 404 or Section 406 of the Stafford Act may be made available for the execution of a one-time, island-wide vegetation clearing and removal operation intended to mitigate the threat to the existing vegetation, if unintended to, poses to Puerto Rico's electric T&D system. See FEMA's letter to COR3, document Signed Vegetation Management March 24 2023.pdf. The Subrecipient's actual recovery solution seeks a one-time Island-wide vegetation clearance and removal operation intended to mitigate the threat to the existing vegetation, if unintended to, poses to Puerto Rico's electric T&D system. The actual recovery solution seeks to mitigate Puerto Rico's electric T&D system, including areas without infrastructure repairs.

The actual recovery solution (scope and cost) will be captured in multiple individual projects (hereinafter Vegetation clearance HMP Sub-FAAST projects) to provide flexibility and enable multiple programmatic reviews simultaneously. The Vegetation clearance HMP Sub-FAAST projects do not include infrastructure repair work.

This project captures a portion of the Island-wide actual recovery solution, specifically the onetime vegetation clearance and removal operation intended to mitigate the 38kV Line 100– Entire Line (see project note #1 and #2).

FEMA 406 Hazard Mitigation (HM) team will review this actual recovery solution and issue an FCE order for the portion of the recovery solution that reduces risk of future similar damages. The Work to be Completed will be captured in the 406 HM scope section. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects will be adjusted as describe in FEMA-4339-DR-PR Public Assistance PREPA FAAST Post-Fix~~ed~~st Estimate Obligation Vegetation HMP Approach: 38kV. See document 956345 DR4339PR FAASTVegetationHMPApproach_38kVTrans.pdf the PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope. WTBC Cost (PA) = \$15,433.57 per mile. Therefore, the total cost (PA) for this project will be \$118,805.00

DI#	PA Vegetation Clearance Overlap per mile	Total miles	WTBC - PA Cost with Subrecipient Management & General Conditions	A&E - PA	Total - PA
1872582	\$15,433.57	7.94	\$122,542.55	\$(3,737.55)	\$118,805.00

Work to be completed total: \$122,542.55

A&E Deduction (Global A&E FAAST 335168): -\$3,737.55

Project Total: \$118,805.00

Project Notes:

1. This is a 38kV Transmission-Vegetation clearanceHMP Sub-FAAST project.
2. Vegetation clearance HMP Sub-FAAST projects will be written according to line type (Distribution13.2kV and down, and Transmission: 38 kV, 115kV, and 230 kV) because of the di?erent ROWs and other characteristics. Multiple projects of each type will be submitted and reviewed for eligible PA 406 HM funding. Vegetation clearing work will only be submitted for those areas that vegetation represents strike potential (may cause future similar damage to the T&D system when subject to high winds). In the submittal of this project the Subrecipient’s Authorized Representative attests that only the vegetation clearance submitted is to reduce strike potential and that the ROW for these lines has been, and will be, counted only once to avoid duplication within the vegetation clearance projects.
3. For more details of the requirements and conditions for the execution of a one-time, island-wide vegetation clearance and removal operation considered as an eligible Section 406 hazard mitigation proposal (HMP), please refer to document labeled: Attachment A FEMA letter dated March 24 2023.pdf.
4. For details on the SOW, refer to filename 1070373-FAAST [38kV Line 1200 – Entire Line] (Vegetation) DSOW.pdf
5. Vegetation clearance funds will not be allocated to SubFAAST projects.
6. A&E cost included in this project will be reduced from this project and obligated under the FAAST Project #335168, A&E, as shown in the table above. The A&E project was obligated to track and account for costs associated with individual FAAST projects.
7. This project is part of Donor FAAST 136271 – MEPA078 Puerto Rico Electrical Power Authority (PREPA) Island Wide FAAST Project.

406 HMP Scope

Project number: [1070366] FAAST [38kV Transmission Line 100 – Entire Line] (Vegetation)

(vegetation)

Damage #: 1872582

Applicant: PR Electric Power Authority (000-UA2QU-00)

Location: Ponce, Puerto Rico

GPS Latitude/Longitude: From: [REDACTED]

Introduction:

Puerto Rico's electrical grid infrastructure has been severely compromised by extreme weather events, particularly with Hurricane Maria in September 2017. The hurricane caused widespread disruptions to transmission and distribution systems, largely due to vegetation impacts that collapsed distribution and transmission lines. Substantial infrastructure was damaged when trees downed utility power lines and poles, causing most of the transmission/distribution system fail. Post-hurricane vegetation clearance to enable grid repair and restoration progressed slowly, considerably delaying overall electrical recovery. Remaining excess vegetation continues to cause operational outages, as ground faults occur when vegetation contacts power lines even during normal weather events. After the passage of Hurricane Maria, minimal cleaning work was carried out exclusively to clear the areas to carry out emergency repairs to the electrical system. These works were covered by Category B - Emergency Protective Measure, but excess vegetation on the electrical system remains an outstanding vulnerability.

Puerto Rico's grid modernization and mitigation one time ROW clearance strategy will prioritize effective and proactive vegetation management protocols to prevent prolonged storm-related outages, thereby increasing the reliability of the electric system. These reliability and resiliency gaps are especially impactful to Puerto Rico, which has been facing increasingly frequent natural hazards such as hurricanes. This project is part of the for Vegetation Reset Program which will impact the Transmission and Distribution systems for each of the 78 municipalities.

Hazard Mitigation Narrative:

In order to minimize damages in a future event, the Subrecipient's actual recovery solution seeks a one-time Islandwide vegetation remediation clearance for the above work included in the PREPA FAASSt Project, as according to the Public Assistance Alternative Procedures (PAAP) (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (hereinafter PR PAAP Guide) and FEMA's letter to COR3, document Signed Island-Wide Vegetation Clearance March 24, 2023. Section 406 hazard mitigation are funds that can be added to projects for the restoration of disaster damaged facilities and must prevent future damage caused by the declared event. Under DR-4339-PR, Section 406 hazard mitigation funds are based on eligible, technically feasible, and cost-effective mitigation activities proposed to reduce risk to the function of the disaster-damaged facilities. The portion of the recovery solution that reduces risk of future damage may be considered as eligible 406 mitigation.

The island-wide transmission and distribution grid was significantly damaged by the strong winds and heavy rainfall during the atmospheric event hurricane Maria. This resulted in many trees and other vegetation becoming a direct hazard to the electrical grid. A one-time 406 hazard mitigation island-wide vegetation clearance will benefit the reliability and resiliency of the Puerto Rico electrical grid, including the number and duration of customer outages during and after the work to complete the repairs to the electrical grid through other PREPA 428 FAASSt Projects. The scope of the global 406 Hazard Mitigation (HM) projects includes vegetation clearing across the entire width of the easement, plus a radius of 12 to 25 feet from energized conductors to directly reduce the potential for future damage to the "transmission and/or distribution" (T&D) systems. Each 406 HM Vegetation Reset project is correlated with an eligible 428 T&D project, in association with PREPA's electrical grid. Different regional projects are developed to impact all lines of the electrical system, including distribution lines and high-voltage transmission lines. Also, projects are defined in terms of line type (distribution or transmission) and population density of the area (high or low) to simplify the evaluation by the Environmental and Historical Preservation team (EHP).

The global project was divided into the following regions:

- Region 1 – San Juan
- Region 2 – Arecibo
- Region 3 – Bayamón
- Region 4 – Caguas
- Region 5 – Mayagüez
- Region 6 – Ponce

For each Region of the island, there will be two types of projects to capture the Vegetation Clearing activities within scopes of work: (1) single transmission line projects based on LUMA's priority list, capturing the lines or segments of lines affected most by vegetation interference, and (2) Regional DSOWs divided into groups (Groups A – F), as follows:

- Region 1 – San Juan
- Region 2 – Arecibo

- Group A – High/Low Density Distribution Lines
- Group B – 38 kV Transmission.
- Group C – Overlapped Distribution and Transmission Lines
- Group D - 115 kV Facilities
- Group E - Substation and Telecommunication Facilities.
- Group F – 230 Kv Facilities (Non-Region – Specific)

This 406 HM work is limited to what is necessary to directly reduce the potential of future damage to the T&D system assets, that exceeds what is necessary to clear vegetation for accessing facilities when carrying out repairs which are already established as eligible for FEMA funding utilizing the 428 FAAS Grant. Each 406 HM will correlate with an eligible 428 Transmission and/or Distribution (T&D) project in association with the PREPA power grid. There will be 7 Regional DSOW's developed capturing planned actions within scopes of work formulated with established criteria detailed for Distribution and Transmission lines/facility locations. The first DSOW is Group A - High Density areas with a low reflection of infrared light; the second DSOW is Group A Low Density locations where more vegetation density is present, which is determined by a higher level of reflection of infrared associated with Vegetation for 13.2kV and below locations; the third DSOW is Group B locations at 38kV level; the fourth DSOW is Group C - with known local environmental sensitivities at 38kv and below levels locations; the fifth DSOW is 115kV Facilities; and the sixth DSOW is Substation and Telecommunication Facilities. There will also be 230 kV Facilities (these installations have a separate Vegetation Clearance project that is not region- specific).

FAAST [38kV Transmission Line 100 – Entire Line] (Vegetation)

This is a project for 38kV transmission lines in Region 6 Ponce. The DSOW captures the scope of work and cost estimate for Vegetation Clearing intended to mitigate the threat that the existing vegetation, along 38kV lines within Ponce (if left untended to), poses Puerto Rico's electric grid.

This SOW is aligned with and leverages FEMA's Island-Wide Benefits Cost Analysis (IWBCA), which was used for this purpose and fully supports the mitigation measures employed within this project scope of work.

The Subrecipient's authorized representative (LUMA) estimates that this 406 Hazard Mitigation proposal for island-wide vegetation clearance will have immediate and future widespread benefits, including:

- Mitigation of the hazards due to vegetation impacts and damages.
- 70% annual reduction of outages caused by vegetation.
- 35-45% annual reduction of customer interruptions.
- Faster restoration for impacted customers.
- Improved safety for utility workers and the public.
- Support the rebuilding of the grid and effective execution of large-scale construction projects.

The following terms, when used in this document, shall have the meaning described below.

Compatible Species – Compatible species are those that are congruent with the intended use of the site, and include small trees, shrubs and herbaceous vegetation that will never grow into conflict with overhead conductors.

Incompatible Species – Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors.

Clearance - The minimum distance between two conductors, between conductors and their support or other objects, or between conductors and the ground. The National Electrical Safety Code (NESC) and PREPA's Technical Communication (See 12-02 attached) determine the minimum requirements regarding distances (vertical and horizontal) between an energized conductor or device and a structure, building or surface. Vegetation Clearing will be limited to clearing any vegetation affecting these clearances. This term is not synonymous with easement. Clearances can be met without being within an easement. Clearance requirements must be complied with either when the Authority builds its facilities, as well as when a third party builds a structure. Clearances, in both cases, must be complied with by regulation, regardless of whether an easement exists. regardless of whether an easement exists.

Easement - is a line imposed on a property for the benefit of another belonging to a different owner. The property, in favor of which the easement is constituted, is called the dominant estate; the one who suffers it, servant property. An easement for electrical power lines provides PREPA and Luma as its agent various rights including reasonable access to the electric infrastructure to provide maintenance, repair, expand, operate and is established on the strips or portions of land where facilities of the T & D system are located or will be

located, such as lines, poles, towers, equipment, and accessories. These acquired rights make it easier to carry out vegetation clearing work.

The PREPA distribution and transmission systems are populated with millions of plants but only some have the conditions, growth characteristics, and/or locations that make them compatible or incompatible with the safe and reliable energy delivery service. The Subrecipient's authorized representative recognizes the diversity of species in tropical ecosystems, and the general remediation strategy is to control incompatible species while encouraging the growth of compatible species. Compatible species may, on occasion, need control if their height or density impedes the necessary line of sight for inspections or access to perform resilience work. Within Appendix A and B are lists of protected flora species and incompatible flora species expected to be encountered during scope performance.

(I) Proposed 428 Public Assistance Scope of Work (SOW):

This project includes Public Assistance (PA) works; however, PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope, \$15,433.57 / mile calculation represents the PA Overlap.

PA incidental works will be deducted from the Section 406 Hazard Mitigation project costs to avoid duplication of works. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects.

FEMA performed an analysis to the PREPA FAAST documents and determined that vegetation clearing on each mile of 38 kV line requiring repair was on average 8.34%% related to the repair (428 PA) and 91.66% related to a mitigation measure (406 HM). The fixed-cost estimate for the PA scope is \$15,433.57 per **7.94 miles**, with a total project cost of **\$122,545.85**. For further details, refer to the document "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

(II) Hazard Mitigation Proposal (HMP) Scope of Work:

[1872596] FAAST [38kV Transmission Line 100 – Entire Line] (Vegetation)

As a result of DR-4339-PR, vegetation surrounding T&D assets are falling onto these facilities and interfering with the safe and reliable operation of the assets. The vegetation at present is currently causing outages when vegetation is in contact with the T&D assets. To mitigate the future damage across T&D assets and protect the 428 repairs and replacement along these facilities, clearing vegetation materials will be required. This 406 Hazard Mitigation Scope of Work is to directly reduce the potential of future, damages to the T&D system by clearing vegetative materials that pose an immediate threat to the power distribution lines, and identification for corrective actions related to clearing vegetation (consisting of shrubs, branches, limbs, stumps, bamboo, and trees that are directly impacting the resilience and productivity of the power grid) applicable to the existing PREPA electrical grid within Region 6 Ponce TL of Puerto Rico.

The extent and execution of this scope includes performing verification of facilities, assets and condition assessments for determining the most appropriate remediation, preparing work orders for executing the necessary vegetation remediation, by ways of tree felling, vegetation remediation, mechanical vegetation remediation, vegetative debris disposal via chipping, mulching, hauling, and recycling where applicable in easement of the PREPA power Distribution lines. LUMA is not planning to construct access roads. If the work to be done is not adjacent to an existing road, our contractor tree crews will minimize environmental disturbance by utilizing vegetation crews hiking by foot in and out of our existing easement.

Parameters for Performing 406 Hazard Mitigation Vegetation Clearing

Regulation 7282 requires that only shrubs and plants (no trees) be planted within the easement under power lines. Climbing plants and vines, as well as bamboo, are prohibited from being planted within an easement. The branches of trees planted outside the easement must not obstruct free passage of the power lines. The National Electrical Safety Code (NESC) and PREPA's Technical Communication establish the minimum required distances, both vertical and horizontal, between an energized conductor or device and any structure, building, or surface. Vegetation clearing will be restricted to removing any vegetation that interferes with these clearances. For power distribution lines, NESC and Regulation 7282 define the vertical distance from vegetation as 12-15 feet. By law, any trees, shrubs, or plants planted in violation of Regulation 7282 may be uprooted, removed, or cut down in accordance with the provisions of Regulation 7282 – for both compatible and incompatible species.

Industry standard practices will determine how the work will be performed. A healthy tree is less likely to fall over in a storm and damage overhead lines; therefore, vegetation will be pruned according to ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Vegetation that is improperly pruned could become susceptible to disease and decay, resulting in a hazard to both the line and public safety. ANSI A300 is the tree care industry standard of care in the USA. It was developed by Tree Care Industry Association and maintained by a consensus of various industry stakeholders through periodically reviewing and updating the guidelines. These standards provide guidance on how and where to prune vegetation to achieve clearances and maintain a healthy plant. In all cases, Subrecipient's authorized representative's vegetation clearing contractors will be required to perform clearing activities in a manner consistent with ANSI A300, NESC, and Regulation 7282 alignment with Resolution 4987, Organic Law 83

(amended version), Communication 12-02, and PREPA 's Comprehensive Management Plan establishing standard Distribution easement widths. Easement Clearance widths for distribution lines are given in the table below:

Recommended Easement width for overhead Transmission & Sub-Transmission Lines (feet)				
Construction type	Area	Voltage(Kv)		
		38	115	230
Single Circuit	Urban	25 ft	30 ft	40 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Same Structure	Urban	25 ft	40 ft	60 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Different Structures	Rural	50 ft	100 ft	100 ft

Scope of Work Inside Easement – Incompatible Species

Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors. For the power distribution lines, all Incompatible Species will be cleared from the full width of the easement. "Clearing" in this context includes the following activities: tree removal, severing of vines, cutting, vegetation mastication.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified working at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter Incompatible Species by hand.
- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

Scope of Work Inside Easement – Compatible Species:

Compatible vegetation species will be cleared consistent with the distances identified in Regulation 7282, which means that any species with the potential to encroach within 12 feet of the conductors at full size will be removed using the same methods discussed above. Even though the distances identified in Regulation 7282 are vertical clearances, Compatible Species encroaching on the conductors from any

direction can pose a hazard to the distribution system, with the maximum edge of the conductors to be 12 feet wide centered on the pole. Therefore, the 12-foot clearance is being applied to both vertical and horizontal clearances. For areas with overhead distribution systems located in the backyard or side yard, the certified easement width from LUMA Land Records office will use for clearing.

In rare cases where Subrecipient's authorized representative encounters significant resistance from landowners or stakeholders to remediate vegetation, Subrecipient's authorized representative will work with landowners or stakeholders to determine if Incompatible and Compatible Species can be pruned to mitigate the hazard to the lines instead of being completely removed

Vegetation with the potential to encroach within 12 feet of conductor — Compatible or Incompatible.

Any vegetation species—whether Compatible or Incompatible—that have the potential (when at full size) to encroach within 20 feet of the conductor will be cleared using one of the methods discussed below:

- **Tree Removal:** Removing above-ground portions of trees while leaving stumps in place.
- **Severing of Vines:** Cutting vines at the base to create an air gap between the root system and the structure.
- **Cutting:** Hand removal of small-diameter incompatible species.
- **Vegetation Mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch. Using heavy equipment to reduce standing trees to woody debris.

All Other Incompatible Species within the Recommended Easement Width:

- All other Incompatible Species will be cleared from the full width of the recommended easement width. The clearing methods described above (tree removal, severing of vines, cutting, and vegetation mastication) will be utilized.

Scope of Work Outside Easement – Species Growing into the Easement

There is the potential for vegetation outside or along the boundary of the easement to interfere with the operation of power distribution lines. Appropriate clearances around the conductors must be achieved to protect the lines from future damage. For distribution lines, Subrecipient's authorized representative has established a minimum clearance distance of 12 feet from all conductors, with the maximum edge of the conductors to be 12 feet wide centered on the pole. This distance is consistent with the vertical distance established in Regulation 7282. If there are species encroaching on the 12-foot clearance outside or along the boundary of the easement, these species will be pruned to obtain at least 20 feet of clearance from the conductors at the time clearance work occurs. In cases where following ANSI A300 best practices require clearance beyond 12 feet, the maximum distance cleared will not exceed an additional 3 feet from set clearing distance. Diagrams illustrating these clearing distances are provided as attachments within Grants Portal. The following clearing methods will be provided as Attachment B-*“FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf”*

- **Tree pruning:** Qualified personnel work from an aerial platform or while climbing within a crown of trees to prune the tree. All pruning work wounds the tree. Done poorly, pruning can result in an exaggerated regrowth response by adversely altering tree architecture and increasing exposure to decay organisms that can weaken the tree. These adverse consequences increase the likelihood of tree-initiated faults causing system interruptions and customer outages. Proper arboriculture techniques will be utilized.
- **Tree removal:** Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- **Severing of vines:** Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified worker at ground level. The upper portion of the vine remains attached and is not removed.
- **Cutting:** Cutting typically involves the removal of small diameter species by hand.
- **Vegetation mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

FEMA 38kV Assessment & Methodology:

LUMA documentation claims a 100% clearance for the entire project segment based on the total length of the feeder. This analysis would not be considered as the method for validation purposes.

Consequently, FEMA perform a 100% evaluation of each feeder to determine the quantity of miles of vegetation non-compatible. The tools used for this analysis are Google Earth, that allows a street view evaluation where the HM Specialist uses the imagery data for analyze the feeder lines adjacent to roads. Where the feeder is through mountains FEMA use top and 3D view maps that allows determine the elevations for mountains, forested areas (assess vegetation), and the topography of the land. When poles are at the top of mountains and lines run between mountains, only the vegetation around the poles will be considered. The total percentage of each line is the result of compiling all the sections analyzed. It is important to emphasize that after work completed, the subrecipient can submit additional eligible vegetation clearance distance not included in this vegetation clearance percent analysis.

FEMA Analysis:

The total miles to be addressed in the Hazard Mitigation Proposal (HMP) is **12.71 miles**, which includes a 10% buffer due the method of assessment (desktop review), providing sufficient funds to ensure vegetation works are covered. This amount is estimated value, that will be adjusted based on the amount of actual work performed.

The cost estimate is based on two vegetation clearance scenarios, (1) the full clearance represents those lines that at both side sides of the right of way have vegetation that needs to be cleared. (2) is the half clearance represented for those circuits alongside roadways and only needs clearance at one side of the right of way. As a result, the total miles used for the cost estimate is **7.94 miles**, which reflects these adjustments for segments that do not require full clearing. This amount is estimated value, based on a desktop review that will be adjusted based on the amount of actual work performed and evidence of the actual work performed.

	HMP	Cost Estimate
Total Project Miles:	23.68	23.68
Vegetation Miles at 100% of Work	2.89	2.89
Vegetation Miles at 50% of Work	8.67	4.33
Total Miles to Clean	11.55	7.22
Buffer Acceptance:	0.10	10%
Vegetation Miles at 100% + Buffer	3.17	3.17
Vegetation Miles at 50% + Buffer	9.53	4.77
Total Miles to Clean with Buffer	12.71	7.94
% of Miles to Clean with Buffer	54%	34%

(III) Hazard Mitigation Proposal (HMP) Cost:

¹ Vegetation Clearance Cost per Mile (Base Cost) =	\$176,173.47 / mile
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Risk Factor approved by the DR4339-PR leadership (5%) =	<u>\$8,808.67 / mile</u>
Vegetation Clearance Cost per Mile (w/Soft Cost) =	<u>\$184,982.14 /mile</u>
² PA Vegetation Clearance Overlap per Mile (Deduction) =	<u>(\$15,433.57/ mile)</u>
Hazard Mitigation Total Cost per Mile =	\$169,548.57 / mile
Project Total Miles with Vegetation:	7.22-miles
Buffer Acceptance:	10%
Project Total Miles with Vegetation:	<u>7.94 miles</u>
Hazard Mitigation Total Cost =	\$1,346,252.00

Note: The \$169,548.57 / mile calculation represents the total cost (base costs + soft costs – PA Overlap). For this project, breaking down that total cost further yields the approximate figures below. For additional information please see the attached document.³

Total Net Hazard Mitigation Cost (Base Cost) =	\$1,282,144.77
+ HM (Management & General Conditions Factors) =	<u>\$64,107.23</u>
Hazard Mitigation Total Cost =	\$1,346,252.00

(IV) Hazard Mitigation Proposal (HMP) Cost Distribution:

Architecture and Engineering (A&E) =	\$41,060.69	
Remaining Vegetation Clearance Cost =	<u>\$1,305,191.31</u>	
Hazard Mitigation Total Cost =	\$1,346,252.00	

(V) HMP Cost-Effectiveness Calculations:

FEMA's Benefit-Cost Analysis, BCA, methodology evaluates the expected risk reduction benefits of a hazard mitigation project and compares those benefits to the cost of the mitigation project. FEMA Public Assistance Program and Policy Guide, PAPPG, Version 3.1, April 2018, Chapter 2, Section VII.C, page 98, considers mitigation measures to be cost-effective when they are demonstrated through an acceptable BCA using FEMA's BCA methodologies and have a resulting Benefit-Cost Ratio, or BCR, equal to or greater than 1.0.

For PREPA infrastructure under FEMA DR-4339-PR, FEMA developed an Island Wide Benefit Cost Analysis, or IWBCA, to evaluate cost-effectiveness at the electrical system level rather than through separate project-specific BCAs. The IWBCA characterizes the PREPA/LUMA system as a single project for mitigation purposes, focuses on system-wide resiliency, and supports the development of cost-effective mitigation projects while avoiding double counting, or duplication, of benefits. The IWBCA applies one BCA to the entire FAASt project and includes benefits based on future costs avoided from physical damage to infrastructure, costs related to the response and reconnection effort, and loss of function for electric service caused by the storm.

The IWBCA established a maximum potential mitigation benefit for the PREPA system of \$7.6 billion. This figure represents the estimated total potential mitigation benefit with the highest confidence and was developed using the incurred costs of the PREPA FEMA Accelerated Award Strategy, FAASt, fixed cost estimate, FCE, the mission assignments used for the reconnection effort, and costs associated with loss of service. The IWBCA results were developed by the PA Mitigation team using the best available data and were further refined and concurred with by FEMA Region 2 PA Mitigation team members and FEMA HQ groups, including the Community Infrastructure Resilience, CIR, Branch and Disaster Implementation, DI, Branch. This maximum potential benefit must be tracked to ensure that the combined cost of all approved mitigation proposals does not exceed the maximum potential benefit.

The Hazard Mitigation Proposal, HMP, described herein has a total Hazard Mitigation cost of **[1,346,252.00]**. In accordance with FEMA's internal IWBCA benefit tracking, the maximum potential benefit remaining in the IWBCA is **[\$4,984,306,276.25]**. The cost of this HMP, when combined with all other approved IWBCA-related proposals funded, does not exceed the remaining available IWBCA benefit. Therefore, this HMP is deemed cost-effective under the FEMA PAPPG Version 3.1, April 2018, Chapter 2, Section VII.C, BCA Rule, because the IWBCA demonstrates an acceptable BCA with a Benefit-Cost Ratio equal to or greater than 1.0.

For validation, reviewers should refer to the attached IWBCA Package, including the IWBCA narrative and backup documentation, which define the IWBCA methodology, inputs, and supporting calculations. Reviewers should also confirm that the project has been included in the current IWBCA benefit tracking record to verify that the total approved IWBCA-related mitigation costs remain below the maximum potential benefit and that no duplication of benefits has occurred.

This Hazard Mitigation Proposal meets the eligible repair and restoration cost-effectiveness requirements. See the Mitigation Profile Documents tab in Grants Manager for the complete supporting documentation, including the HMP cost estimate and supporting documents file.

(VI) Compliance and Assurance Requirements:

A) HMP GENERAL NOTES:

By agreeing to implement the hazard mitigation measures in this HMP, the Applicant/Sub-Applicant is bound by the specific guidelines listed within this document.

COSTS AND GENERAL CONDITIONS: The vegetation removal cost is established according to the average base cost of **\$176,173.47 / mile**. Additionally, DR4339-PR leadership has approved the application of a 5% risk factor to the average cost per mile, resulting in **\$184,982.14 / mile**. After deducting Public Assistance (PA) \$15,433.57 amount (incidental work- refer to document FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf), the final total obligated amount through PA 406 is **\$169,548.57 / mile**.

DOCUMENTATION REQUIREMENTS: The subrecipient shall document all vegetation removal work, including but not limited to the following:

- Before and after photographs of the total distance included in the HMP Scope of work that clearly show the condition of the area before and after the vegetation clearance.
- A digital map in ArcGIS format showing all areas where vegetation removal was performed. Location information must be provided, including the physical address, GPS coordinates from start to finish of clearance work, and contact information for private property (when applicable).

· Work orders must account for the entire feeder length distance and include a description of the sections both with and without vegetation. Material disposal documentation must specify whether the material was chipped and removed, left on-site, or transported to a landfill.

Note: All vegetation clearance projects must include the above documentation to define the work completed prior to project closeout.

COST DISTRIBUTION: Recognizing that the established cost is an average per mile, it is understood that actual expenses for each feeder or area may deviate (either underrun or overrun) from the estimated project amount. The 406 HMP scope and cost agreement sets an average cost per mile for vegetation clearance, allowing the subrecipient to manage funds across the various projects that comprise the vegetation asset. The *Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, January 1, 2022 (PR PAAP Guide)*, states that if funds for 406 Mitigation are included in the fixed-cost subaward, the subrecipient must complete the approved Scope of Work (SOW) of the Hazard Mitigation Proposal (HMP) in order to retain the 406 Mitigation funding. Consequently, only completed distance in the HM Scope of work, supported by the necessary back-up documentation (e.g., verified mitigated clearance distance), will be eligible for fund retention. Any uncompleted work from the HM SOW (e.g., miles not documented with mitigated clearance distance) will be de-obligated during the closeout process.

SCOPE OF WORK DEVELOPMENT OF HAZARD MITIGATION: FEMA will evaluate each mitigation opportunity to first determine what measures or portions of solutions could be funded through Section 406 mitigation. FEMA analyzes the proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and Eos. FEMA, the Applicant, Recipient, and Sub-recipients will develop and agree to scopes of work (SOW) and cost estimates to repair, restore, or replace eligible facilities including 406 Hazard Mitigation" (Page 6).

COMPLETION OF HAZARD MITIGATION SCOPE OF WORK: If this HMP is approved and the mitigation is not performed, the Applicant must apply for a change in the Scope of Work and a de-obligation of the HMP funding. Failure to complete the work of the HMP may limit future FEMA funding of repairs at the site in the event that a similar disaster event results in similar damage at the site.

CHANGES TO THE HAZARD MITIGATION SCOPE OF WORK FOR LARGE PROJECTS:

Per PAAP PA Process (Section 428), Guide for Permanent Work, February 10, 2020, "A Subrecipient may alter the 406-hazard mitigation SOW (HMP) after FEMA, the Recipient, and Subrecipient agree on the cost estimate for the initial proposal. After the project is obligated, the SOW for the HMP can be changed only once and the timeline for this change will be established based on a facility-by-facility basis. The proposed change will require evaluation by FEMA for eligibility and EHP. As part of the eligibility review, FEMA will evaluate the SOW, technical feasibility, the level of protection, the revised cost estimate, and cost effectiveness of the new hazard mitigation proposal, and, if approved, will adjust the scope and cost estimate accordingly." (Page 14)

HAZARD MITIGATION DESIGN: This HMP is for estimating purposes only and not to be construed as a project design. If the site's final placement and configuration are different than the preliminary estimate, the Applicant should submit a change in scope request. This HMP is subject to further review prior to award.

HAZARD MITIGATION CONSTRUCTION: The Applicant must provide & maintain competent & adequate engineering design & supervision during the construction phase to ensure that the completed work conforms to the approved plans & specifications & all applicable material & construction standards.

As a condition of the FEMA mitigation grant, the Applicant is responsible for the determination of and compliance with all applicable requirements, codes, standards and specifications in connection with the project, including but not limited to the Puerto Rico Building Code of 2018 (2018 PRBC), IBC, IRBC, NFIP Floodplain Management Regulations outlined in 44 C.F.R 60.3, ASCE 24, ASCE 7, and receiving all applicable permits & approvals prior to construction.

MAINTENANCE OF HAZARD MITIGATION: The Applicant shall ensure proper maintenance of the installed mitigation measures, per manufacturer and designer specifications. Any adaptations or installations not approved or that renders the hazard mitigation measure ineffective shall be removed by the Applicant. Examples include, but are not limited to, improper installation of roof-mounted equipment or installation of window-mounted air-conditioning units.

ENVIRONMENTAL AND HISTORIC PRESERVATION: Eligibility and funding for the mitigation at this site on this project will be subject to the compliance of all environmental laws, regulations, and executive orders applicable to the site. This project will undergo a EHP compliance review, after obligation any changes to the SOW will likely trigger an additional EHP compliance review of the revised SOW.

ATTACHMENTS:

Please refer to the following documents.

1. "Island-Wide Vegetation Clearance - FEMA letter dated March 24, 2023.pdf"
2. "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"
3. "Appendix A and B - Protected Flora and Incompatible Flora Species.pdf"

4. "IWBCA HMP Package.pdf"
5. "PN1070366-TL100_38KV_Ponce.kmz"
6. "PN1070366-DR4339PR-HMCE-IEP-20260909-RIBR.xslm"
7. "PN1070366-DR4339PR-HMP-20260914-RIBR.pdf"

Cost

Code	Quantity	Unit	Total Cost	Section
9001	1	Lump Sum	\$122,542.55	Uncompleted
3510	1	Lump Sum	(\$3,737.55)	Uncompleted

CRC Gross Cost	\$118,805.00
Total 406 HMP Cost	\$0.00
Total Insurance Reductions	\$0.00
CRC Net Cost	\$118,805.00
Federal Share (90.00%)	\$106,924.50
Non-Federal Share (10.00%)	\$11,880.50

Subgrant Conditions

- Applicants must retain all source documentation for each large project for three years after the date the Recipient submits to FEMA certification of completion of the project and all source documentation for small projects for three years after the Recipient submits to FEMA certification of the applicant's last small project. See Title 2 Code of Federal Regulations (C.F.R.) § 200.334. Recipients may require longer retention periods. Real property and equipment disposition, audits, and litigation may also require longer retention periods. If requested, Applicants must provide documentation to FEMA. Recipients may require documentation not otherwise required by FEMA (such as actual cost documentation for Small Projects). In such cases, the Applicant must provide the documentation to the Recipient.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance in effect at the time of the declaration. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise. DHS Standard Terms and Conditions are viewable at <https://www.dhs.gov/publication/dhs-standard-terms-and-conditions>.
- The applicant acknowledges that the Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 200.110.
- The applicant acknowledges that PA funding must be used exclusively for the work specified in the approved project. If a change to the approved scope of work is needed, the applicant must submit a written request through the Recipient to FEMA before it commences work associated with a change.
- Applicants must inform FEMA of each purchased equipment item with a fair market value over \$10,000 after it is no longer needed for federally funded programs or projects. Applicants must also inform FEMA of any unused residual supplies when the aggregate total exceeds \$10,000. See Title 2 C.F.R. §§ 200.313 and 200.314. FEMA reduces eligible funding by this amount.
- The Recipient must submit its certification of the subrecipient's completion of all of its small projects and compliance with all environmental and historic preservation requirements within 180 days of the applicant's completion of its last small project, or the latest approved deadline, whichever is sooner.
- The Subrecipient provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.
- The Applicant certifies that all work claimed was or will be delivered in an impartial manner without discrimination as required by Title VI of the Civil Rights Act, Section 308 of the Stafford Act, 42 U.S.C. § 5151, and applicable provisions of laws and authorities prohibiting discrimination.
- The Applicant certifies that all impacts/damage claimed was a direct result of the Presidential declaration, was not pre-existing damage, and did not result from a lack of maintenance.
- The applicant certifies that all work claimed was required as a direct result of the major disaster declaration, is located within the designated area, and is the Applicant's legal responsibility.
- The applicant certifies that all costs claimed are reasonable and of a type recognized as ordinary and necessary for the type of work as required by 44 C.F.R. § 206.228 and 2 C.F.R. § 200.404.
- The applicant certifies that no work or costs claimed are covered by another funding source. Pursuant to section 312 of the Stafford Act, 42 U.S.C. § 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The applicant acknowledges it is required to notify FEMA through the recipient if it receives assistance for the same work or costs from another Federal agency, insurance, or any other source and return any duplicated funds to FEMA.
- The applicant certifies that all facilities are being restored in accordance with all federal and SLTT code and standard requirements.
- The applicant acknowledges it must comply with EHP laws, regulations, and Executive Orders (EO), including but not limited to, the

Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA). The applicant must afford FEMA the opportunity to perform EHP reviews prior to starting any work that has potential to impact the environment or historic properties, including archaeological resources. If the applicant starts work prior to FEMA's completion of the EHP review, it jeopardizes PA funding for the entire project.

- The applicant acknowledges that under 2 C.F.R. Part 200, it must follow their documented procurement procedures, provided they conform to federal procurement and contracting requirements. The applicant certifies that it is using the most restrictive of either its own documented policies and procedures for procurement or federal procurement and contracting laws in accordance with 2 C.F.R. §§ 200.317 - 200.327. The Applicant is following Environmental Protection Agency guidelines for procurement of recovered materials; and including all applicable required contract provisions.
- The applicant certifies that all information provided is true and correct. Upon submittal this project application becomes a legal document. The False Claims Act (31 U.S.C. §§ 3729-3733) prohibits the submission of false or fraudulent claims for payment to the federal government. It is a violation of federal law to intentionally make false statements or hide information when applying for Public Assistance. This can carry severe criminal and civil penalties including a fine of up to \$250,000, imprisonment, or both (18 U.S.C. §§ 287, 1001, 1040, and 3571).
- The applicant acknowledges that it must obtain and maintain insurance coverage for all buildings, contents, equipment, and vehicles in an amount equal to or greater than the total cost, prior to any reductions as required by the Stafford Act § 311, 42 U.S.C. §5154, 44 C.F.R §§ 206.251 - 206.253, and in accordance with FEMA Policy 206-086-1 Public Assistance Policy on Insurance.

Insurance

Additional Information

9/15/2026

Does the Applicant have a Commercial Policy: Yes.

Does the Applicant's Commercial Policy extend coverage for the damage described in this project: No.

Property insurance coverage for the electrical distribution facilities represented on this project are not insured or insurable. No insurance relief is anticipated. No Obtain and Maintain requirement will be made.

FEMA requires the applicant to take reasonable efforts to pursue claims to recover insurance proceeds that it is entitled to receive from its insurer(s). In the event that any insurance proceeds are received for these expenses those proceeds must be reduced from FEMA Public Assistance funding to ensure no duplication of benefits has occurred.

No duplication of benefits from insurance is anticipated for work described in this application. In the event any part or all costs are paid by an insurance policy, a duplication of benefits from insurance will occur. Applicant must notify grantee and FEMA of such recoveries and the Sub-Grant award amount must be reduced by actual insurance proceeds.

No insurance requirements will be required for this project. Insurance requirements are specific to permanent work to replace, restore, repair, reconstruct, or construct buildings, contents, equipment, or vehicles. (FEMA Recovery Policy FP 206-086-1).

No insurance narrative will be produced or uploaded into documents or attachments.

Jean-Carlo Echevarria, PA Insurance Specialist, CRC Atlantic, Guaynabo, PR

O&M Requirements

There are no Obtain and Maintain Requirements on **FAAST [38kV Line 100 – Entire Line] (Vegetation) (HM Cost Alignment)**.

406 Mitigation

Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and executive orders?

Yes

EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- On May 16, 2025, the Secretary of the U.S. Department of Energy (DOE) issued Order 202-25-2 (Order), pursuant to the authority vested in him by section 202(c) of the Federal Power Act (FPA), 16 U.S.C. § 824a(c), and section 301(b) of the Department of Energy Organization Act, 42 U.S.C. § 7151(b). The Order sought to expedite repair and maintenance efforts to the electrical grid of Puerto Rico by directing the Puerto Rico Electric Power Authority (PREPA) to perform vegetation management, including vegetation clearing to reestablish a right-of-way, for particular transmission and distribution facilities in the Territory as specified in the Order. The Order required PREPA to identify certain parameters by which the directed work would be performed, and required that all work be performed, to the maximum extent practicable, in a manner consistent with all applicable Federal, State, or local environmental laws or regulations and minimize any adverse environmental impacts. However, pursuant to Section 202(c)(3) of the FPA, to the extent any omission or action taken by PREPA that was necessary to comply with the Order, including any omission or action taken to voluntarily comply with the Order, caused PREPA to not comply with any Federal, State, or local environmental law or regulation, including any environmental conditions in this REC's "Standard Conditions," such omission or action shall not be considered a violation of such environmental law or regulation, or subject PREPA to any requirement, civil or criminal liability, or citizen suit under such environmental law or regulation. On August 15, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. To renew/reissue the Order, DOE was required to consult with the primary Federal agency with expertise in the environmental interest protected by such law or regulation and include in the Order conditions necessary to minimize any adverse environmental impacts to the extent practicable. Pursuant to Section 202(c)(4)(B) of the FPA, DOE provided the relevant agencies the opportunity to submit conditions for worked performed under the Order, to be included in the Order. According to DOE, no conditions were submitted by the agencies for inclusion in the Order. On November 12, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. DOE and FEMA have agreed that DOE is the lead agency for activities that fall under the prior and any future DOE 202(c) orders issued under the Federal Power Act to resolve the current and related emergencies in Puerto Rico. FEMA has requested that DOE provide FEMA with all documentation relating to their EHP compliance. FEMA will review and incorporate all available information and data for this project pertaining to applicable environmental laws and regulations into this REC when it is received from DOE. On February 10, 2026, and again on May 7, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities. On August 07, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities.
- If ground disturbing activities occur during construction, the applicant will monitor ground disturbance, and if any previously unidentified historic properties, including archeological resources, are discovered, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA. Should any unanticipated effects to previously identified historic properties, including archaeological resources, be identified during construction activities, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA.

EHP Additional Info

There is no additional environmental historical preservation on **FAAST [38kV Line 100 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Final Reviews

Final Review

Reviewed By LEFRANC-GARCIA, CARLOS L.

Reviewed On 09/25/2026 8:08 PM PDT

Review Comments

Version 0 contemplates \$106,924.50 (federal share) for incidental vegetation clearance associated with 7.94 miles of the 38kV Line 100 – Entire Line. No permanent infrastructure repairs are included in the approved Scope of Work. The Work to Be Completed cost is \$122,542.55 , based on \$15,433.57 per mile, and the final PA project cost is \$118,805.00.

Recipient Review

Reviewed By Mulero, Noel

Reviewed On 10/06/2026 9:26 PM PDT

Review Comments

Recipient review completed. Applicant must ensure to compliance with all regulatory requirements, Record of Environmental Consideration (REC) Special Conditions and PA policy. This project applies to the Department of Energy's executive order. This means that DOE is the lead agency for environmental matters. Project is ready for applicant review.

Project Signatures

Reviewed By Unsigned

Reviewed On Unsigned

Award Information

EMMIE Imported Version Information

Version #	Eligibility Status	Current Location	Bundle Number	Project Amount	Cost Share	Federal Share Obligated	Date Obligated
No Records							

Drawdown History

EMMIE Drawdown Status As of Date	IFMIS Obligation #	Expenditure Number	Expended Date	Expended Amount
No Records				

Obligation History

Version #	Date Obligated	Obligated Cost	Cost Share	IFMIS Status	IFMIS Obligation #
0	10/14/2026	\$106,924.50	90%	Accepted	4339DRPRP01083301

**Department of Homeland Security
Federal Emergency Management Agency**

v0

General Info

Project #	1070369	P/W #	108333	Project Type	Specialized
Project Category	F - Utilities	Applicant	PR Electric Power Authority (000-UA2QU-00)		
Project Title	FAASt [38kV Line 200 – Entire Line] (Vegetation) (HM Cost Alignment)			Event	4339DR-PR (4339DR)
Project Size	Small	Declaration Date	9/20/2017		
Activity Completion Date	9/20/2027	Incident Start Date	9/17/2017		
Process Step	Obligated	Incident End Date	11/15/2017		

Damage Description and Dimensions

The Disaster # 4339DR, which occurred between 09/17/2017 and 11/15/2017, caused:

Damage #1872583; FAASt [38kV Transmission Line 200 – Entire Line] (Vegetation)

General Facility Information:

- **Facility Type:** Power generation, transmission, and distribution facilities
- **Facility:** FAASt [38kV Transmission Line 200 – Entire Line] (Vegetation)
- **Facility Description:** The Puerto Rico Electric Power Authority (PREPA) owns more than 19,000 miles of transmission and distribution lines, as well as more than 400 substations. The facilities addressed in this project are all the overhead transmission and distribution lines (16,000+ miles), as well as substations. To ensure the functioning of this infrastructure to the level of service needed, keeping this equipment clear from vegetation is significant.
- **Approx. Year Built:** 1950
- **GPS Latitude/Longitude:** [REDACTED]

Final Scope

1872583 FAASt [38kV Transmission Line 200 – Entire Line] (Vegetation)

Project 136271 (hereinafter PREPA FAASt Project) authorized \$9,459,885,412.39 (Federal Share) to be awarded to the Puerto Rico Electric Power Authority (PREPA, Subrecipient) as a fixed cost estimate (FAASt FCE agreement) based on eligible work without detailed scopes of work to restore disaster-damaged facilities. Eligible work for the Transmission and Distribution (T&D) system included restoration of:

Broken structures due to high winds such as poles/towers (counted as broken when poles were inclined, bent, torn, and/or cracked); and other damages/broken components such as transformers, insulators, conductors, grounding system, jumpers, Gang Operated Air Breakers (GOABs), pole hardware, guy wires and anchors.

FEMA deferred the 406 Hazard Mitigation Proposal (HMP) fixed cost order in the PREPA FAASt Project until the Subrecipient submits its actual recovery solutions. FEMA also issued a clarification letter regarding whether hazard mitigation funding under Section 404 or Section 406 of the Stafford Act may be made available for the execution of a one-time, island-wide vegetation clearing and removal operation intended to mitigate the threat to the existing vegetation, if unintended to, poses to Puerto Rico's electric T&D system. See FEMA's letter to COR3, document Signed Vegetation

Management March 24 2023.pdf. The Subrecipient's actual recovery solution seeks a one-time Island-wide vegetation clearance and

removal operation intended to mitigate the threat to the existing vegetation, if untended to, poses to Puerto Rico's electric T&D system. The actual recovery solution seeks to mitigate Puerto Rico's electric T&D system, including areas without infrastructure repairs.

The actual recovery solution (scope and cost) will be captured in multiple individual projects (hereinafter Vegetation clearance HMP Sub-FAAST projects) to provide flexibility and enable multiple programmatic reviews simultaneously. The Vegetation clearance HMP Sub-FAAST projects do not include infrastructure repair work.

This project captures a portion of the Island-wide actual recovery solution, specifically the onetime vegetation clearance and removal operation intended to mitigate the 38kV Line 200– Entire Line (see project note #1 and #2).

FEMA 406 Hazard Mitigation (HM) team will review this actual recovery solution and issue an FCE order for the portion of the recovery solution that reduces risk of future similar damages. The Work to be Completed will be captured in the 406 HM scope section. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects will be adjusted as describe in FEMA-4339-DR-PR Public Assistance PREPA FAAST Post-Fixed Cost Estima Obligation Vegetation HMP Approach: 38kV. See document 956345 DR4339PR FAASTVegetationHMPApproach_38kVTrans.pdf. The PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope. WTBC Cost (PA) = \$15,433.57 per mile. Therefore, the total cost (PA) for this project will be \$40,998.20

D#	PA Vegetation Clearance Overlap per mile	Total miles	WTBC - PA Cost with Subrecipient Management & General Conditions	A&E - PA	Total - PA
1872583	\$15,433.57	2.74	\$42,287.98	\$(1,289.78)	\$40,998.20

Work to be completed total: \$42,287.98

A&E Deduction (Global A&E FAAST 335168): -\$1,289.78

Project Total: \$40,998.20

Project Notes:

1. This is a 38kV Transmission-Vegetation clearanceHMP Sub-FAAST project.
2. Vegetation clearance HMP Sub-FAAST projects will be written according to line type (Distribution: 13.2kV and down, and Transmission: 38 kV, 115kV, and 230 kV) because of the different ROWs and other characteristics. Multiple projects of each type will be submitted and reviewed for eligible PA 406 HM funding. Vegetation clearing work will only be submitted for those areas that vegetation represents strike potential (may cause future similar damage to the T&D system when subject to high winds). In the submittal of this project the Subrecipient's Authorized Representative attests that only the vegetation clearance submitted is to reduce strike potential and that the ROW for these lines has been, and will be, counted only once to avoid duplication within the vegetation clearance projects.
3. For more details of the requirements and conditions for the execution of a one-time, island-wide vegetation clearance and removal operation considered as an eligible Section 406 hazard mitigation proposal (HMP), please refer to document labeled: Attachment A FEMA letter dated March 24 2023.pdf.
4. For details on the SOW, refer to filename 1070369 -FAAST [38kV Line 200 – Entire Line] (Vegetation) DSOW.pdf
5. Vegetation clearance funds will not be allocated to SubFAAST projects.
6. A&E cost included in this project will be reduced from this project and obligated under the FAAST Project #335168, A&E, as shown in the table above. The A&E project was obligated to track and account for costs associated with individual FAAST projects.
7. This project is part of Donor FAAST 136271 – MEPA078 Puerto Rico Electrical Power Authority (PREPA) Island Wide FAAST

Project.

406 HMP Scope

Project number: [1070369] FAASt [38kV Transmission Line 200 – Entire Line] (Vegetation)

Damage #: 1872583

Applicant: PR Electric Power Authority (000-UA2QU-00)

Location: Ponce, Puerto Rico

GPS Latitude/Longitude: From: [REDACTED]

Introduction:

Puerto Rico's electrical grid infrastructure has been severely compromised by extreme weather events, particularly with Hurricane Maria in September 2017. The hurricane caused widespread disruptions to transmission and distribution systems, largely due to vegetation impacts that collapsed distribution and transmission lines. Substantial infrastructure was damaged when trees downed utility power lines and poles, causing most of the transmission/distribution system to fail. Post-hurricane vegetation clearance to enable grid repair and restoration progressed slowly, considerably delaying overall electrical recovery. Remaining excess vegetation continues to cause operational outages, as ground faults occur when vegetation contacts power lines even during normal weather events. After the passage of Hurricane Maria, minimal clearing work was carried out exclusively to clear the areas to carry out emergency repairs to the electrical system. These works were covered by Category B - Emergency Protective Measure, but excess vegetation on the electrical system remains an outstanding vulnerability.

Puerto Rico's grid modernization and mitigation one-time ROW clearance strategy will prioritize effective and proactive vegetation management protocols to prevent prolonged storm-related outages, thereby increasing the reliability of the electric system. These reliability and resiliency gaps are especially impactful to Puerto Rico, which has been facing increasingly frequent natural hazards such as hurricanes. This project is part of the Vegetation Reset Program which will impact the Transmission and Distribution systems for each of the 78 municipalities.

Hazard Mitigation Narrative:

In order to minimize damages in a future event, the Subrecipient's actual recovery solution seeks a one-time islandwide vegetation remediation clearance for the above work included in the PREPA FAASt Project, as according to the Public Assistance Alternative Procedures (PAAP) (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (hereinafter PR PAAP Guide) and FEMA's letter to COR3, document Signed Island-Wide Vegetation Clearance March 24, 2023. Section 406 hazard mitigation are funds that can be added to projects for the restoration of disaster damaged facilities and must prevent future damage caused by the declared event. Under DR-4339-PR, Section 406 hazard mitigation funds are based on eligible, technically feasible, and cost-effective mitigation activities proposed to reduce risk to the function of the disaster-damaged facilities. The portion of the recovery solution that reduces risk of future damage may be considered as eligible 406 mitigation.

The island-wide transmission and distribution grid was significantly damaged by the strong winds and heavy rainfall during the atmospheric event hurricane Maria. This resulted in many trees and other vegetation becoming a direct hazard to the electrical grid. A one-time 406 hazard mitigation island-wide vegetation clearance will benefit the reliability and resiliency of the Puerto Rico electrical grid, including the number and duration of customer outages during and after the work to complete the repairs to the electrical grid through other PREPA 428 FAASt Projects. The scope of the global 406 Hazard Mitigation (HM) projects includes vegetation clearing across the entire width of the easement, plus a radius of 12 to 25 feet from energized conductors to directly reduce the potential for future damage to the "transmission and/or distribution" (T&D) systems. Each 406 HM Vegetation Reset project is correlated with an eligible 428 T&D project, in association with PREPA's electrical grid. Different regional projects are developed to impact all lines of the electrical system, including distribution lines and high-voltage transmission lines. Also, projects are defined in terms of line type (distribution or transmission) and population density of the area (high or low) to simplify the evaluation by the Environmental and Historical Preservation team (EHP).

The global project was divided into the following regions:

- Region 1 – San Juan
- Region 2 – Arecibo
- Region 3 – Bayamón
- Region 4 – Caguas

- Region 5 – Mayagüez
- Region 6 – Ponce

For each Region of the island, there will be two types of projects to capture the Vegetation Clearing activities within scopes of work: (1) single transmission line projects based on LUMA's priority list, capturing the lines or segments of lines affected most by vegetation interference, and (2) Regional DSOWs divided into groups (Groups A – F), as follows:

- Region 1 – San Juan
- Region 2 – Arecibo
- Group A – High/Low Density Distribution Lines
- Group B – 38 kV Transmission.
- Group C – Overlapped Distribution and Transmission Lines
- Group D - 115 kV Facilities
- Group E - Substation and Telecommunication Facilities.
- Group F – 230 Kv Facilities (Non-Region – Specific)

This 406 HM work is limited to what is necessary to directly reduce the potential of future damage to the T&D system assets, that exceeds what is necessary to clear vegetation for accessing facilities when carrying out repairs which are already established as eligible for FEMA funding utilizing the 428 FAAS Grant. Each 406 HM will correlate with an eligible 428 Transmission and/or Distribution (T&D) project in association with the PREPA power grid. There will be 7 Regional DSOW's developed capturing planned actions within scopes of work formulated with established criteria detailed for Distribution and Transmission lines/facility locations. The first DSOW is Group A - High Density areas with a low reflection of infrared light; the second DSOW is Group A Low Density locations where more vegetation density is present, which is determined by a higher level of reflection of infrared associated with Vegetation for 13.2kV and below locations; the third DSOW is Group B locations at 38kV level; the fourth DSOW is Group C - with known local environmental sensitivities at 38kv and below levels locations; the fifth DSOW is 115kV Facilities; and the sixth DSOW is Substation and Telecommunication Facilities. There will also be 230 kV Facilities (these installations have a separate Vegetation Clearance project that is not region- specific).

FAAS [38kV Transmission Line 200 – Entire Line] (Vegetation)

This is a project for 38kV transmission lines in Region 6 Ponce. The DSOW captures the scope of work and cost estimate for Vegetation Clearing intended to mitigate the threat that the existing vegetation, along 38kV lines within Ponce (if left untended to), poses Puerto Rico's electric grid.

This SOW is aligned with and leverages FEMA's Island-Wide Benefits Cost Analysis (IWBCA), which was used for this purpose and fully supports the mitigation measures employed within this project scope of work.

The Subrecipient's authorized representative (LUMA) estimates that this 406 Hazard Mitigation proposal for island-wide vegetation clearance will have immediate and future widespread benefits, including:

- Mitigation of the hazards due to vegetation impacts and damages.
- 70% annual reduction of outages caused by vegetation.
- 35-45% annual reduction of customer interruptions.
- Faster restoration for impacted customers.
- Improved safety for utility workers and the public.
- Support the rebuilding of the grid and effective execution of large-scale construction projects.

The following terms, when used in this document, shall have the meaning described below.

Compatible Species – Compatible species are those that are congruent with the intended use of the site, and include small trees, shrubs and herbaceous vegetation that will never grow into conflict with overhead conductors.

Incompatible Species – Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors.

Clearance - The minimum distance between two conductors, between conductors and their support or other objects, or between conductors and the ground. The National Electrical Safety Code (NESC) and PREPA's Technical Communication (See 12-02 attached) determine the minimum requirements regarding distances (vertical and horizontal) between an energized conductor or device and a structure, building or surface. Vegetation Clearing will be limited to clearing any vegetation affecting these clearances. This term is not synonymous with easement. Clearances can be met without being within an easement. Clearance requirements must be complied with either when the Authority builds its facilities, as well as when a third party builds a structure. Clearances, in both cases, must be complied with by regulation, regardless of whether an easement exists. regardless of whether an easement exists.

Easement - is a line imposed on a property for the benefit of another belonging to a different owner. The property, in favor of which the easement is constituted, is called the dominant estate; the one who suffers it, servant property. An easement for electrical power lines provides PREPA and Luma as its agent various rights including reasonable access to the electric infrastructure to provide maintenance, repair, expand, operate and is established on the strips or portions of land where facilities of the T & D system are located or will be located, such as lines, poles, towers, equipment, and accessories. These acquired rights make it easier to carry out vegetation clearing work.

The PREPA distribution and transmission systems are populated with millions of plants but only some have the conditions, growth characteristics, and/or locations that make them compatible or incompatible with the safe and reliable energy delivery service. The Subrecipient's authorized representative recognizes the diversity of species in tropical ecosystems, and the general remediation strategy is to control incompatible species while encouraging the growth of compatible species. Compatible species may, on occasion, need control if their height or density impedes the necessary line of sight for inspections or access to perform resilience work. Within Appendix A and B are lists of protected flora species and incompatible flora species expected to be encountered during scope performance.

(I) Proposed 428 Public Assistance Scope of Work (SOW):

This project includes Public Assistance (PA) works; however, PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope, \$15,433.57 / mile calculation represents the PA Overlap.

PA incidental works will be deducted from the Section 406 Hazard Mitigation project costs to avoid duplication of works. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects.

FEMA performed an analysis to the PREPA FAAST documents and determined that vegetation clearing on each mile of 38 kV line requiring repair was on average 8.34%% related to the repair (428 PA) and 91.66% related to a mitigation measure (406 HM). The fixed-cost estimate for the PA scope is \$15,433.57 per **2.74 miles**, with a total project cost of **\$42,287.27**. For further details, refer to the document "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

(II) Hazard Mitigation Proposal (HMP) Scope of Work:

[1872583]; FAAST [38kV Transmission Line 200 – Entire Line] (Vegetation)

As a result of DR-4339-PR, vegetation surrounding T&D assets are falling onto these facilities and interfering with the safe and reliable operation of the assets. The vegetation at present is currently causing outages when vegetation is in contact with the T&D assets. To mitigate the future damage across T&D assets and protect the 428 repairs and replacement along these facilities, clearing vegetation materials will be required. This 406 Hazard Mitigation Scope of Work is to directly reduce the potential of future, damages to the T&D system by clearing vegetative materials that pose an immediate threat to the power distribution lines, and identification for corrective actions related to clearing vegetation (consisting of shrubs, branches, limbs, stumps, bamboo, and trees that are directly impacting the resilience and productivity of the power grid) applicable to the existing PREPA electrical grid within Region 6 Ponce TL of Puerto Rico.

The extent and execution of this scope includes performing verification of facilities, assets and condition assessments for determining the most appropriate remediation, preparing work orders for executing the necessary vegetation remediation, by ways of tree felling, vegetation remediation, mechanical vegetation remediation, vegetative debris disposal via chipping, mulching, hauling, and recycling where applicable in easement of the PREPA power Distribution lines. LUMA is not planning to construct access roads. If the work to be done is not adjacent to an existing road, our contractor tree crews will minimize environmental disturbance by utilizing vegetation crews hiking by foot in and out of our existing easement.

Parameters for Performing 406 Hazard Mitigation Vegetation Clearing

Regulation 7282 requires that only shrubs and plants (no trees) be planted within the easement under power lines. Climbing plants and vines, as well as bamboo, are prohibited from being planted within an easement. The branches of trees planted outside the easement must not obstruct free passage of the power lines. The National Electrical Safety Code (NESC) and PREPA's Technical Communication establish the minimum required distances, both vertical and horizontal, between an energized conductor or device and any structure, building, or surface. Vegetation clearing will be restricted to removing any vegetation that interferes with these clearances. For power distribution lines, NESC and Regulation 7282 define the vertical distance from vegetation as 12-15 feet. By law, any trees, shrubs, or plants planted in violation of Regulation 7282 may be uprooted, removed, or cut down in accordance with the provisions of Regulation

Industry standard practices will determine how the work will be performed. A healthy tree is less likely to fall over in a storm and damage overhead lines; therefore, vegetation will be pruned according to ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Vegetation that is improperly pruned could become susceptible to disease and decay, resulting in a hazard to both the line and public safety. ANSI A300 is the tree care industry standard of care in the USA. It was developed by Tree Care Industry Association and maintained by a consensus of various industry stakeholders through periodically reviewing and updating the guidelines. These standards provide guidance on how and where to prune vegetation to achieve clearances and maintain a healthy plant. In all cases, Subrecipient's authorized representative's vegetation clearing contractors will be required to perform clearing activities in a manner consistent with ANSI A300, NESC, and Regulation 7282 alignment with Resolution 4987, Organic Law 83 (amended version), Communication 12-02, and PREPA 's Comprehensive Management Plan establishing standard Distribution easement widths. Easement Clearance widths for distribution lines are given in the table below:

Recommended Easement width for overhead Transmission & Sub-Transmission Lines (feet)				
Construction type	Area	Voltage(Kv)		
		38	115	230
Single Circuit	Urban	25 ft	30 ft	40 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Same Structure	Urban	25 ft	40 ft	60 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Different Structures	Rural	50 ft	100 ft	100 ft

Scope of Work Inside Easement – Incompatible Species

Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors. For the power distribution lines, all Incompatible Species will be cleared from the full width of the easement. "Clearing" in this context includes the following activities: tree removal, severing of vines, cutting, vegetation mastication.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified working at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter Incompatible Species by hand.

- **Vegetation mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

Scope of Work Inside Easement – Compatible Species:

Compatible vegetation species will be cleared consistent with the distances identified in Regulation 7282, which means that any species with the potential to encroach within 12 feet of the conductors at full size will be removed using the same methods discussed above. Even though the distances identified in Regulation 7282 are vertical clearances, Compatible Species encroaching on the conductors from any direction can pose a hazard to the distribution system, with the maximum edge of the conductors to be 12 feet wide centered on the pole. Therefore, the 12-foot clearance is being applied to both vertical and horizontal clearances. For areas with overhead distribution systems located in the backyard or side yard, the certified easement width from LUMA Land Records office will use for clearing.

In rare cases where Subrecipient's authorized representative encounters significant resistance from landowners or stakeholders to remediate vegetation, Subrecipient's authorized representative will work with landowners or stakeholders to determine if Incompatible and Compatible Species can be pruned to mitigate the hazard to the lines instead of being completely removed

Vegetation with the potential to encroach within 12 feet of conductor — Compatible or Incompatible.

Any vegetation species—whether Compatible or Incompatible—that have the potential (when at full size) to encroach within 20 feet of the conductor will be cleared using one of the methods discussed below:

- **Tree Removal:** Removing above-ground portions of trees while leaving stumps in place.
- **Severing of Vines:** Cutting vines at the base to create an air gap between the root system and the structure.
- **Cutting:** Hand removal of small-diameter incompatible species.
- **Vegetation Mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch. Using heavy equipment to reduce standing trees to woody debris.

All Other Incompatible Species within the Recommended Easement Width:

- All other Incompatible Species will be cleared from the full width of the recommended easement width. The clearing methods described above (tree removal, severing of vines, cutting, and vegetation mastication) will be utilized.

Scope of Work Outside Easement – Species Growing into the Easement

There is the potential for vegetation outside or along the boundary of the easement to interfere with the operation of power distribution lines. Appropriate clearances around the conductors must be achieved to protect the lines from future damage. For distribution lines, Subrecipient's authorized representative has established a minimum clearance distance of 12 feet from all conductors, with the maximum edge of the conductors to be 12 feet wide centered on the pole. This distance is consistent with the vertical distance established in Regulation 7282. If there are species encroaching on the 12-foot clearance outside or along the boundary of the easement, these species will be pruned to obtain at least 20 feet of clearance from the conductors at the time clearance work occurs. In cases where following ANSI A300 best practices require clearance beyond 12 feet, the maximum distance cleared will not exceed an additional 3 feet from set clearing distance. Diagrams illustrating these clearing distances are provided as attachments within Grants Portal. The following clearing methods will be provided as Attachment B-“FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf”

- **Tree pruning:** Qualified personnel work from an aerial platform or while climbing within a crown of trees to prune the tree. All pruning work wounds the tree. Done poorly, pruning can result in an exaggerated regrowth response by adversely altering tree architecture and increasing exposure to decay organisms that can weaken the tree. These adverse consequences increase the likelihood of tree-initiated faults causing system interruptions and customer outages. Proper arboriculture techniques will be utilized.
- **Tree removal:** Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- **Severing of vines:** Vines will be severed at the base with an airgap created between the root system and the portion of the vine

climbing on the structure. Vines are severed and treated by a qualified worker at ground level. The upper portion of the vine remains attached and is not removed.

- Cutting: Cutting typically involves the removal of small diameter species by hand.
- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

FEMA 38kV Assessment & Methodology:

LUMA documentation claims a 100% clearance for the entire project segment based on the total length of the feeder. This analysis would not be considered as the method for validation purposes.

Consequently, FEMA perform a 100% evaluation of each feeder to determine the quantity of miles of vegetation non-compatible. The tools used for this analysis are Google Earth, that allows a street view evaluation where the HM Specialist uses the imagery data for analyze the feeder lines adjacent to roads. Where the feeder is through mountains FEMA use top and 3D view maps that allows determine the elevations for mountains, forested areas (assess vegetation), and the topography of the land. When poles are at the top of mountains and lines run between mountains, only the vegetation around the poles will be considered. The total percentage of each line is the result of compiling all the sections analyzed. It is important to emphasize that after work completed, the subrecipient can submit additional eligible vegetation clearance distance not included in this vegetation clearance percent analysis.

FEMA Analysis:

The total miles to be addressed in the Hazard Mitigation Proposal (HMP) is **4.01 miles**, which includes a 10% buffer due the method of assessment (desktop review), providing sufficient funds to ensure vegetation works are covered. This amount is estimated value, that will be adjusted based on the amount of actual work performed.

The cost estimate is based on two vegetation clearance scenarios, (1) the full clearance represents those lines that at both side sides of the right of way have vegetation that needs to be cleared. (2) is the half clearance represented for those circuits alongside roadways and only needs clearance at one side of the right of way. As a result, the total miles used for the cost estimate is **2.74 miles**, which reflects these adjustments for segments that do not require full clearing. This amount is estimated value, based on a desktop review that will be adjusted based on the amount of actual work performed and evidence of the actual work performed.

	HMP	Cost Estimate
Total Project Miles:	14.43	14.43
Vegetation Miles at 100% of Work	1.34	1.34
Vegetation Miles at 50% of Work	2.31	1.15
Total Miles to Clean	3.64	2.49
Buffer Acceptance:	0.10	10%
Vegetation Miles at 100% + Buffer	1.47	1.47
Vegetation Miles at 50% + Buffer	2.54	1.27
Total Miles to Clean with Buffer	4.01	2.74
% of Miles to Clean with Buffer	28%	19%

(III) Hazard Mitigation Proposal (HMP) Cost:

¹ Vegetation Clearance Cost per Mile (Base Cost) =	\$176,173.47 / mile
Risk Factor approved by the DR4339-PR leadership (5%) =	<u>\$8,808.67 / mile</u>
Vegetation Clearance Cost per Mile (w/Soft Cost) =	<u>\$184,982.14 /mile</u>
² PA Vegetation Clearance Overlap per Mile (Deduction) =	<u>(\$15,433.57/ mile)</u>
Hazard Mitigation Total Cost per Mile =	\$169,548.57 / mile
Project Total Miles with Vegetation:	2.49-miles
Buffer Acceptance:	10%
Project Total Miles with Vegetation:	<u>2.74 miles</u>
Hazard Mitigation Total Cost =	\$464,563.08

Note: The \$169,548.57 / mile calculation represents the total cost (base costs + soft costs – PA Overlap). For this project, breaking down that total cost further yields the approximate figures below. For additional information please see the attached document.³

Total Net Hazard Mitigation Cost (Base Cost) =	\$442,441.03
+ HM (Management & General Conditions Factors) =	<u>\$22,122.05</u>
Hazard Mitigation Total Cost =	\$464,563.08

(IV) Hazard Mitigation Proposal (HMP) Cost Distribution:

Architecture and Engineering (A&E) =	\$14,169.17	
Remaining Vegetation Clearance Cost =	<u>\$450,393.91</u>	
Hazard Mitigation Total Cost =	\$464,563.08	

(V) HMP Cost-Effectiveness Calculations:

FEMA's Benefit-Cost Analysis, BCA, methodology evaluates the expected risk reduction benefits of a hazard mitigation project and compares those benefits to the cost of the mitigation project. FEMA Public Assistance Program and Policy Guide, PAPPG, Version 3.1, April 2018, Chapter 2, Section VII.C, page 98, considers mitigation measures to be cost-effective when they are demonstrated through an acceptable BCA using FEMA's BCA methodologies and have a resulting Benefit-Cost Ratio, or BCR, equal to or greater than 1.0.

For PREPA infrastructure under FEMA DR-4339-PR, FEMA developed an Island Wide Benefit Cost Analysis, or IWBCA, to evaluate cost-effectiveness at the electrical system level rather than through separate project-specific BCAs. The IWBCA characterizes the PREPA/LUMA system as a single project for mitigation purposes, focuses on system-wide resiliency, and supports the development of cost-effective mitigation projects while avoiding double counting, or duplication, of benefits. The IWBCA applies one BCA to the entire FAASt project and includes benefits based on future costs avoided from physical damage to infrastructure, costs related to the response and reconnection effort, and loss of function for electric service caused by the storm.

The IWBCA established a maximum potential mitigation benefit for the PREPA system of \$7.6 billion. This figure represents the estimated total potential mitigation benefit with the highest confidence and was developed using the incurred costs of the PREPA FEMA Accelerated Award Strategy, FAASt, fixed cost estimate, FCE, the mission assignments used for the reconnection effort, and costs associated with loss of service. The IWBCA results were developed by the PA Mitigation team using the best available data and were further refined and concurred with by FEMA Region 2 PA Mitigation team members and FEMA HQ groups, including the Community Infrastructure Resilience, CIR, Branch and Disaster Implementation, DI, Branch. This maximum potential benefit must be tracked to ensure that the combined cost of all approved mitigation proposals does not exceed the maximum potential benefit.

The Hazard Mitigation Proposal, HMP, described herein has a total Hazard Mitigation cost of **\$464,563.08**. In accordance with FEMA's internal IWBCA benefit tracking, the maximum potential benefit remaining in the IWBCA is **\$4,984,435,169.52**. The cost of this HMP, when combined with all other approved IWBCA-related proposals funded, does not exceed the remaining available IWBCA benefit. Therefore, this HMP is deemed cost-effective under the FEMA PAPPG Version 3.1, April 2018, Chapter 2, Section VII.C, BCA Rule, because the IWBCA demonstrates an acceptable BCA with a Benefit-Cost Ratio equal to or greater than 1.0.

For validation, reviewers should refer to the attached IWBCA Package, including the IWBCA narrative and backup documentation, which define the IWBCA methodology, inputs, and supporting calculations. Reviewers should also confirm that the project has been included in the current IWBCA benefit tracking record to verify that the total approved IWBCA-related mitigation costs remain below the maximum potential benefit and that no duplication of benefits has occurred.

This Hazard Mitigation Proposal meets the eligible repair and restoration cost-effectiveness requirements. See the Mitigation Profile Documents tab in Grants Manager for the complete supporting documentation, including the HMP cost estimate and supporting documents file.

(VI) Compliance and Assurance Requirements:

A) HMP GENERAL NOTES:

By agreeing to implement the hazard mitigation measures in this HMP, the Applicant/Sub-Applclicant is bound by the specific guidelines listed within this document.

COSTS AND GENERAL CONDITIONS: The vegetation removal cost is established according to the average base cost of **\$176,173.47 / mile**. Additionally, DR4339-PR leadership has approved the application of a 5% risk factor to the average cost per mile, resulting in **\$184,982.14 / mile**. After deducting Public Assistance (PA) \$15,433.57 amount (incidental work- refer to document FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf), the final total obligated amount through PA 406 is **\$169,548.57 / mile**.

DOCUMENTATION REQUIREMENTS: The subrecipient shall document all vegetation removal work, including but not limited to the following:

- Before and after photographs of the total distance included in the HMP Scope of work that clearly show the condition of the area before and after the vegetation clearance.
- A digital map in ArcGIS format showing all areas where vegetation removal was performed. Location information must be provided, including the physical address, GPS coordinates from start to finish of clearance work, and contact information for private property (when applicable).
- Work orders must account for the entire feeder length distance and include a description of the sections both with and without vegetation. Material disposal documentation must specify whether the material was chipped and removed, left on-site, or transported to a landfill.

Note: All vegetation clearance projects must include the above documentation to define the work completed prior to project closeout.

COST DISTRIBUTION: Recognizing that the established cost is an average per mile, it is understood that actual expenses for each feeder or area may deviate (either underrun or overrun) from the estimated project amount. The 406 HMP scope and cost agreement sets an average cost per mile for vegetation clearance, allowing the subrecipient to manage funds across the various projects that comprise the vegetation asset. The *Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, January 1, 2022 (PR PAAP Guide)*, states that if funds for 406 Mitigation are included in the fixed-cost subaward, the subrecipient must complete the approved Scope of Work (SOW) of the Hazard Mitigation Proposal (HMP) in order to retain the 406 Mitigation funding. Consequently, only completed distance in the HM Scope of work, supported by the necessary back-up documentation (e.g., verified mitigated clearance distance), will be eligible for fund retention. Any uncompleted work from the HM SOW (e.g., miles not documented with mitigated clearance distance) will be de-obligated during the closeout process.

SCOPE OF WORK DEVELOPMENT OF HAZARD MITIGATION: FEMA will evaluate each mitigation opportunity to first determine what measures or portions of solutions could be funded through Section 406 mitigation. FEMA analyzes the proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and Eos. FEMA, the Applicant, Recipient, and Subrecipients will develop and agree to scopes of work (SOW) and cost estimates to repair, restore, or replace eligible facilities including 406 Hazard Mitigation" (Page 6).

COMPLETION OF HAZARD MITIGATION SCOPE OF WORK: If this HMP is approved and the mitigation is not performed, the Applicant must apply for a change in the Scope of Work and a de-obligation of the HMP funding. Failure to complete the work of the HMP may limit future FEMA funding of repairs at the site in the event that a similar disaster event results in similar damage at the site.

CHANGES TO THE HAZARD MITIGATION SCOPE OF WORK FOR LARGE PROJECTS:

Per PAAP PA Process (Section 428), Guide for Permanent Work, February 10, 2020, "A Subrecipient may alter the 406-hazard mitigation SOW (HMP) after FEMA, the Recipient, and Subrecipient agree on the cost estimate for the initial proposal. After the project is obligated, the SOW for the HMP can be changed only once and the timeline for this change will be established based on a facility-by-facility basis. The proposed change will require evaluation by FEMA for eligibility and EHP. As part of the eligibility review, FEMA will evaluate the SOW, technical feasibility, the level of protection, the revised cost estimate, and cost effectiveness of the new hazard mitigation proposal, and, if approved, will adjust the scope and cost estimate accordingly." (Page 14)

HAZARD MITIGATION DESIGN: This HMP is for estimating purposes only and not to be construed as a project design. If the site's final placement and configuration are different than the preliminary estimate, the Applicant should submit a change in scope request. This HMP is subject to further review prior to award.

HAZARD MITIGATION CONSTRUCTION: The Applicant must provide & maintain competent & adequate engineering design & supervision during the construction phase to ensure that the completed work conforms to the approved plans & specifications & all applicable material & construction standards.

As a condition of the FEMA mitigation grant, the Applicant is responsible for the determination of and compliance with all applicable requirements, codes, standards and specifications in connection with the project, including but not limited to the Puerto Rico Building Code of 2018 (2018 PRBC), IBC, IRBC, NFIP Floodplain Management Regulations outlined in 44 C.F.R 60.3, ASCE 24, ASCE 7, and receiving all applicable permits & approvals prior to construction.

MAINTENANCE OF HAZARD MITIGATION: The Applicant shall ensure proper maintenance of the installed mitigation measures, per manufacturer and designer specifications. Any adaptations or installations not approved or that renders the hazard mitigation measure ineffective shall be removed by the Applicant. Examples include, but are not limited to, improper installation of roof-mounted equipment or installation of window-mounted air-conditioning units.

ENVIRONMENTAL AND HISTORIC PRESERVATION: Eligibility and funding for the mitigation at this site on this project will be subject to the compliance of all environmental laws, regulations, and executive orders applicable to the site. This project will undergo a EHP compliance review, after obligation any changes to the SOW will likely trigger an additional EHP compliance review of the revised SOW.

ATTACHMENTS:

Please refer to the following documents.

1. "Island-Wide Vegetation Clearance - FEMA letter dated March 24, 2023.pdf"
2. "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"
3. "Appendix A and B - Protected Flora and Incompatible Flora Species.pdf"
4. "IWBCA HMP Package.pdf"
5. "PN1070369-TL200_38KV_Ponce.kmz"
6. "PN1070369-DR4339PR-HMCE-IEP-20260910-RIBR"

Cost

Code	Quantity	Unit	Total Cost	Section
9001	1	Lump Sum	\$42,287.98	Uncompleted
3510	1	Lump Sum	(\$1,289.78)	Uncompleted

CRC Gross Cost \$40,998.20

Total 406 HMP Cost \$0.00

Total Insurance Reductions \$0.00

CRC Net Cost \$40,998.20

Federal Share (90.00%) \$36,898.38

Non-Federal Share (10.00%) \$4,099.82

Subgrant Conditions

- Applicants must retain all source documentation for each large project for three years after the date the Recipient submits to FEMA certification of completion of the project and all source documentation for small projects for three years after the Recipient submits to FEMA certification of the applicant's last small project. See Title 2 Code of Federal Regulations (C.F.R.) § 200.334. Recipients may require longer retention periods. Real property and equipment disposition, audits, and litigation may also require longer retention periods. If requested, Applicants must provide documentation to FEMA. Recipients may require documentation not otherwise required by FEMA (such as actual cost documentation for Small Projects). In such cases, the Applicant must provide the documentation to the Recipient.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance in effect at the time of the declaration. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise. DHS Standard Terms and Conditions are viewable at <https://www.dhs.gov/publication/dhs-standard-terms-and-conditions>.
- The applicant acknowledges that the Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 200.110.
- The applicant acknowledges that PA funding must be used exclusively for the work specified in the approved project. If a change to the approved scope of work is needed, the applicant must submit a written request through the Recipient to FEMA before it commences work associated with a change.
- Applicants must inform FEMA of each purchased equipment item with a fair market value over \$10,000 after it is no longer needed for federally funded programs or projects. Applicants must also inform FEMA of any unused residual supplies when the aggregate total exceeds \$10,000. See Title 2 C.F.R. §§ 200.313 and 200.314. FEMA reduces eligible funding by this amount.
- The Recipient must submit its certification of the subrecipient's completion of this project, the final claim for payment, and supporting documentation within 180 days from the date that the applicant completes the scope of work, or the project deadline, whichever occurs first. FEMA reimburses Large Projects (those with costs above the large project threshold) based on the actual eligible final project costs. Therefore, during the final project reconciliation (closeout), the project may be amended to reflect the reconciliation of actual eligible costs.
- The Subrecipient provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.
- The Applicant certifies that all work claimed was or will be delivered in an impartial manner without discrimination as required by Title VI of the Civil Rights Act, Section 308 of the Stafford Act, 42 U.S.C. § 5151, and applicable provisions of laws and authorities prohibiting discrimination.
- The Applicant certifies that all impacts/damage claimed was a direct result of the Presidential declaration, was not pre-existing damage, and did not result from a lack of maintenance.
- The applicant certifies that all work claimed was required as a direct result of the major disaster declaration, is located within the designated area, and is the Applicant's legal responsibility.
- The applicant certifies that all costs claimed are reasonable and of a type recognized as ordinary and necessary for the type of work as required by 44 C.F.R. § 206.228 and 2 C.F.R. § 200.404.
- The applicant certifies that no work or costs claimed are covered by another funding source. Pursuant to section 312 of the Stafford Act, 42 U.S.C. § 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The applicant acknowledges it is required to notify FEMA through the recipient if it receives assistance for the same work or costs from another Federal agency, insurance, or any other source and return any duplicated funds to FEMA.
- The applicant certifies that all facilities are being restored in accordance with all federal and SLTT code and standard requirements.

- The applicant acknowledges it must comply with EHP laws, regulations, and Executive Orders (EO), including but not limited to, the Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA). The applicant must afford FEMA the opportunity to perform EHP reviews prior to starting any work that has potential to impact the environment or historic properties, including archaeological resources. If the applicant starts work prior to FEMA's completion of the EHP review, it jeopardizes PA funding for the entire project.
- The applicant acknowledges that under 2 C.F.R. Part 200, it must follow their documented procurement procedures, provided they conform to federal procurement and contracting requirements. The applicant certifies that it is using the most restrictive of either its own documented policies and procedures for procurement or federal procurement and contracting laws in accordance with 2 C.F.R. §§ 200.317 - 200.327. The Applicant is following Environmental Protection Agency guidelines for procurement of recovered materials; and including all applicable required contract provisions.
- The applicant certifies that all information provided is true and correct. Upon submittal this project application becomes a legal document. The False Claims Act (31 U.S.C. §§ 3729-3733) prohibits the submission of false or fraudulent claims for payment to the federal government. It is a violation of federal law to intentionally make false statements or hide information when applying for Public Assistance. This can carry severe criminal and civil penalties including a fine of up to \$250,000, imprisonment, or both (18 U.S.C. §§ 287, 1001, 1040, and 3571).
- The applicant acknowledges that it must obtain and maintain insurance coverage for all buildings, contents, equipment, and vehicles in an amount equal to or greater than the total cost, prior to any reductions as required by the Stafford Act § 311, 42 U.S.C. §5154, 44 C.F.R §§ 206.251 - 206.253, and in accordance with FEMA Policy 206-086-1 Public Assistance Policy on Insurance.

Insurance

Additional Information

9/16/2026

Does the Applicant have a Commercial Policy: Yes.

Does the Applicant's Commercial Policy extend coverage for the damage described in this project: No.

Property insurance coverage for the electrical distribution facilities represented on this project are not insured or insurable. No insurance relief is anticipated. No Obtain and Maintain requirement will be made.

FEMA requires the applicant to take reasonable efforts to pursue claims to recover insurance proceeds that it is entitled to receive from its insurer(s). In the event that any insurance proceeds are received for these expenses those proceeds must be reduced from FEMA Public Assistance funding to ensure no duplication of benefits has occurred.

No duplication of benefits from insurance is anticipated for work described in this application. In the event any part or all costs are paid by an insurance policy, a duplication of benefits from insurance will occur. Applicant must notify grantee and FEMA of such recoveries and the Sub-Grant award amount must be reduced by actual insurance proceeds.

No insurance requirements will be required for this project. Insurance requirements are specific to permanent work to replace, restore, repair, reconstruct, or construct buildings, contents, equipment, or vehicles. (FEMA Recovery Policy FP 206-086-1).

No insurance narrative will be produced or uploaded into documents or attachments.

Jean-Carlo Echevarria, PA Insurance Specialist, CRC Atlantic, Guaynabo, PR

O&M Requirements

There are no Obtain and Maintain Requirements on **FAAST [38kV Line 200 – Entire Line] (Vegetation) (HM Cost Alignment)**.

406 Mitigation

There is no additional mitigation information on **FAAST [38kV Line 200 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and executive orders?

Yes

EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- On May 16, 2025, the Secretary of the U.S. Department of Energy (DOE) issued Order 202-25-2 (Order), pursuant to the authority vested in him by section 202(c) of the Federal Power Act (FPA), 16 U.S.C. § 824a(c), and section 301(b) of the Department of Energy Organization Act, 42 U.S.C. § 7151(b). The Order sought to expedite repair and maintenance efforts to the electrical grid of Puerto Rico by directing the Puerto Rico Electric Power Authority (PREPA) to perform vegetation management, including vegetation clearing to reestablish a right-of-way, for particular transmission and distribution facilities in the Territory as specified in the Order. The Order required PREPA to identify certain parameters by which the directed work would be performed, and required that all work be performed, to the maximum extent practicable, in a manner consistent with all applicable Federal, State, or local environmental laws or regulations and minimize any adverse environmental impacts. However, pursuant to Section 202(c)(3) of the FPA, to the extent any omission or action taken by PREPA that was necessary to comply with the Order, including any omission or action taken to voluntarily comply with the Order, caused PREPA to not comply with any Federal, State, or local environmental law or regulation, including any environmental conditions in this REC's "Standard Conditions," such omission or action shall not be considered a violation of such environmental law or regulation, or subject PREPA to any requirement, civil or criminal liability, or citizen suit under such environmental law or regulation. On August 15, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. To renew/reissue the Order, DOE was required to consult with the primary Federal agency with expertise in the environmental interest protected by such law or regulation and include in the Order conditions necessary to minimize any adverse environmental impacts to the extent practicable. Pursuant to Section 202(c)(4)(B) of the FPA, DOE provided the relevant agencies the opportunity to submit conditions for work performed under the Order, to be included in the Order. According to DOE, no conditions were submitted by the agencies for inclusion in the Order. On November 12, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. DOE and FEMA have agreed that DOE is the lead agency for activities that fall under the prior and any future DOE 202(c) orders issued under the Federal Power Act to resolve the current and related emergencies in Puerto Rico. FEMA has requested that DOE provide FEMA with all documentation relating to their EHP compliance. FEMA will review and incorporate all available information and data for this project pertaining to applicable environmental laws and regulations into this REC when it is received from DOE. On February 10, 2026, and again on May 7, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities. On August 07, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities.
- If ground disturbing activities occur during construction, the applicant will monitor ground disturbance, and if any previously unidentified historic properties, including archeological resources, are discovered, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA. Should any unanticipated effects to previously identified historic properties, including archaeological resources, be identified during construction activities, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA.

EHP Additional Info

There is no additional environmental historical preservation on **FAAST [38kV Line 200 – Entire Line] (Vegetation) (HM Cost**

Alignment).

Final Reviews

Final Review

Reviewed By LEFRANC-GARCIA, CARLOS L.

Reviewed On 09/25/2026 8:08 PM PDT

Review Comments

Version 0 contemplates \$36,898.38 (federal share) for incidental vegetation clearance associated with 2.74 miles of the 38kV Line 200 – Entire Line. No permanent infrastructure repairs are included in the approved Scope of Work. The Work to Be Completed cost is \$42,287.98, based on \$15,433.57 per mile, and the final PA project cost is \$40,998.20.

Recipient Review

Reviewed By Mulero, Noel

Reviewed On 10/06/2026 8:03 PM PDT

Review Comments

Recipient review completed. Applicant must ensure to compliance with all regulatory requirements, Record of Environmental Consideration (REC) Special Conditions and PA policy. This project applies to the Department of Energy's executive order. This means that DOE is the lead agency for environmental matters. Project is ready for applicant review.

Project Signatures

Reviewed By Unsigned

Reviewed On Unsigned

Award Information

EMMIE Imported Version Information

Version #	Eligibility Status	Current Location	Bundle Number	Project Amount	Cost Share	Federal Share Obligated	Date Obligated
No Records							

Drawdown History

EMMIE Drawdown Status As of Date	IFMIS Obligation #	Expenditure Number	Expended Date	Expended Amount
No Records				

Obligation History

Version #	Date Obligated	Obligated Cost	Cost Share	IFMIS Status	IFMIS Obligation #
0	10/14/2026	\$36,898.38	90%	Accepted	4339DRPRP01083331

**Department of Homeland Security
Federal Emergency Management Agency**

v0

General Info

Project #	1070370	P/W #	108334	Project Type	Specialized
Project Category	F - Utilities	Applicant	PR Electric Power Authority (000-UA2QU-00)		
Project Title	FAASt [38kV Line 800 – Entire Line] (Vegetation) (HM Cost Alignment)			Event	4339DR-PR (4339DR)
Project Size	Small	Declaration Date	9/20/2017		
Activity Completion Date	9/20/2027	Incident Start Date	9/17/2017		
Process Step	Obligated	Incident End Date	11/15/2017		

Damage Description and Dimensions

The Disaster # 4339DR, which occurred between 09/17/2017 and 11/15/2017, caused:

Damage #1872584; FAASt [38kV Transmission Line 800 – Entire Line] (Vegetation)

General Facility Information:

- **Facility Type:** Power generation, transmission, and distribution facilities
- **Facility:** FAASt [38kV Transmission Line 800 – Entire Line] (Vegetation)
- **Facility Description:** The Puerto Rico Electric Power Authority (PREPA) owns more than 19,000 miles of transmission and distribution lines, as well as more than 400 substations. The facilities addressed in this project are all the overhead transmission and distribution lines (16,000+ miles), as well as substations. To ensure the functioning of this infrastructure to the level of service needed, keeping this equipment clear from vegetation is significant.
- **Approx. Year Built:** 1950
- **GPS Latitude/Longitude:** [REDACTED]

Final Scope

1872584 FAASt [38kV Transmission Line 800 – Entire Line] (Vegetation)

Project 136271 (hereinafter PREPA FAASt Project) authorized \$9,459,885,412.39 (Federal Share) to be awarded to the Puerto Rico Electric Power Authority (PREPA, Subrecipient) as a fixed cost estimate (FAASt FCE agreement) based on eligible work without detailed scopes of work to restore disaster-damaged facilities. Eligible work for the Transmission and Distribution (T&D) system included restoration of:

Broken structures due to high winds such as poles/towers (counted as broken when poles were inclined, bent, torn, and/or cracked); and other damages/broken components such as transformers, insulators, conductors, grounding system, jumpers, Gang Operated Air Breakers (GOABs), pole hardware, guy wires and anchors.

FEMA deferred the 406 Hazard Mitigation Proposal (HMP) fixed cost over in the PREPA FAASt Project until the Subrecipient submits its actual recovery solutions. FEMA also issued a clarification letter regarding whether hazard mitigation funding under Section 404 or Section 406 of the Stafford Act may be made available for the execution of a one-time, island-wide vegetation clearing and removal operation intended to mitigate the threat to the existing vegetation, if unintended to, poses to Puerto Rico's electric T&D system. See FEMA's letter to COR3, document Signed Vegetation Management March 24 2023.pdf. The Subrecipient's actual recovery solution seeks a one-time Island-wide vegetation clearance and removal operation intended to mitigate the threat to the existing vegetation, if unintended to, poses to Puerto Rico's electric T&D system. The actual recovery solution seeks to mitigate Puerto Rico's electric T&D system, including areas without infrastructure repairs.

The actual recovery solution (scope and cost) will be captured in multiple individual projects (hereinafter Vegetation clearance HMP Sub-FAAST projects) to provide flexibility and enable multiple programmatic reviews simultaneously. The Vegetation clearance HMP Sub-FAAST projects do not include infrastructure repair work.

This project captures a portion of the Island-wide actual recovery solution, specifically the onetime vegetation clearance and removal operation intended to mitigate the 38kV Line 800– Entire Line (see project note #1 and #2).

FEMA 406 Hazard Mitigation (HM) team will review this actual recovery solution and issue an FCE offer for the portion of the recovery solution that reduces risk of future similar damages. The Work to be Completed will be captured in the 406 HM scope section. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects will be adjusted as describe in FEMA-4339-DR-PR Public Assistance PREPA FAAST Post-Fix Estimate Obligation Vegetation HMP Approach: 38kV. See document 956345 DR4339PR FAASTVegetationHMPApproach_38kVTrans.pdf. The PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope. WTBC Cost (PA) = \$15,433.57 per mile. Therefore, the total cost (PA) for this project will be \$59,385.23.

DI#	PA Vegetation Clearance Overlap per mile	Total miles	WTBC - PA Cost with Subrecipient Management & General Conditions	A&E - PA	Total - PA
1872584	\$15,433.57	3.88	\$59,882.25	\$(497.02)	\$59,385.23

Work to be completed total: \$59,882.25

A&E Deduction (Global A&E FAAST 335168): -\$497.02

Project Total: \$59,385.23

Project Notes:

1. This is a 38kV Transmission-Vegetation clearanceHMP Sub-FAAST project.
2. Vegetation clearance HMP Sub-FAAST projects will be written according to line type (Distribution: 13.2kV and down, and Transmission: 38 kV, 115kV, and 230 kV) because of the different ROWs and other characteristics. Multiple projects of each type will be submitted and reviewed for eligible PA 406 HM funding. Vegetation clearing work will only be submitted for those areas that vegetation represents strike potential (may cause future similar damage to the T&D system when subject to high winds). In the submittal of this project the Subrecipient's Authorized Representative attests that only the vegetation clearance submitted is to reduce strike potential and that the ROW for these lines has been, and will be, counted only once to avoid duplication within the vegetation clearance projects.
3. For more details of the requirements and conditions for the execution of a one-time, island-wide vegetation clearance and removal operation considered as an eligible Section 406 hazard mitigation proposal (HMP), please refer to document labeled: Attachment A FEMA letter dated March 24 2023.pdf.
4. For details on the SOW, refer to filename 1070373-FAAST [38kV Line 1200 – Entire Line] (Vegetation) DSOW.pdf
5. Vegetation clearance funds will not be allocated to SubFAAST projects.
6. A&E cost included in this project will be reduced from this project and obligated under the FAAST Project #335168, A&E, as shown in the table above. The A&E project was obligated to track and account for costs associated with individual FAAST projects.
7. This project is part of Donor FAAST 136271 – MEPA078 Puerto Rico Electrical Power Authority (PREPA) Island Wide FAAST Project.

406 HMP Scope

Project number: [1070370] FAAST [38kV Transmission Line 800 – Entire Line (Vegetation)]

Damage #: 1872584

Applicant: PR Electric Power Authority (000-UA2QU-00)

Location: Caguas, Puerto Rico

GPS Latitude/Longitude: From: [REDACTED]

Introduction:

Puerto Rico's electrical grid infrastructure has been severely compromised by extreme weather events, particularly with Hurricane Maria in September 2017. The hurricane caused widespread disruptions to transmission and distribution systems, largely due to vegetation impacts that collapsed distribution and transmission lines. Substantial infrastructure was damaged when trees downed utility power lines and poles, causing most of the transmission/distribution system to fail. Post-hurricane vegetation clearance to enable grid repair and restoration progressed slowly, considerably delaying overall electrical recovery. Remaining excess vegetation continues to cause operational outages, as ground faults occur when vegetation contacts power lines even during normal weather events. After the passage of Hurricane Maria, minimal cleaning work was carried out exclusively to clear the areas to carry out emergency repairs to the electrical system. These works were covered by Category B - Emergency Protective Measure, but excess vegetation on the electrical system remains an outstanding vulnerability.

Puerto Rico's grid modernization and mitigation one-time ROW clearance strategy will prioritize effective and proactive vegetation management protocols to prevent prolonged storm-related outages, thereby increasing the reliability of the electric system. These reliability and resiliency gaps are especially impactful to Puerto Rico, which has been facing increasingly frequent natural hazards such as hurricanes. This project is part of the Vegetation Reset Program which will impact the Transmission and Distribution systems for each of the 78 municipalities.

Hazard Mitigation Narrative:

In order to minimize damages in a future event, the Subrecipient's actual recovery solution seeks a one-time Islandwide vegetation remediation clearance for the above work included in the PREPA FAAS Project, as according to the Public Assistance Alternative Procedures (PAAP) (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (hereinafter PR PAAP Guide) and FEMA's letter to COR3, document Signed Island-Wide Vegetation Clearance March 24, 2023. Section 406 hazard mitigation are funds that can be added to projects for the restoration of disaster damaged facilities and must prevent future damage caused by the declared event. Under DR-4339-PR, Section 406 hazard mitigation funds are based on eligible, technically feasible, and cost-effective mitigation activities proposed to reduce risk to the function of the disaster-damaged facilities. The portion of the recovery solution that reduces risk of future damage may be considered as eligible 406 mitigation.

The island-wide transmission and distribution grid was significantly damaged by the strong winds and heavy rainfall during the atmospheric event hurricane Maria. This resulted in many trees and other vegetation becoming a direct hazard to the electrical grid. A one-time 406 hazard mitigation island-wide vegetation clearance will benefit the reliability and resiliency of the Puerto Rico electrical grid, including the number and duration of customer outages during and after the work to complete the repairs to the electrical grid through other PREPA 428 FAAS Projects. The scope of the global 406 Hazard Mitigation (HM) projects includes vegetation clearing across the entire width of the easement, plus a radius of 12 to 25 feet from energized conductors to directly reduce the potential for future damage to the "transmission and/or distribution" (T&D) systems. Each 406 HM Vegetation Reset project is correlated with an eligible 428 T&D project, in association with PREPA's electrical grid. Different regional projects are developed to impact all lines of the electrical system, including distribution lines and high-voltage transmission lines. Also, projects are defined in terms of line type (distribution or transmission) and population density of the area (high or low) to simplify the evaluation by the Environmental and Historical Preservation team (EHP).

The global project was divided into the following regions:

- Region 1 – San Juan
- Region 2 – Arecibo
- Region 3 – Bayamón
- Region 4 – Caguas
- Region 5 – Mayagüez
- Region 6 – Ponce

For each Region of the island, there will be two types of projects to capture the Vegetation Clearing activities within scopes of work: (1) single transmission line projects based on LUMA's priority list, capturing the lines or segments of lines affected most by vegetation interference, and (2) Regional DSOWs divided into groups (Groups A – F), as follows:

- Region 1 – San Juan

- Region 2 – Arecibo
- Group A – High/Low Density Distribution Lines
- Group B – 38 kV Transmission.
- Group C – Overlapped Distribution and Transmission Lines
- Group D - 115 kV Facilities
- Group E - Substation and Telecommunication Facilities.
- Group F – 230 Kv Facilities (Non-Region – Specific)

This 406 HM work is limited to what is necessary to directly reduce the potential of future damage to the T&D system assets, that exceeds what is necessary to clear vegetation for accessing facilities when carrying out repairs which are already established as eligible for FEMA funding utilizing the 428 FAAS Grant. Each 406 HM will correlate with an eligible 428 Transmission and/or Distribution (T&D) project in association with the PREPA power grid. There will be 7 Regional DSOW's developed capturing planned actions within scopes of work formulated with established criteria detailed for Distribution and Transmission lines/facility locations. The first DSOW is Group A - High Density areas with a low reflection of infrared light; the second DSOW is Group A Low Density locations where more vegetation density is present, which is determined by a higher level of reflection of infrared associated with Vegetation for 13.2kV and below locations; the third DSOW is Group B locations at 38kV level; the fourth DSOW is Group C - with known local environmental sensitivities at 38kv and below levels locations; the fifth DSOW is 115kV Facilities; and the sixth DSOW is Substation and Telecommunication Facilities. There will also be 230 kV Facilities (these installations have a separate Vegetation Clearance project that is not region- specific).

FAAS [38kV Transmission Line 800 – Entire Line (Vegetation)

This is a project for 38kV transmission lines in Region 4 Caguas. The DSOW captures the scope of work and cost estimate for Vegetation Clearing intended to mitigate the threat that the existing vegetation, along 38kV lines within Caguas (if left untended to), poses Puerto Rico's electric grid.

This SOW is aligned with and leverages FEMA's Island-Wide Benefits Cost Analysis (IWBCA), which was used for this purpose and fully supports the mitigation measures employed within this project scope of work.

The Subrecipient's authorized representative (LUMA) estimates that this 406 Hazard Mitigation proposal for island-wide vegetation clearance will have immediate and future widespread benefits, including:

- Mitigation of the hazards due to vegetation impacts and damages.
- 70% annual reduction of outages caused by vegetation.
- 35-45% annual reduction of customer interruptions.
- Faster restoration for impacted customers.
- Improved safety for utility workers and the public.
- Support the rebuilding of the grid and effective execution of large-scale construction projects.

The following terms, when used in this document, shall have the meaning described below.

Compatible Species – Compatible species are those that are congruent with the intended use of the site, and include small trees, shrubs and herbaceous vegetation that will never grow into conflict with overhead conductors.

Incompatible Species – Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors.

Clearance - The minimum distance between two conductors, between conductors and their support or other objects, or between conductors and the ground. The National Electrical Safety Code (NESC) and PREPA's Technical Communication (See 12-02 attached) determine the minimum requirements regarding distances (vertical and horizontal) between an energized conductor or device and a structure, building or surface. Vegetation Clearing will be limited to clearing any vegetation affecting these clearances. This term is not synonymous with easement. Clearances can be met without being within an easement. Clearance requirements must be complied with either when the Authority builds its facilities, as well as when a third party builds a structure. Clearances, in both cases, must be complied with by regulation, regardless of whether an easement exists. regardless of whether an easement exists.

Easement - is a line imposed on a property for the benefit of another belonging to a different owner. The property, in favor of which the easement is constituted, is called the dominant estate; the one who suffers it, servant property. An easement for electrical power lines

provides PREPA and Luma as its agent various rights including reasonable access to the electric infrastructure to provide maintenance, repair, expand, operate and is established on the strips or portions of land where facilities of the T & D system are located or will be located, such as lines, poles, towers, equipment, and accessories. These acquired rights make it easier to carry out vegetation clearing work.

The PREPA distribution and transmission systems are populated with millions of plants but only some have the conditions, growth characteristics, and/or locations that make them compatible or incompatible with the safe and reliable energy delivery service. The Subrecipient's authorized representative recognizes the diversity of species in tropical ecosystems, and the general remediation strategy is to control incompatible species while encouraging the growth of compatible species. Compatible species may, on occasion, need control if their height or density impedes the necessary line of sight for inspections or access to perform resilience work. Within Appendix A and B are lists of protected flora species and incompatible flora species expected to be encountered during scope performance.

(I) Proposed 428 Public Assistance Scope of Work (SOW):

This project includes Public Assistance (PA) works; however, PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope, \$15,433.57 / mile calculation represents the PA Overlap.

PA incidental works will be deducted from the Section 406 Hazard Mitigation project costs to avoid duplication of works. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects.

FEMA performed an analysis to the PREPA FAAST documents and determined that vegetation clearing on each mile of 38 kV line requiring repair was on average 8.34%% related to the repair (428 PA) and 91.66% related to a mitigation measure (406 HM). The fixed-cost estimate for the PA scope is \$15,433.57 per **3.88 miles**, with a total project cost of **\$59882.25**. For further details, refer to the document "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

(II) Hazard Mitigation Proposal (HMP) Scope of Work:

[1872584]; FAAST [38kV Transmission Line 800 – Entire Line] (Vegetation)

As a result of DR-4339-PR, vegetation surrounding T&D assets are falling onto these facilities and interfering with the safe and reliable operation of the assets. The vegetation at present is currently causing outages when vegetation is in contact with the T&D assets. To mitigate the future damage across T&D assets and protect the 428 repairs and replacement along these facilities, clearing vegetation materials will be required. This 406 Hazard Mitigation Scope of Work is to directly reduce the potential of future, damages to the T&D system by clearing vegetative materials that pose an immediate threat to the power distribution lines, and identification for corrective actions related to clearing vegetation (consisting of shrubs, branches, limbs, stumps, bamboo, and trees that are directly impacting the resilience and productivity of the power grid) applicable to the existing PREPA electrical grid within Region 4 Caguas TL of Puerto Rico.

The extent and execution of this scope includes performing verification of facilities, assets and condition assessments for determining the most appropriate remediation, preparing work orders for executing the necessary vegetation remediation, by ways of tree felling, vegetation remediation, mechanical vegetation remediation, vegetative debris disposal via chipping, mulching, hauling, and recycling where applicable in easement of the PREPA power Distribution lines. LUMA is not planning to construct access roads. If the work to be done is not adjacent to an existing road, our contractor tree crews will minimize environmental disturbance by utilizing vegetation crews hiking by foot in and out of our existing easement.

Parameters for Performing 406 Hazard Mitigation Vegetation Clearing

Regulation 7282 requires that only shrubs and plants (no trees) be planted within the easement under power lines. Climbing plants and vines, as well as bamboo, are prohibited from being planted within an easement. The branches of trees planted outside the easement must not obstruct free passage of the power lines. The National Electrical Safety Code (NESC) and PREPA's Technical Communication establish the minimum required distances, both vertical and horizontal, between an energized conductor or device and any structure, building, or surface. Vegetation clearing will be restricted to removing any vegetation that interferes with these clearances. For power distribution lines, NESC and Regulation 7282 define the vertical distance from vegetation as 12-15 feet. By law, any trees, shrubs, or plants planted in violation of Regulation 7282 may be uprooted, removed, or cut down in accordance with the provisions of Regulation 7282 – for both compatible and incompatible species.

Industry standard practices will determine how the work will be performed. A healthy tree is less likely to fall over in a storm and damage overhead lines; therefore, vegetation will be pruned according to ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Vegetation that is improperly pruned could become susceptible to disease and decay, resulting in a hazard to both the line and public safety. ANSI A300 is the tree care industry standard of care in the USA. It was developed by Tree Care Industry Association and maintained by a consensus of various industry stakeholders through periodically reviewing and updating the guidelines. These standards provide guidance on how and where to prune vegetation to achieve clearances and maintain a

healthy plant. In all cases, Subrecipient's authorized representative's vegetation clearing contractors will be required to perform clearing activities in a manner consistent with ANSI A300, NESC, and Regulation 7282 alignment with Resolution 4987, Organic Law 83 (amended version), Communication 12-02, and PREPA 's Comprehensive Management Plan establishing standard Distribution easement widths. Easement Clearance widths for distribution lines are given in the table below:

Recommended Easement width for overhead Transmission & Sub-Transmission Lines (feet)				
Construction type	Area	Voltage(Kv)		
		38	115	230
Single Circuit	Urban	25 ft	30 ft	40 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Same Structure	Urban	25 ft	40 ft	60 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Different Structures	Rural	50 ft	100 ft	100 ft

Scope of Work Inside Easement – Incompatible Species

Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors. For the power distribution lines, all Incompatible Species will be cleared from the full width of the easement. "Clearing" in this context includes the following activities: tree removal, severing of vines, cutting, vegetation mastication.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified working at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter Incompatible Species by hand.
- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

Scope of Work Inside Easement – Compatible Species:

Compatible vegetation species will be cleared consistent with the distances identified in Regulation 7282, which means that any species

with the potential to encroach within 12 feet of the conductors at full size will be removed using the same methods discussed above. Even though the distances identified in Regulation 7282 are vertical clearances, Compatible Species encroaching on the conductors from any direction can pose a hazard to the distribution system, with the maximum edge of the conductors to be 12 feet wide centered on the pole. Therefore, the 12-foot clearance is being applied to both vertical and horizontal clearances. For areas with overhead distribution systems located in the backyard or side yard, the certified easement width from LUMA Land Records office will use for clearing.

In rare cases where Subrecipient's authorized representative encounters significant resistance from landowners or stakeholders to remediate vegetation, Subrecipient's authorized representative will work with landowners or stakeholders to determine if Incompatible and Compatible Species can be pruned to mitigate the hazard to the lines instead of being completely removed

Vegetation with the potential to encroach within 12 feet of conductor — Compatible or Incompatible.

Any vegetation species—whether Compatible or Incompatible—that have the potential (when at full size) to encroach within 20 feet of the conductor will be cleared using one of the methods discussed below:

- **Tree Removal:** Removing above-ground portions of trees while leaving stumps in place.
- **Severing of Vines:** Cutting vines at the base to create an air gap between the root system and the structure.
- **Cutting:** Hand removal of small-diameter incompatible species.
- **Vegetation Mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch. Using heavy equipment to reduce standing trees to woody debris.

All Other Incompatible Species within the Recommended Easement Width:

- All other Incompatible Species will be cleared from the full width of the recommended easement width. The clearing methods described above (tree removal, severing of vines, cutting, and vegetation mastication) will be utilized.

Scope of Work Outside Easement – Species Growing into the Easement

There is the potential for vegetation outside or along the boundary of the easement to interfere with the operation of power distribution lines. Appropriate clearances around the conductors must be achieved to protect the lines from future damage. For distribution lines, Subrecipient's authorized representative has established a minimum clearance distance of 12 feet from all conductors, with the maximum edge of the conductors to be 12 feet wide centered on the pole. This distance is consistent with the vertical distance established in Regulation 7282. If there are species encroaching on the 12-foot clearance outside or along the boundary of the easement, these species will be pruned to obtain at least 20 feet of clearance from the conductors at the time clearance work occurs. In cases where following ANSI A300 best practices require clearance beyond 12 feet, the maximum distance cleared will not exceed an additional 3 feet from set clearing distance. Diagrams illustrating these clearing distances are provided as attachments within Grants Portal. The following clearing methods will be provided as Attachment B-*“FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf”*

- **Tree pruning:** Qualified personnel work from an aerial platform or while climbing within a crown of trees to prune the tree. All pruning work wounds the tree. Done poorly, pruning can result in an exaggerated regrowth response by adversely altering tree architecture and increasing exposure to decay organisms that can weaken the tree. These adverse consequences increase the likelihood of tree-initiated faults causing system interruptions and customer outages. Proper arboriculture techniques will be utilized.
- **Tree removal:** Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- **Severing of vines:** Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified worker at ground level. The upper portion of the vine remains attached and is not removed.
- **Cutting:** Cutting typically involves the removal of small diameter species by hand.
- **Vegetation mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

FEMA 38kV Assessment & Methodology:

LUMA documentation claims a 100% clearance for the entire project segment based on the total length of the feeder. This analysis would not be considered as the method for validation purposes.

Consequently, FEMA perform a 100% evaluation of each feeder to determine the quantity of miles of vegetation non-compatible. The tools used for this analysis are Google Earth, that allows a street view evaluation where the HM Specialist uses the imagery data for analyze the feeder lines adjacent to roads. Where the feeder is through mountains FEMA use top and 3D view maps that allows determine the elevations for mountains, forested areas (assess vegetation), and the topography of the land. When poles are at the top of mountains and lines run between mountains, only the vegetation around the poles will be considered. The total percentage of each line is the result of compiling all the sections analyzed. It is important to emphasize that after work completed, the subrecipient can submit additional eligible vegetation clearance distance not included in this vegetation clearance percent analysis.

FEMA Analysis:

The total miles to be addressed in the Hazard Mitigation Proposal (HMP) is **6.48 miles**, which includes a 10% buffer due the method of assessment (desktop review), providing sufficient funds to ensure vegetation works are covered. This amount is estimated value, that will be adjusted based on the amount of actual work performed.

The cost estimate is based on two vegetation clearance scenarios, (1) the full clearance represents those lines that at both side sides of the right of way have vegetation that needs to be cleared. (2) is the half clearance represented for those circuits alongside roadways and only needs clearance at one side of the right of way. As a result, the total miles used for the cost estimate is **3.88 miles**, which reflects these adjustments for segments that do not require full clearing. This amount is estimated value, based on a desktop review that will be adjusted based on the amount of actual work performed and evidence of the actual work performed.

	HMP	Cost Estimate
Total Project Miles:	14.98	14.98
Vegetation Miles at 100% of Work	1.16	1.16
Vegetation Miles at 50% of Work	4.74	2.37
Total Miles to Clean	5.89	3.53
Buffer Acceptance:	0.10	10%
Vegetation Miles at 100% + Buffer	1.27	1.27
Vegetation Miles at 50% + Buffer	5.21	2.60
Total Miles to Clean with Buffer	6.48	3.88
% of Miles to Clean with Buffer	43%	26%

(III) Hazard Mitigation Proposal (HMP) Cost:

¹ Vegetation Clearance Cost per Mile (Base Cost) =	\$176,173.47 / mile
Risk Factor approved by the DR4339-PR leadership (5%) =	<u>\$8,808.67 / mile</u>
Vegetation Clearance Cost per Mile (w/Soft Cost) =	<u>\$184,982.14 /mile</u>
² PA Vegetation Clearance Overlap per Mile (Deduction) =	<u>(\$15,433.57/ mile)</u>
Hazard Mitigation Total Cost per Mile =	\$169,548.57 / mile
Project Total Miles with Vegetation:	3.53-miles
Buffer Acceptance:	10%
Project Total Miles with Vegetation:	<u>3.88 miles</u>
Hazard Mitigation Total Cost =	\$657,848.45

Note: The \$169,548.57 / mile calculation represents the total cost (base costs + soft costs – PA Overlap). For this project, breaking down that total cost further yields the approximate figures below. For additional information please see the attached document.³

Total Net Hazard Mitigation Cost (Base Cost) =	\$626,522.34
+ HM (Management & General Conditions Factors) =	<u>\$31,326.11</u>
Hazard Mitigation Total Cost =	\$657,848.45

(IV) Hazard Mitigation Proposal (HMP) Cost Distribution:

Architecture and Engineering (A&E) =	\$5,460.14	
Remaining Vegetation Clearance Cost =	<u>\$652,388.31</u>	

Hazard Mitigation Total Cost =	\$657,848.45	
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(V) HMP Cost-Effectiveness Calculations:

FEMA's Benefit-Cost Analysis, BCA, methodology evaluates the expected risk reduction benefits of a hazard mitigation project and compares those benefits to the cost of the mitigation project. FEMA Public Assistance Program and Policy Guide, PAPPG, Version 3.1, April 2018, Chapter 2, Section VII.C, page 98, considers mitigation measures to be cost-effective when they are demonstrated through an acceptable BCA using FEMA's BCA methodologies and have a resulting Benefit-Cost Ratio, or BCR, equal to or greater than 1.0.

For PREPA infrastructure under FEMA DR-4339-PR, FEMA developed an Island Wide Benefit Cost Analysis, or IWBCA, to evaluate cost-effectiveness at the electrical system level rather than through separate project-specific BCAs. The IWBCA characterizes the PREPA/LUMA system as a single project for mitigation purposes, focuses on system-wide resiliency, and supports the development of cost-effective mitigation projects while avoiding double counting, or duplication, of benefits. The IWBCA applies one BCA to the entire FAASt project and includes benefits based on future costs avoided from physical damage to infrastructure, costs related to the response and reconnection effort, and loss of function for electric service caused by the storm.

The IWBCA established a maximum potential mitigation benefit for the PREPA system of \$7.6 billion. This figure represents the estimated total potential mitigation benefit with the highest confidence and was developed using the incurred costs of the PREPA FEMA Accelerated Award Strategy, FAASt, fixed cost estimate, FCE, the mission assignments used for the reconnection effort, and costs associated with loss of service. The IWBCA results were developed by the PA Mitigation team using the best available data and were further refined and concurred with by FEMA Region 2 PA Mitigation team members and FEMA HQ groups, including the Community Infrastructure Resilience, CIR, Branch and Disaster Implementation, DI, Branch. This maximum potential benefit must be tracked to ensure that the combined cost of all approved mitigation proposals does not exceed the maximum potential benefit.

The Hazard Mitigation Proposal, HMP, described herein has a total Hazard Mitigation cost of **\$657,848.46**. In accordance with FEMA's internal IWBCA benefit tracking, the maximum potential benefit remaining in the IWBCA is **\$4,981,759,294.81**. The cost of this HMP, when combined with all other approved IWBCA-related proposals funded, does not exceed the remaining available IWBCA benefit. Therefore, this HMP is deemed cost-effective under the FEMA PAPPG Version 3.1, April 2018, Chapter 2, Section VII.C, BCA Rule, because the IWBCA demonstrates an acceptable BCA with a Benefit-Cost Ratio equal to or greater than 1.0.

For validation, reviewers should refer to the attached IWBCA Package, including the IWBCA narrative and backup documentation, which define the IWBCA methodology, inputs, and supporting calculations. Reviewers should also confirm that the project has been included in the current IWBCA benefit tracking record to verify that the total approved IWBCA-related mitigation costs remain below the maximum potential benefit and that no duplication of benefits has occurred.

This Hazard Mitigation Proposal meets the eligible repair and restoration cost-effectiveness requirements. See the Mitigation Profile Documents Tab in Grants Manager for the complete supporting documentation, including the HMP cost estimate and supporting documents file.

(VI) Compliance and Assurance Requirements:

A) HMP GENERAL NOTES:

By agreeing to implement the hazard mitigation measures in this HMP, the Applicant/Sub-Applicant is bound by the specific guidelines listed within this document.

COSTS AND GENERAL CONDITIONS: The vegetation removal cost is established according to the average base cost of **\$176,173.47 / mile**. Additionally, DR4339-PR leadership has approved the application of a 5% risk factor to the average cost per mile, resulting in **\$184,982.14 / mile**. After deducting Public Assistance (PA) \$15,433.57 amount (incidental work- refer to document FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf), the final total obligated amount through PA 406 is **\$169,548.57 / mile**.

DOCUMENTATION REQUIREMENTS: The subrecipient shall document all vegetation removal work, including but not limited to the following:

- Before and after photographs of the total distance included in the HMP Scope of work that clearly show the condition of the area before and after the vegetation clearance.

- A digital map in ArcGIS format showing all areas where vegetation removal was performed. Location information must be provided, including the physical address, GPS coordinates from start to finish of clearance work, and contact information for private property (when applicable).

- Work orders must account for the entire feeder length distance and include a description of the sections both with and without vegetation. Material disposal documentation must specify whether the material was chipped and removed, left on-site, or transported to a landfill.

Note: All vegetation clearance projects must include the above documentation to define the work completed prior to project closeout.

COST DISTRIBUTION: Recognizing that the established cost is an average per mile, it is understood that actual expenses for each feeder or area may deviate (either underrun or overrun) from the estimated project amount. The 406 HMP scope and cost agreement sets an average cost per mile for vegetation clearance, allowing the subrecipient to manage funds across the various projects that comprise the vegetation asset. The *Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, January 1, 2022 (PR PAAP Guide)*, states that if funds for 406 Mitigation are included in the fixed-cost subaward, the subrecipient must complete the approved Scope of Work (SOW) of the Hazard Mitigation Proposal (HMP) in order to retain the 406 Mitigation funding. Consequently, only completed distance in the HM Scope of work, supported by the necessary back-up documentation (e.g., verified mitigated clearance distance), will be eligible for fund retention. Any uncompleted work from the HM SOW (e.g., miles not documented with mitigated clearance distance) will be de-obligated during the closeout process.

SCOPE OF WORK DEVELOPMENT OF HAZARD MITIGATION: FEMA will evaluate each mitigation opportunity to first determine what measures or portions of solutions could be funded through Section 406 mitigation. FEMA analyzes the proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and Eos. FEMA, the Applicant, Recipient, and Sub-recipients will develop and agree to scopes of work (SOW) and cost estimates to repair, restore, or replace eligible facilities including 406 Hazard Mitigation" (Page 6).

COMPLETION OF HAZARD MITIGATION SCOPE OF WORK: If this HMP is approved and the mitigation is not performed, the Applicant must apply for a change in the Scope of Work and a de-obligation of the HMP funding. Failure to complete the work of the HMP may limit future FEMA funding of repairs at the site in the event that a similar disaster event results in similar damage at the site.

CHANGES TO THE HAZARD MITIGATION SCOPE OF WORK FOR LARGE PROJECTS:

Per PAAP PA Process (Section 428), Guide for Permanent Work, February 10, 2020, "A Subrecipient may alter the 406-hazard mitigation SOW (HMP) after FEMA, the Recipient, and Subrecipient agree on the cost estimate for the initial proposal. After the project is obligated, the SOW for the HMP can be changed only once and the timeline for this change will be established based on a facility-by-facility basis. The proposed change will require evaluation by FEMA for eligibility and EHP. As part of the eligibility review, FEMA will evaluate the SOW, technical feasibility, the level of protection, the revised cost estimate, and cost effectiveness of the new hazard mitigation proposal, and, if approved, will adjust the scope and cost estimate accordingly." (Page 14)

HAZARD MITIGATION DESIGN: This HMP is for estimating purposes only and not to be construed as a project design. If the site's final placement and configuration are different than the preliminary estimate, the Applicant should submit a change in scope request. This HMP is subject to further review prior to award.

HAZARD MITIGATION CONSTRUCTION: The Applicant must provide & maintain competent & adequate engineering design & supervision during the construction phase to ensure that the completed work conforms to the approved plans & specifications & all applicable material & construction standards.

As a condition of the FEMA mitigation grant, the Applicant is responsible for the determination of and compliance with all applicable requirements, codes, standards and specifications in connection with the project, including but not limited to the Puerto Rico Building Code of 2018 (2018 PRBC), IBC, IRBC, NFIP Floodplain Management Regulations outlined in 44 C.F.R 60.3, ASCE 24, ASCE 7, and receiving all applicable permits & approvals prior to construction.

MAINTENANCE OF HAZARD MITIGATION: The Applicant shall ensure proper maintenance of the installed mitigation measures, per manufacturer and designer specifications. Any adaptations or installations not approved or that renders the hazard mitigation measure ineffective shall be removed by the Applicant. Examples include, but are not limited to, improper installation of roof-mounted equipment or installation of window-mounted air-conditioning units.

ENVIRONMENTAL AND HISTORIC PRESERVATION: Eligibility and funding for the mitigation at this site on this project will be subject to the compliance of all environmental laws, regulations, and executive orders applicable to the site. This project will undergo a EHP compliance review, after obligation any changes to the SOW will likely trigger an additional EHP compliance review of the revised SOW.

ATTACHMENTS:

Please refer to the following documents.

1. "Island-Wide Vegetation Clearance - FEMA letter dated March 24, 2023.pdf"

2. "FAASVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"
3. "Appendix A and B - Protected Flora and Incompatible Flora Species.pdf"
4. "WBCA HMP Package.pdf"
5. "PN1070370 TL800 38KV Caguas.kmz"
6. "PN1070370-DR4339PR-HMCE-IEP-20260910-RFP.xlsm"
7. "PN1070370-DR4339PR-HMP-20260910-RFP.pdf"

Cost

Code	Quantity	Unit	Total Cost	Section
9001	1	Lump Sum	\$59,882.25	Uncompleted
3510	1	Lump Sum	(\$497.02)	Uncompleted

CRC Gross Cost \$59,385.23

Total 406 HMP Cost \$0.00

Total Insurance Reductions \$0.00

CRC Net Cost \$59,385.23

Federal Share (90.00%) \$53,446.71

Non-Federal Share (10.00%) \$5,938.52

Subgrant Conditions

- Applicants must retain all source documentation for each large project for three years after the date the Recipient submits to FEMA certification of completion of the project and all source documentation for small projects for three years after the Recipient submits to FEMA certification of the applicant's last small project. See Title 2 Code of Federal Regulations (C.F.R.) § 200.334. Recipients may require longer retention periods. Real property and equipment disposition, audits, and litigation may also require longer retention periods. If requested, Applicants must provide documentation to FEMA. Recipients may require documentation not otherwise required by FEMA (such as actual cost documentation for Small Projects). In such cases, the Applicant must provide the documentation to the Recipient.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance in effect at the time of the declaration. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise. DHS Standard Terms and Conditions are viewable at <https://www.dhs.gov/publication/dhs-standard-terms-and-conditions>.
- The applicant acknowledges that the Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 200.110.
- The applicant acknowledges that PA funding must be used exclusively for the work specified in the approved project. If a change to the approved scope of work is needed, the applicant must submit a written request through the Recipient to FEMA before it commences work associated with a change.
- Applicants must inform FEMA of each purchased equipment item with a fair market value over \$10,000 after it is no longer needed for federally funded programs or projects. Applicants must also inform FEMA of any unused residual supplies when the aggregate total exceeds \$10,000. See Title 2 C.F.R. §§ 200.313 and 200.314. FEMA reduces eligible funding by this amount.
- The Recipient must submit its certification of the subrecipient's completion of all of its small projects and compliance with all environmental and historic preservation requirements within 180 days of the applicant's completion of its last small project, or the latest approved deadline, whichever is sooner.
- The Subrecipient provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.
- The Applicant certifies that all work claimed was or will be delivered in an impartial manner without discrimination as required by Title VI of the Civil Rights Act, Section 308 of the Stafford Act, 42 U.S.C. § 5151, and applicable provisions of laws and authorities prohibiting discrimination.
- The Applicant certifies that all impacts/damage claimed was a direct result of the Presidential declaration, was not pre-existing damage, and did not result from a lack of maintenance.
- The applicant certifies that all work claimed was required as a direct result of the major disaster declaration, is located within the designated area, and is the Applicant's legal responsibility.
- The applicant certifies that all costs claimed are reasonable and of a type recognized as ordinary and necessary for the type of work as required by 44 C.F.R. § 206.228 and 2 C.F.R. § 200.404.
- The applicant certifies that no work or costs claimed are covered by another funding source. Pursuant to section 312 of the Stafford Act, 42 U.S.C. § 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The applicant acknowledges it is required to notify FEMA through the recipient if it receives assistance for the same work or costs from another Federal agency, insurance, or any other source and return any duplicated funds to FEMA.
- The applicant certifies that all facilities are being restored in accordance with all federal and SLTT code and standard requirements.
- The applicant acknowledges it must comply with EHP laws, regulations, and Executive Orders (EO), including but not limited to, the

Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA). The applicant must afford FEMA the opportunity to perform EHP reviews prior to starting any work that has potential to impact the environment or historic properties, including archaeological resources. If the applicant starts work prior to FEMA's completion of the EHP review, it jeopardizes PA funding for the entire project.

- The applicant acknowledges that under 2 C.F.R. Part 200, it must follow their documented procurement procedures, provided they conform to federal procurement and contracting requirements. The applicant certifies that it is using the most restrictive of either its own documented policies and procedures for procurement or federal procurement and contracting laws in accordance with 2 C.F.R. §§ 200.317 - 200.327. The Applicant is following Environmental Protection Agency guidelines for procurement of recovered materials; and including all applicable required contract provisions.
- The applicant certifies that all information provided is true and correct. Upon submittal this project application becomes a legal document. The False Claims Act (31 U.S.C. §§ 3729-3733) prohibits the submission of false or fraudulent claims for payment to the federal government. It is a violation of federal law to intentionally make false statements or hide information when applying for Public Assistance. This can carry severe criminal and civil penalties including a fine of up to \$250,000, imprisonment, or both (18 U.S.C. §§ 287, 1001, 1040, and 3571).
- The applicant acknowledges that it must obtain and maintain insurance coverage for all buildings, contents, equipment, and vehicles in an amount equal to or greater than the total cost, prior to any reductions as required by the Stafford Act § 311, 42 U.S.C. §5154, 44 C.F.R §§ 206.251 - 206.253, and in accordance with FEMA Policy 206-086-1 Public Assistance Policy on Insurance.

Insurance

Additional Information

9/14/2026

Does the Applicant have a Commercial Policy: Yes.

Does the Applicant's Commercial Policy extend coverage for the damage described in this project: No.

Property insurance coverage for the electrical distribution facilities represented on this project are not insured or insurable. No insurance relief is anticipated. No Obtain and Maintain requirement will be made.

FEMA requires the applicant to take reasonable efforts to pursue claims to recover insurance proceeds that it is entitled to receive from its insurer(s). In the event that any insurance proceeds are received for these expenses those proceeds must be reduced from FEMA Public Assistance funding to ensure no duplication of benefits has occurred.

No duplication of benefits from insurance is anticipated for work described in this application. In the event any part or all costs are paid by an insurance policy, a duplication of benefits from insurance will occur. Applicant must notify grantee and FEMA of such recoveries and the Sub-Grant award amount must be reduced by actual insurance proceeds.

No insurance requirements will be required for this project. Insurance requirements are specific to permanent work to replace, restore, repair, reconstruct, or construct buildings, contents, equipment, or vehicles. (FEMA Recovery Policy FP 206-086-1).

No insurance narrative will be produced or uploaded into documents or attachments.

Jesus M. Vela Ayala, PA Senior Insurance Specialist - CRC Atlantic, Guaynabo, PR

O&M Requirements

There are no Obtain and Maintain Requirements on **FAAST [38kV Line 800 – Entire Line] (Vegetation) (HM Cost Alignment)**.

406 Mitigation

There is no additional mitigation information on **FAAST [38kV Line 800 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and executive orders?

Yes

EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- On May 16, 2025, the Secretary of the U.S. Department of Energy (DOE) issued Order 202-25-2 (Order), pursuant to the authority vested in him by section 202(c) of the Federal Power Act (FPA), 16 U.S.C. § 824a(c), and section 301(b) of the Department of Energy Organization Act, 42 U.S.C. § 7151(b). The Order sought to expedite repair and maintenance efforts to the electrical grid of Puerto Rico by directing the Puerto Rico Electric Power Authority (PREPA) to perform vegetation management, including vegetation clearing to reestablish a right-of-way, for particular transmission and distribution facilities in the Territory as specified in the Order. The Order required PREPA to identify certain parameters by which the directed work would be performed, and required that all work be performed, to the maximum extent practicable, in a manner consistent with all applicable Federal, State, or local environmental laws or regulations and minimize any adverse environmental impacts. However, pursuant to Section 202(c)(3) of the FPA, to the extent any omission or action taken by PREPA that was necessary to comply with the Order, including any omission or action taken to voluntarily comply with the Order, caused PREPA to not comply with any Federal, State, or local environmental law or regulation, including any environmental conditions in this REC's "Standard Conditions," such omission or action shall not be considered a violation of such environmental law or regulation, or subject PREPA to any requirement, civil or criminal liability, or citizen suit under such environmental law or regulation. On August 15, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. To renew/reissue the Order, DOE was required to consult with the primary Federal agency with expertise in the environmental interest protected by such law or regulation and include in the Order conditions necessary to minimize any adverse environmental impacts to the extent practicable. Pursuant to Section 202(c)(4)(B) of the FPA, DOE provided the relevant agencies the opportunity to submit conditions for work performed under the Order, to be included in the Order. According to DOE, no conditions were submitted by the agencies for inclusion in the Order. On November 12, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. DOE and FEMA have agreed that DOE is the lead agency for activities that fall under the prior and any future DOE 202(c) orders issued under the Federal Power Act to resolve the current and related emergencies in Puerto Rico. FEMA has requested that DOE provide FEMA with all documentation relating to their EHP compliance. FEMA will review and incorporate all available information and data for this project pertaining to applicable environmental laws and regulations into this REC when it is received from DOE. On February 10, 2026, and again on May 7, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities. On August 07, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities.
- If ground disturbing activities occur during construction, the applicant will monitor ground disturbance, and if any previously unidentified historic properties, including archeological resources, are discovered, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA. Should any unanticipated effects to previously identified historic properties, including archaeological resources, be identified during construction activities, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA.

EHP Additional Info

There is no additional environmental historical preservation on **FAAST [38kV Line 800 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Final Reviews

Final Review

Reviewed By LEFRANC-GARCIA, CARLOS L.

Reviewed On 09/25/2026 8:08 PM PDT

Review Comments

Version 0 contemplates \$53,446.71 (federal share) for incidental vegetation clearance associated with 3.88 miles of the 38kV Line 800 – Entire Line. No permanent infrastructure repairs are included in the approved Scope of Work. The Work to Be Completed cost is \$59,882.25, based on \$15,433.57 per mile, and the final PA project cost is \$59,385.23.

Recipient Review

Reviewed By Mulero, Noel

Reviewed On 10/06/2026 1:29 PM PDT

Review Comments

Recipient review completed. Applicant must ensure to compliance with all regulatory requirements, Record of Environmental Consideration (REC) Special Conditions and PA policy. This project applies to the Department of Energy's executive order. This means that DOE is the lead agency for environmental matters. Project is ready for applicant review.

Project Signatures

Reviewed By Unsigned

Reviewed On Unsigned

Award Information

EMMIE Imported Version Information

Version #	Eligibility Status	Current Location	Bundle Number	Project Amount	Cost Share	Federal Share Obligated	Date Obligated
No Records							

Drawdown History

EMMIE Drawdown Status As of Date	IFMIS Obligation #	Expenditure Number	Expended Date	Expended Amount
No Records				

Obligation History

Version #	Date Obligated	Obligated Cost	Cost Share	IFMIS Status	IFMIS Obligation #
0	10/14/2026	\$53,446.71	90%	Accepted	4339DRPRP01083341

Department of Homeland Security Federal Emergency Management Agency

v0

General Info

Project #	1070375	P/W #	108339	Project Type	Specialized
Project Category	F - Utilities	Applicant	PR Electric Power Authority (000-UA2QU-00)		
Project Title	FAASt [38kV Line 1600 – Entire Line] (Vegetation) (HM Cost Alignment)			Event	4339DR-PR (4339DR)
Project Size	Large	Declaration Date	9/20/2017		
Activity Completion Date	9/20/2027	Incident Start Date	9/17/2017		
Process Step	Obligated	Incident End Date	11/15/2017		

Damage Description and Dimensions

The Disaster # 4339DR, which occurred between 09/17/2017 and 11/15/2017, caused:

Damage #1872590; FAASt [38kV Transmission Line 1600 – Entire Line] (Vegetation)

General Facility Information:

- **Facility Type:** Power generation, transmission, and distribution facilities
- **Facility:** FAASt [38kV Transmission Line 1600 – Entire Line] (Vegetation)
- **Facility Description:** The Puerto Rico Electric Power Authority (PREPA) owns more than 19,000 miles of transmission and distribution lines, as well as more than 400 substations. The facilities addressed in this project are all the overhead transmission and distribution lines (16,000+ miles), as well as substations. To ensure the functioning of this infrastructure to the level of service needed, keeping this equipment clear from vegetation is significant.
- **Approx. Year Built:** 1950
- **GPS Latitude/Longitude:** [REDACTED]

Final Scope

1872590 FAASt [38kV Transmission Line 1600 – Entire Line] (Vegetation)

Project 136271 (hereinafter PREPA FAASt Project) authorized \$9,459,885,412.39 (Federal Share) to be awarded to the Puerto Rico Electric Power Authority (PREPA, Subrecipient) as a fixed cost estimate (FAASt FCE agreement) based on eligible work without detailed scopes of work to restore disaster-damaged facilities. Eligible work for the Transmission and Distribution (T&D) system included restoration of:

Broken structures due to high winds such as poles/towers (counted as broken when poles were inclined, bent, torn, and/or cracked); and other damages/broken components such as transformers, insulators, conductors, grounding system, jumpers, Gang Operated Air Breakers (GOABs), pole hardware, guy wires and anchors.

FEMA deferred the 406 Hazard Mitigation Proposal (HMP) fixed cost over in the PREPA FAASt Project until the Subrecipient submits its actual recovery solutions. FEMA also issued a clarification letter regarding whether hazard mitigation funding under Section 404 or Section 406 of the Stafford Act may be made available for the execution of a one-time, island-wide vegetation clearing and removal operation intended to mitigate the threat to the existing vegetation, if unintended to, poses to Puerto Rico's electric T&D system. See FEMA's letter to COR3, document Signed Vegetation Management March 24 2023.pdf. The Subrecipient's actual recovery solution seeks a one-time Island-wide vegetation clearance and removal operation intended to mitigate the threat to the existing vegetation, if unintended to, poses to Puerto Rico's electric T&D system. The actual recovery solution seeks to mitigate Puerto Rico's electric T&D system, including areas without infrastructure repairs.

The actual recovery solution (scope and cost) will be captured in multiple individual projects (hereinafter Vegetation clearance HMP Sub-FAAST projects) to provide flexibility and enable multiple programmatic reviews simultaneously. The Vegetation clearance HMP Sub-FAAST projects do not include infrastructure repair work.

This project captures a portion of the Island-wide actual recovery solution, specifically the onetime vegetation clearance and removal operation intended to mitigate the 38kV Line 1600– Entire Line (see project note #1 and #2).

FEMA 406 Hazard Mitigation (HM) team will review this actual recovery solution and issue an FCE order for the portion of the recovery solution that reduces risk of future similar damages. The Work to be Completed will be captured in the 406 HM scope section. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects will be adjusted as describe in FEMA-4339-DR-PR Public Assistance PREPA FAAST Post-Fix~~ed~~st Estimate Obligation Vegetation HMP Approach: 38kV. See document 956345 DR4339PR FAASTVegetationHMPApproach_38kVTrans.pdf the PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope. WTBCCost (PA) = \$15,433.57 per mile. Therefore, the total cost (PA) for this project will be \$153,668.43.

DI#	PA Vegetation Clearance Overlap per mile	Total miles	WTBC - PA Cost with Subrecipient Management & General Conditions	A&E - PA	Total - PA
1872590	\$15,433.57	10.27	\$158,502.76	\$(4,834.33)	\$153,668.43

Work to be completed total: \$158,502.76

A&E Deduction (Global A&E FAAST 335168): -\$4,834.33

Project Total: \$153,668.43

Project Notes:

1. This is a 38kV Transmission-Vegetation clearance HMP Sub-FAAST project.
2. Vegetation clearance HMP Sub-FAAST projects will be written according to line type (Distribution 13.2kV and down, and Transmission: 38 kV, 115kV, and 230 kV) because of the different ROWs and other characteristics. Multiple projects of each type will be submitted and reviewed for eligible PA 406 HM funding. Vegetation clearing work will only be submitted for those areas that vegetation represents strike potential (may cause future similar damage to the T&D system when subject to high winds). In the submittal of this project the Subrecipient's Authorized Representative attests that only the vegetation clearance submitted is to reduce strike potential and that the ROW for these lines has been, and will be, counted only once to avoid duplication within the vegetation clearance projects.
3. For more details of the requirements and conditions for the execution of a one-time, island-wide vegetation clearance and removal operation considered as an eligible Section 406 hazard mitigation proposal (HMP), please refer to document labeled: Attachment A FEMA letter dated March 24 2023.pdf.
4. For details on the SOW, refer to filename 1070373-FAAST [38kV Line 1200 – Entire Line] (Vegetation) DSOW.pdf
5. Vegetation clearance funds will not be allocated to SubFAAST projects.
6. A&E cost included in this project will be reduced from this project and obligated under the FAAST Project #335168, A&E, as shown in the table above. The A&E project was obligated to track and account for costs associated with individual FAAST projects.
7. This project is part of Donor FAAST 136271 – MEPA078 Puerto Rico Electrical Power Authority (PREPA) Island Wide FAAST Project.

406 HMP Scope

Project number: [1070375] FAAST [38kV Line 1600 – Entire Line] (Vegetation)

(vegetation)

Damage # 1872590

Applicant: PR Electric Power Authority (000-UA2QU-00)

Location: Ponce, Puerto Rico

GPS Latitude/Longitude: From: [REDACTED]

Introduction:

Puerto Rico's electrical grid infrastructure has been severely compromised by extreme weather events, particularly with Hurricane Maria in September 2017. The hurricane caused widespread disruptions to transmission and distribution systems, largely due to vegetation impacts that collapsed distribution and transmission lines. Substantial infrastructure was damaged when trees downed utility power lines and poles, causing most of the transmission/distribution system fail. Post-hurricane vegetation clearance to enable grid repair and restoration progressed slowly, considerably delaying overall electrical recovery. Remaining excess vegetation continues to cause operational outages, as ground faults occur when vegetation contacts power lines even during normal weather events. After the passage of Hurricane Maria, minimal cleaning work was carried out exclusively to clear the areas to carry out emergency repairs to the electrical system. These works were covered by Category B - Emergency Protective Measure, but excess vegetation on the electrical system remains an outstanding vulnerability.

Puerto Rico's grid modernization and mitigation one time ROW clearance strategy will prioritize effective and proactive vegetation management protocols to prevent prolonged storm-related outages, thereby increasing the reliability of the electric system. These reliability and resiliency gaps are especially impactful to Puerto Rico, which has been facing increasingly frequent natural hazards such as hurricanes. This project is part of the for Vegetation Reset Program which will impact the Transmission and Distribution systems for each of the 78 municipalities.

Hazard Mitigation Narrative:

In order to minimize damages in a future event, the Subrecipient's actual recovery solution seeks a one-time Islandwide vegetation remediation clearance for the above work included in the PREPA FAASSt Project, as according to the Public Assistance Alternative Procedures (PAAP) (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (hereinafter PR PAAP Guide) and FEMA's letter to COR3, document Signed Island-Wide Vegetation Clearance March 24, 2023. Section 406 hazard mitigation are funds that can be added to projects for the restoration of disaster damaged facilities and must prevent future damage caused by the declared event. Under DR-4339-PR, Section 406 hazard mitigation funds are based on eligible, technically feasible, and cost-effective mitigation activities proposed to reduce risk to the function of the disaster-damaged facilities. The portion of the recovery solution that reduces risk of future damage may be considered as eligible 406 mitigation.

The island-wide transmission and distribution grid was significantly damaged by the strong winds and heavy rainfall during the atmospheric event hurricane Maria. This resulted in many trees and other vegetation becoming a direct hazard to the electrical grid. A one-time 406 hazard mitigation island-wide vegetation clearance will benefit the reliability and resiliency of the Puerto Rico electrical grid, including the number and duration of customer outages during and after the work to complete the repairs to the electrical grid through other PREPA 428 FAASSt Projects. The scope of the global 406 Hazard Mitigation (HM) projects includes vegetation clearing across the entire width of the easement, plus a radius of 12 to 25 feet from energized conductors to directly reduce the potential for future damage to the "transmission and/or distribution" (T&D) systems. Each 406 HM Vegetation Reset project is correlated with an eligible 428 T&D project, in association with PREPA's electrical grid. Different regional projects are developed to impact all lines of the electrical system, including distribution lines and high-voltage transmission lines. Also, projects are defined in terms of line type (distribution or transmission) and population density of the area (high or low) to simplify the evaluation by the Environmental and Historical Preservation team (EHP).

The global project was divided into the following regions:

- Region 1 – San Juan
- Region 2 – Arecibo
- Region 3 – Bayamón
- Region 4 – Caguas
- Region 5 – Mayagüez
- Region 6 – Ponce

For each Region of the island, there will be two types of projects to capture the Vegetation Clearing activities within scopes of work: (1) single transmission line projects based on LUMA's priority list, capturing the lines or segments of lines affected most by vegetation interference, and (2) Regional DSOWs divided into groups (Groups A – F), as follows:

- Region 1 – San Juan
- Region 2 – Arecibo

- Group A – High/Low Density Distribution Lines
- Group B – 38 kV Transmission.
- Group C – Overlapped Distribution and Transmission Lines
- Group D - 115 kV Facilities
- Group E - Substation and Telecommunication Facilities.
- Group F – 230 Kv Facilities (Non-Region – Specific)

This 406 HM work is limited to what is necessary to directly reduce the potential of future damage to the T&D system assets, that exceeds what is necessary to clear vegetation for accessing facilities when carrying out repairs which are already established as eligible for FEMA funding utilizing the 428 FAAS Grant. Each 406 HM will correlate with an eligible 428 Transmission and/or Distribution (T&D) project in association with the PREPA power grid. There will be 7 Regional DSOW's developed capturing planned actions within scopes of work formulated with established criteria detailed for Distribution and Transmission lines/facility locations. The first DSOW is Group A - High Density areas with a low reflection of infrared light; the second DSOW is Group A Low Density locations where more vegetation density is present, which is determined by a higher level of reflection of infrared associated with Vegetation for 13.2kV and below locations; the third DSOW is Group B locations at 38kV level; the fourth DSOW is Group C - with known local environmental sensitivities at 38kv and below levels locations; the fifth DSOW is 115kV Facilities; and the sixth DSOW is Substation and Telecommunication Facilities. There will also be 230 kV Facilities (these installations have a separate Vegetation Clearance project that is not region- specific).

FAAST [38kV Line 1600 – Entire Line] (Vegetation)

This is a project for 38kV transmission lines in Region 6 Ponce. The DSOW captures the scope of work and cost estimate for Vegetation Clearing intended to mitigate the threat that the existing vegetation, along 38kV lines within Ponce (if left untended to), poses Puerto Rico's electric grid.

This SOW is aligned with and leverages FEMA's Island-Wide Benefits Cost Analysis (IWBCA), which was used for this purpose and fully supports the mitigation measures employed within this project scope of work.

The Subrecipient's authorized representative (LUMA) estimates that this 406 Hazard Mitigation proposal for island-wide vegetation clearance will have immediate and future widespread benefits, including:

- Mitigation of the hazards due to vegetation impacts and damages.
- 70% annual reduction of outages caused by vegetation.
- 35-45% annual reduction of customer interruptions.
- Faster restoration for impacted customers.
- Improved safety for utility workers and the public.
- Support the rebuilding of the grid and effective execution of large-scale construction projects.

The following terms, when used in this document, shall have the meaning described below.

Compatible Species – Compatible species are those that are congruent with the intended use of the site, and include small trees, shrubs and herbaceous vegetation that will never grow into conflict with overhead conductors.

Incompatible Species – Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors.

Clearance - The minimum distance between two conductors, between conductors and their support or other objects, or between conductors and the ground. The National Electrical Safety Code (NESC) and PREPA's Technical Communication (See 12-02 attached) determine the minimum requirements regarding distances (vertical and horizontal) between an energized conductor or device and a structure, building or surface. Vegetation Clearing will be limited to clearing any vegetation affecting these clearances. This term is not synonymous with easement. Clearances can be met without being within an easement. Clearance requirements must be complied with either when the Authority builds its facilities, as well as when a third party builds a structure. Clearances, in both cases, must be complied with by regulation, regardless of whether an easement exists. regardless of whether an easement exists.

Easement - is a line imposed on a property for the benefit of another belonging to a different owner. The property, in favor of which the easement is constituted, is called the dominant estate; the one who suffers it, servant property. An easement for electrical power lines provides PREPA and Luma as its agent various rights including reasonable access to the electric infrastructure to provide maintenance, repair, expand, operate and is established on the strips or portions of land where facilities of the T & D system are located or will be

located, such as lines, poles, towers, equipment, and accessories. These acquired rights make it easier to carry out vegetation clearing work.

The PREPA distribution and transmission systems are populated with millions of plants but only some have the conditions, growth characteristics, and/or locations that make them compatible or incompatible with the safe and reliable energy delivery service. The Subrecipient's authorized representative recognizes the diversity of species in tropical ecosystems, and the general remediation strategy is to control incompatible species while encouraging the growth of compatible species. Compatible species may, on occasion, need control if their height or density impedes the necessary line of sight for inspections or access to perform resilience work. Within Appendix A and B are lists of protected flora species and incompatible flora species expected to be encountered during scope performance.

(I) Proposed 428 Public Assistance Scope of Work (SOW):

This project includes Public Assistance (PA) works; however, PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope, \$15,433.57 / mile calculation represents the PA Overlap.

PA incidental works will be deducted from the Section 406 Hazard Mitigation project costs to avoid duplication of works. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects.

FEMA performed an analysis to the PREPA FAAST documents and determined that vegetation clearing on each mile of 38 kV line requiring repair was on average 8.34%% related to the repair (428 PA) and 91.66% related to a mitigation measure (406 HM). The fixed-cost estimate for the PA scope is \$15,433.57 per **10.27 miles**, with a total project cost of **\$158,502.76**. For further details, refer to the document "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

(II) Hazard Mitigation Proposal (HMP) Scope of Work:

[1070375] FAAST [38kV Line 1600 – Entire Line] (Vegetation)

As a result of DR-4339-PR, vegetation surrounding T&D assets are falling onto these facilities and interfering with the safe and reliable operation of the assets. The vegetation at present is currently causing outages when vegetation is in contact with the T&D assets. To mitigate the future damage across T&D assets and protect the 428 repairs and replacement along these facilities, clearing vegetation materials will be required. This 406 Hazard Mitigation Scope of Work is to directly reduce the potential of future, damages to the T&D system by clearing vegetative materials that pose an immediate threat to the power distribution lines, and identification for corrective actions related to clearing vegetation (consisting of shrubs, branches, limbs, stumps, bamboo, and trees that are directly impacting the resilience and productivity of the power grid) applicable to the existing PREPA electrical grid within Region 6 Ponce TL of Puerto Rico.

The extent and execution of this scope includes performing verification of facilities, assets and condition assessments for determining the most appropriate remediation, preparing work orders for executing the necessary vegetation remediation, by ways of tree felling, vegetation remediation, mechanical vegetation remediation, vegetative debris disposal via chipping, mulching, hauling, and recycling where applicable in easement of the PREPA power Distribution lines. LUMA is not planning to construct access roads. If the work to be done is not adjacent to an existing road, our contractor tree crews will minimize environmental disturbance by utilizing vegetation crews hiking by foot in and out of our existing easement.

Parameters for Performing 406 Hazard Mitigation Vegetation Clearing

Regulation 7282 requires that only shrubs and plants (no trees) be planted within the easement under power lines. Climbing plants and vines, as well as bamboo, are prohibited from being planted within an easement. The branches of trees planted outside the easement must not obstruct free passage of the power lines. The National Electrical Safety Code (NESC) and PREPA's Technical Communication establish the minimum required distances, both vertical and horizontal, between an energized conductor or device and any structure, building, or surface. Vegetation clearing will be restricted to removing any vegetation that interferes with these clearances. For power distribution lines, NESC and Regulation 7282 define the vertical distance from vegetation as 12-15 feet. By law, any trees, shrubs, or plants planted in violation of Regulation 7282 may be uprooted, removed, or cut down in accordance with the provisions of Regulation 7282 – for both compatible and incompatible species.

Industry standard practices will determine how the work will be performed. A healthy tree is less likely to fall over in a storm and damage overhead lines; therefore, vegetation will be pruned according to ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Vegetation that is improperly pruned could become susceptible to disease and decay, resulting in a hazard to both the line and public safety. ANSI A300 is the tree care industry standard of care in the USA. It was developed by Tree Care Industry Association and maintained by a consensus of various industry stakeholders through periodically reviewing and updating the guidelines. These standards provide guidance on how and where to prune vegetation to achieve clearances and maintain a healthy plant. In all cases, Subrecipient's authorized representative's vegetation clearing contractors will be required to perform clearing activities in a manner consistent with ANSI A300, NESC, and Regulation 7282 alignment with Resolution 4987, Organic Law 83

(amended version), Communication 12-02, and PREPA 's Comprehensive Management Plan establishing standard Distribution easement widths. Easement Clearance widths for distribution lines are given in the table below:

Recommended Easement width for overhead Transmission & Sub-Transmission Lines (feet)				
Construction type	Area	Voltage(Kv)		
		38	115	230
Single Circuit	Urban	25 ft	30 ft	40 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Same Structure	Urban	25 ft	40 ft	60 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Different Structures	Rural	50 ft	100 ft	100 ft

Scope of Work Inside Easement – Incompatible Species

Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors. For the power distribution lines, all Incompatible Species will be cleared from the full width of the easement. "Clearing" in this context includes the following activities: tree removal, severing of vines, cutting, vegetation mastication.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified working at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter Incompatible Species by hand.
- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

Scope of Work Inside Easement – Compatible Species:

Compatible vegetation species will be cleared consistent with the distances identified in Regulation 7282, which means that any species with the potential to encroach within 12 feet of the conductors at full size will be removed using the same methods discussed above. Even though the distances identified in Regulation 7282 are vertical clearances, Compatible Species encroaching on the conductors from any

direction can pose a hazard to the distribution system, with the maximum edge of the conductors to be 12 feet wide centered on the pole. Therefore, the 12-foot clearance is being applied to both vertical and horizontal clearances. For areas with overhead distribution systems located in the backyard or side yard, the certified easement width from LUMA Land Records office will use for clearing.

In rare cases where Subrecipient's authorized representative encounters significant resistance from landowners or stakeholders to remediate vegetation, Subrecipient's authorized representative will work with landowners or stakeholders to determine if Incompatible and Compatible Species can be pruned to mitigate the hazard to the lines instead of being completely removed

Vegetation with the potential to encroach within 12 feet of conductor — Compatible or Incompatible.

Any vegetation species—whether Compatible or Incompatible—that have the potential (when at full size) to encroach within 20 feet of the conductor will be cleared using one of the methods discussed below:

- **Tree Removal:** Removing above-ground portions of trees while leaving stumps in place.
- **Severing of Vines:** Cutting vines at the base to create an air gap between the root system and the structure.
- **Cutting:** Hand removal of small-diameter incompatible species.
- **Vegetation Mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch. Using heavy equipment to reduce standing trees to woody debris.

All Other Incompatible Species within the Recommended Easement Width:

- All other Incompatible Species will be cleared from the full width of the recommended easement width. The clearing methods described above (tree removal, severing of vines, cutting, and vegetation mastication) will be utilized.

Scope of Work Outside Easement – Species Growing into the Easement

There is the potential for vegetation outside or along the boundary of the easement to interfere with the operation of power distribution lines. Appropriate clearances around the conductors must be achieved to protect the lines from future damage. For distribution lines, Subrecipient's authorized representative has established a minimum clearance distance of 12 feet from all conductors, with the maximum edge of the conductors to be 12 feet wide centered on the pole. This distance is consistent with the vertical distance established in Regulation 7282. If there are species encroaching on the 12-foot clearance outside or along the boundary of the easement, these species will be pruned to obtain at least 20 feet of clearance from the conductors at the time clearance work occurs. In cases where following ANSI A300 best practices require clearance beyond 12 feet, the maximum distance cleared will not exceed an additional 3 feet from set clearing distance. Diagrams illustrating these clearing distances are provided as attachments within Grants Portal. The following clearing methods will be provided as Attachment B-*“FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf”*

- **Tree pruning:** Qualified personnel work from an aerial platform or while climbing within a crown of trees to prune the tree. All pruning work wounds the tree. Done poorly, pruning can result in an exaggerated regrowth response by adversely altering tree architecture and increasing exposure to decay organisms that can weaken the tree. These adverse consequences increase the likelihood of tree-initiated faults causing system interruptions and customer outages. Proper arboriculture techniques will be utilized.
- **Tree removal:** Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- **Severing of vines:** Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified worker at ground level. The upper portion of the vine remains attached and is not removed.
- **Cutting:** Cutting typically involves the removal of small diameter species by hand.
- **Vegetation mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

FEMA 38kV Assessment & Methodology:

LUMA documentation claims a 100% clearance for the entire project segment based on the total length of the feeder. This analysis would not be considered as the method for validation purposes.

Consequently, FEMA perform a 100% evaluation of each feeder to determine the quantity of miles of vegetation non-compatible. The tools used for this analysis are Google Earth, that allows a street view evaluation where the HM Specialist uses the imagery data for analyze the feeder lines adjacent to roads. Where the feeder is through mountains FEMA use top and 3D view maps that allows determine the elevations for mountains, forested areas (assess vegetation), and the topography of the land. When poles are at the top of mountains and lines run between mountains, only the vegetation around the poles will be considered. The total percentage of each line is the result of compiling all the sections analyzed. It is important to emphasize that after work completed, the subrecipient can submit additional eligible vegetation clearance distance not included in this vegetation clearance percent analysis.

FEMA Analysis:

The total miles to be addressed in the Hazard Mitigation Proposal (HMP) is **12.84 miles**, which includes a 10% buffer due to the method of assessment (desktop review), providing sufficient funds to ensure vegetation works are covered. This amount is estimated value, that will be adjusted based on the amount of actual work performed.

The cost estimate is based on two vegetation clearance scenarios, (1) the full clearance represents those lines that at both side sides of the right of way have vegetation that needs to be cleared. (2) is the half clearance represented for those circuits alongside roadways and only needs clearance at one side of the right of way. As a result, the total miles used for the cost estimate is **12.27 miles**, which reflects these adjustments for segments that do not require full clearing. This amount is estimated value, based on a desktop review that will be adjusted based on the amount of actual work performed and evidence of the actual work performed.

	HMP	Cost Estimate
Total Project Miles:	28.37	28.37
Vegetation Miles at 100% of Work	7.00	7.00
Vegetation Miles at 50% of Work	4.67	2.34
Total Miles to Clean	11.67	9.34
Buffer Acceptance:	0.10	10%
Vegetation Miles at 100% + Buffer	7.70	7.70
Vegetation Miles at 50% + Buffer	5.14	2.57
Total Miles to Clean with Buffer	12.84	10.27
% of Miles to Clean with Buffer	45%	36%

(III) Hazard Mitigation Proposal (HMP) Cost:

¹ Vegetation Clearance Cost per Mile (Base Cost) =	\$176,173.47 / mile
Risk Factor approved by the DR4339-PR leadership (5%) =	<u>\$8,808.67 / mile</u>
Vegetation Clearance Cost per Mile (w/Soft Cost) =	<u>\$184,982.14 /mile</u>
² PA Vegetation Clearance Overlap per Mile (Deduction) =	<u>(\$15,433.57/ mile)</u>
Hazard Mitigation Total Cost per Mile =	\$169,548.57 / mile
Project Total Miles with Vegetation:	9.34-miles
Buffer Acceptance:	10%
Project Total Miles with Vegetation:	<u>10.27 miles</u>
Hazard Mitigation Total Cost =	\$1,741,263.81

Note: The \$169,548.57 / mile calculation represents the total cost (base costs + soft costs – PA Overlap). For this project, breaking down that total cost further yields the approximate figures below. For additional information please see the attached document.³

Total Net Hazard Mitigation Cost (Base Cost) =	\$1,658,346.50
+ HM (Management & General Conditions Factors) =	<u>\$ 82,917.31</u>
Hazard Mitigation Total Cost =	\$1,741,263.81

(IV) Hazard Mitigation Proposal (HMP) Cost Distribution:

Architecture and Engineering (A&E) =	\$ 53,108.55	
Remaining Vegetation Clearance Cost =	<u>\$1,688,155.26</u>	

Hazard Mitigation Total Cost =	\$1,741,263.81	
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(V) HMP Cost-Effectiveness Calculations:

FEMA's Benefit-Cost Analysis, BCA, methodology evaluates the expected risk reduction benefits of a hazard mitigation project and compares those benefits to the cost of the mitigation project. FEMA Public Assistance Program and Policy Guide, PAPPG, Version 3.1, April 2018, Chapter 2, Section VII.C, page 98, considers mitigation measures to be cost-effective when they are demonstrated through an acceptable BCA using FEMA's BCA methodologies and have a resulting Benefit-Cost Ratio, or BCR, equal to or greater than 1.0.

For PREPA infrastructure under FEMA DR-4339-PR, FEMA developed an Island Wide Benefit Cost Analysis, or IWBCA, to evaluate cost-effectiveness at the electrical system level rather than through separate project-specific BCAs. The IWBCA characterizes the PREPA/LUMA system as a single project for mitigation purposes, focuses on system-wide resiliency, and supports the development of cost-effective mitigation projects while avoiding double counting, or duplication, of benefits. The IWBCA applies one BCA to the entire FAASt project and includes benefits based on future costs avoided from physical damage to infrastructure, costs related to the response and reconnection effort, and loss of function for electric service caused by the storm.

The IWBCA established a maximum potential mitigation benefit for the PREPA system of \$7.6 billion. This figure represents the estimated total potential mitigation benefit with the highest confidence and was developed using the incurred costs of the PREPA FEMA Accelerated Award Strategy, FAASt, fixed cost estimate, FCE, the mission assignments used for the reconnection effort, and costs associated with loss of service. The IWBCA results were developed by the PA Mitigation team using the best available data and were further refined and concurred with by FEMA Region 2 PA Mitigation team members and FEMA HQ groups, including the Community Infrastructure Resilience, CIR, Branch and Disaster Implementation, DI, Branch. This maximum potential benefit must be tracked to ensure that the combined cost of all approved mitigation proposals does not exceed the maximum potential benefit.

The Hazard Mitigation Proposal, HMP, described herein has a total Hazard Mitigation cost of **[\$1,741,263.81]**. In accordance with FEMA's internal IWBCA benefit tracking, the maximum potential benefit remaining in the IWBCA is **[\$4,970,402,688.89]**. The cost of this HMP, when combined with all other approved IWBCA-related proposals funded, does not exceed the remaining available IWBCA benefit. Therefore, this HMP is deemed cost-effective under the FEMA PAPPG Version 3.1, April 2018, Chapter 2, Section VII.C, BCA Rule, because the IWBCA demonstrates an acceptable BCA with a Benefit-Cost Ratio equal to or greater than 1.0.

For validation, reviewers should refer to the attached IWBCA Package, including the IWBCA narrative and backup documentation, which define the IWBCA methodology, inputs, and supporting calculations. Reviewers should also confirm that the project has been included in the current IWBCA benefit tracking record to verify that the total approved IWBCA-related mitigation costs remain below the maximum potential benefit and that no duplication of benefits has occurred.

This Hazard Mitigation Proposal meets the eligible repair and restoration cost-effectiveness requirements. See the Mitigation Profile Documents tab in Grants Manager for the complete supporting documentation, including the HMP cost estimate and supporting documents file.

(VI) Compliance and Assurance Requirements:

A) HMP GENERAL NOTES:

By agreeing to implement the hazard mitigation measures in this HMP, the Applicant/Sub-Applicant is bound by the specific guidelines listed within this document.

COSTS AND GENERAL CONDITIONS: The vegetation removal cost is established according to the average base cost of **\$176,173.47 / mile**. Additionally, DR4339-PR leadership has approved the application of a 5% risk factor to the average cost per mile, resulting in **\$184,982.14 / mile**. After deducting Public Assistance (PA) \$15,433.57 amount (incidental work- refer to document FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf), the final total obligated amount through PA 406 is **\$169,548.57 / mile**.

DOCUMENTATION REQUIREMENTS: The subrecipient shall document all vegetation removal work, including but not limited to the following:

- Before and after photographs of the total distance included in the HMP Scope of work that clearly show the condition of the area before and after the vegetation clearance.

- A digital map in ArcGIS format showing all areas where vegetation removal was performed. Location information must be provided, including the physical address, GPS coordinates from start to finish of clearance work, and contact information for private property (when applicable).

- Work orders must account for the entire feeder length distance and include a description of the sections both with and without vegetation. Material disposal documentation must specify whether the material was chipped and removed, left on-site, or transported to a landfill.

Note: All vegetation clearance projects must include the above documentation to define the work completed prior to project closeout.

COST DISTRIBUTION: Recognizing that the established cost is an average per mile, it is understood that actual expenses for each feeder or area may deviate (either underrun or overrun) from the estimated project amount. The 406 HMP scope and cost agreement sets an average cost per mile for vegetation clearance, allowing the subrecipient to manage funds across the various projects that comprise the vegetation asset. The *Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, January 1, 2022 (PR PAAP Guide)*, states that if funds for 406 Mitigation are included in the fixed-cost subaward, the subrecipient must complete the approved Scope of Work (SOW) of the Hazard Mitigation Proposal (HMP) in order to retain the 406 Mitigation funding. Consequently, only completed distance in the HM Scope of work, supported by the necessary back-up documentation (e.g., verified mitigated clearance distance), will be eligible for fund retention. Any uncompleted work from the HM SOW (e.g., miles not documented with mitigated clearance distance) will be de-obligated during the closeout process.

SCOPE OF WORK DEVELOPMENT OF HAZARD MITIGATION: FEMA will evaluate each mitigation opportunity to first determine what measures or portions of solutions could be funded through Section 406 mitigation. FEMA analyzes the proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and Eos. FEMA, the Applicant, Recipient, and Sub-recipients will develop and agree to scopes of work (SOW) and cost estimates to repair, restore, or replace eligible facilities including 406 Hazard Mitigation" (Page 6).

COMPLETION OF HAZARD MITIGATION SCOPE OF WORK: If this HMP is approved and the mitigation is not performed, the Applicant must apply for a change in the Scope of Work and a de-obligation of the HMP funding. Failure to complete the work of the HMP may limit future FEMA funding of repairs at the site in the event that a similar disaster event results in similar damage at the site.

CHANGES TO THE HAZARD MITIGATION SCOPE OF WORK FOR LARGE PROJECTS:

Per PAAP PA Process (Section 428), Guide for Permanent Work, February 10, 2020, "A Subrecipient may alter the 406-hazard mitigation SOW (HMP) after FEMA, the Recipient, and Subrecipient agree on the cost estimate for the initial proposal. After the project is obligated, the SOW for the HMP can be changed only once and the timeline for this change will be established based on a facility-by-facility basis. The proposed change will require evaluation by FEMA for eligibility and EHP. As part of the eligibility review, FEMA will evaluate the SOW, technical feasibility, the level of protection, the revised cost estimate, and cost effectiveness of the new hazard mitigation proposal, and, if approved, will adjust the scope and cost estimate accordingly." (Page 14)

HAZARD MITIGATION DESIGN: This HMP is for estimating purposes only and not to be construed as a project design. If the site's final placement and configuration are different than the preliminary estimate, the Applicant should submit a change in scope request. This HMP is subject to further review prior to award.

HAZARD MITIGATION CONSTRUCTION: The Applicant must provide & maintain competent & adequate engineering design & supervision during the construction phase to ensure that the completed work conforms to the approved plans & specifications & all applicable material & construction standards.

As a condition of the FEMA mitigation grant, the Applicant is responsible for the determination of and compliance with all applicable requirements, codes, standards and specifications in connection with the project, including but not limited to the Puerto Rico Building Code of 2018 (2018 PRBC), IBC, IRBC, NFIP Floodplain Management Regulations outlined in 44 C.F.R 60.3, ASCE 24, ASCE 7, and receiving all applicable permits & approvals prior to construction.

MAINTENANCE OF HAZARD MITIGATION: The Applicant shall ensure proper maintenance of the installed mitigation measures, per manufacturer and designer specifications. Any adaptations or installations not approved or that renders the hazard mitigation measure ineffective shall be removed by the Applicant. Examples include, but are not limited to, improper installation of roof-mounted equipment or installation of window-mounted air-conditioning units.

ENVIRONMENTAL AND HISTORIC PRESERVATION: Eligibility and funding for the mitigation at this site on this project will be subject to the compliance of all environmental laws, regulations, and executive orders applicable to the site. This project will undergo a EHP compliance review, after obligation any changes to the SOW will likely trigger an additional EHP compliance review of the revised SOW.

ATTACHMENTS:

Please refer to the following documents.

1. "Island-Wide Vegetation Clearance - FEMA letter dated March 24, 2023.pdf"

2. "FAASVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"
3. "Appendix A and B - Protected Flora and Incompatible Flora Species.pdf"
4. "WBCA HMP Package.pdf"
5. "PN1070375-TL1600_38KV.kmz"
6. "PN1070375-DR4339PR-HMCE-IEP-20260903-REG.xslm"
7. "PN1070375-DR4339PR-HMP-20260908-KPC.pdf"

Cost

Code	Quantity	Unit	Total Cost	Section
9001	1	Lump Sum	\$158,502.76	Uncompleted
3510	1	Lump Sum	(\$4,834.33)	Uncompleted

CRC Gross Cost \$153,668.43

Total 406 HMP Cost \$0.00

Total Insurance Reductions \$0.00

CRC Net Cost \$153,668.43

Federal Share (90.00%) \$138,301.59

Non-Federal Share (10.00%) \$15,366.84

Subgrant Conditions

- Applicants must retain all source documentation for each large project for three years after the date the Recipient submits to FEMA certification of completion of the project and all source documentation for small projects for three years after the Recipient submits to FEMA certification of the applicant's last small project. See Title 2 Code of Federal Regulations (C.F.R.) § 200.334. Recipients may require longer retention periods. Real property and equipment disposition, audits, and litigation may also require longer retention periods. If requested, Applicants must provide documentation to FEMA. Recipients may require documentation not otherwise required by FEMA (such as actual cost documentation for Small Projects). In such cases, the Applicant must provide the documentation to the Recipient.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance in effect at the time of the declaration. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise. DHS Standard Terms and Conditions are viewable at <https://www.dhs.gov/publication/dhs-standard-terms-and-conditions>.
- The applicant acknowledges that the Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 200.110.
- The applicant acknowledges that PA funding must be used exclusively for the work specified in the approved project. If a change to the approved scope of work is needed, the applicant must submit a written request through the Recipient to FEMA before it commences work associated with a change.
- Applicants must inform FEMA of each purchased equipment item with a fair market value over \$10,000 after it is no longer needed for federally funded programs or projects. Applicants must also inform FEMA of any unused residual supplies when the aggregate total exceeds \$10,000. See Title 2 C.F.R. §§ 200.313 and 200.314. FEMA reduces eligible funding by this amount.
- The Recipient must submit its certification of the subrecipient's completion of all of its small projects and compliance with all environmental and historic preservation requirements within 180 days of the applicant's completion of its last small project, or the latest approved deadline, whichever is sooner.
- The Applicant certifies that all work claimed was or will be delivered in an impartial manner without discrimination as required by Title VI of the Civil Rights Act, Section 308 of the Stafford Act, 42 U.S.C. § 5151, and applicable provisions of laws and authorities prohibiting discrimination.
- The Applicant certifies that all impacts/damage claimed was a direct result of the Presidential declaration, was not pre-existing damage, and did not result from a lack of maintenance.
- The applicant certifies that all work claimed was required as a direct result of the major disaster declaration, is located within the designated area, and is the Applicant's legal responsibility.
- The applicant certifies that all costs claimed are reasonable and of a type recognized as ordinary and necessary for the type of work as required by 44 C.F.R. § 206.228 and 2 C.F.R. § 200.404.
- The applicant certifies that no work or costs claimed are covered by another funding source. Pursuant to section 312 of the Stafford Act, 42 U.S.C. § 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The applicant acknowledges it is required to notify FEMA through the recipient if it receives assistance for the same work or costs from another Federal agency, insurance, or any other source and return any duplicated funds to FEMA.
- The applicant certifies that all facilities are being restored in accordance with all federal and SLTT code and standard requirements.
- The applicant acknowledges it must comply with EHP laws, regulations, and Executive Orders (EO), including but not limited to, the Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA). The applicant must afford FEMA the opportunity to perform EHP reviews prior to starting any work that has potential to impact the environment or historic properties, including archaeological resources. If the applicant starts work prior to FEMA's completion of

the EHP review, it jeopardizes PA funding for the entire project.

- The applicant acknowledges that under 2 C.F.R. Part 200, it must follow their documented procurement procedures, provided they conform to federal procurement and contracting requirements. The applicant certifies that it is using the most restrictive of either its own documented policies and procedures for procurement or federal procurement and contracting laws in accordance with 2 C.F.R. §§ 200.317 - 200.327. The Applicant is following Environmental Protection Agency guidelines for procurement of recovered materials; and including all applicable required contract provisions.
- The applicant certifies that all information provided is true and correct. Upon submittal this project application becomes a legal document. The False Claims Act (31 U.S.C. §§ 3729-3733) prohibits the submission of false or fraudulent claims for payment to the federal government. It is a violation of federal law to intentionally make false statements or hide information when applying for Public Assistance. This can carry severe criminal and civil penalties including a fine of up to \$250,000, imprisonment, or both (18 U.S.C. §§ 287, 1001, 1040, and 3571).
- The applicant acknowledges that it must obtain and maintain insurance coverage for all buildings, contents, equipment, and vehicles in an amount equal to or greater than the total cost, prior to any reductions as required by the Stafford Act § 311, 42 U.S.C. § 5154, 44 C.F.R §§ 206.251 - 206.253, and in accordance with FEMA Policy 206-086-1 Public Assistance Policy on Insurance.

Insurance

Additional Information

09/14/2026

Does the Applicant have a Commercial Policy: Yes.

Does the Applicant's Commercial Policy extend coverage for the damage described in this project: No.

Property insurance coverage for the electrical distribution facilities represented on this project are not insured or insurable. No insurance relief is anticipated. No Obtain and Maintain requirement will be made.

FEMA requires the applicant to take reasonable efforts to pursue claims to recover insurance proceeds that it is entitled to receive from its insurer(s). In the event that any insurance proceeds are received for these expenses those proceeds must be reduced from FEMA Public Assistance funding to ensure no duplication of benefits has occurred.

No duplication of benefits from insurance is anticipated for work described in this application. In the event any part or all costs are paid by an insurance policy, a duplication of benefits from insurance will occur. Applicant must notify grantee and FEMA of such recoveries, and the Sub-Grant award amount must be reduced by actual insurance proceeds.

No insurance requirements will be required for this project. Insurance requirements are specific to permanent work to replace, restore, repair, reconstruct, or construct buildings, contents, equipment, or vehicles. (FEMA Recovery Policy FP 206-086-1).

No insurance narrative will be produced or uploaded into documents or attachments.

Jorge Parrilla, PA Insurance Specialist

CRC Atlantic, Guaynabo, PR

O&M Requirements

There are no Obtain and Maintain Requirements on **FAAST [38kV Line 1600 – Entire Line] (Vegetation) (HM Cost Alignment)**.

406 Mitigation

Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and executive orders?

Yes

EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- On May 16, 2025, the Secretary of the U.S. Department of Energy (DOE) issued Order 202-25-2 (Order), pursuant to the authority vested in him by section 202(c) of the Federal Power Act (FPA), 16 U.S.C. § 824a(c), and section 301(b) of the Department of Energy Organization Act, 42 U.S.C. § 7151(b). The Order sought to expedite repair and maintenance efforts to the electrical grid of Puerto Rico by directing the Puerto Rico Electric Power Authority (PREPA) to perform vegetation management, including vegetation clearing to reestablish a right-of-way, for particular transmission and distribution facilities in the Territory as specified in the Order. The Order required PREPA to identify certain parameters by which the directed work would be performed, and required that all work be performed, to the maximum extent practicable, in a manner consistent with all applicable Federal, State, or local environmental laws or regulations and minimize any adverse environmental impacts. However, pursuant to Section 202(c)(3) of the FPA, to the extent any omission or action taken by PREPA that was necessary to comply with the Order, including any omission or action taken to voluntarily comply with the Order, caused PREPA to not comply with any Federal, State, or local environmental law or regulation, including any environmental conditions in this REC's "Standard Conditions," such omission or action shall not be considered a violation of such environmental law or regulation, or subject PREPA to any requirement, civil or criminal liability, or citizen suit under such environmental law or regulation. On August 15, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. To renew/reissue the Order, DOE was required to consult with the primary Federal agency with expertise in the environmental interest protected by such law or regulation and include in the Order conditions necessary to minimize any adverse environmental impacts to the extent practicable. Pursuant to Section 202(c)(4)(B) of the FPA, DOE provided the relevant agencies the opportunity to submit conditions for work performed under the Order, to be included in the Order. According to DOE, no conditions were submitted by the agencies for inclusion in the Order. On November 12, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. DOE and FEMA have agreed that DOE is the lead agency for activities that fall under the prior and any future DOE 202(c) orders issued under the Federal Power Act to resolve the current and related emergencies in Puerto Rico. FEMA has requested that DOE provide FEMA with all documentation relating to their EHP compliance. FEMA will review and incorporate all available information and data for this project pertaining to applicable environmental laws and regulations into this REC when it is received from DOE. On February 10, 2026, and again on May 7, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities. On August 07, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities.
- If ground disturbing activities occur during construction, the applicant will monitor ground disturbance, and if any previously unidentified historic properties, including archeological resources, are discovered, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA. Should any unanticipated effects to previously identified historic properties, including archaeological resources, be identified during construction activities, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA.

EHP Additional Info

There is no additional environmental historical preservation on **FAASt [38kV Line 1600 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Final Reviews

Final Review

Reviewed By LEFRANC-GARCIA, CARLOS L.

Reviewed On 09/18/2026 6:32 PM PDT

Review Comments

Version 0 contemplates \$138,301.59 (federal share) for incidental vegetation clearance associated with 10.27 miles of the 38kV Line 1600 – Entire Line. No permanent infrastructure repairs are included in the approved Scope of Work. The Work to Be Completed cost is \$158,502.76, based on \$15,433.57 per mile, and the final PA project cost is \$153,668.43.

Recipient Review

Reviewed By Mulero, Noel

Reviewed On 10/06/2026 9:45 PM PDT

Review Comments

Recipient review completed. Applicant must ensure to compliance with all regulatory requirements, Record of Environmental Consideration (REC) Special Conditions and PA policy. This project applies to the Department of Energy's executive order. This means that DOE is the lead agency for environmental matters. Project is ready for applicant review.

Project Signatures

Reviewed By Unsigned

Reviewed On Unsigned

Award Information

EMMIE Imported Version Information

Version #	Eligibility Status	Current Location	Bundle Number	Project Amount	Cost Share	Federal Share Obligated	Date Obligated
No Records							

Drawdown History

EMMIE Drawdown Status As of Date	IFMIS Obligation #	Expenditure Number	Expended Date	Expended Amount
No Records				

Obligation History

Version #	Date Obligated	Obligated Cost	Cost Share	IFMIS Status	IFMIS Obligation #
0	10/14/2026	\$138,301.59	90%	Accepted	4339DRPRP01083391

**Department of Homeland Security
Federal Emergency Management Agency**

v0

General Info

Project #	1070376	P/W #	108340	Project Type	Specialized
Project Category	F - Utilities	Applicant	PR Electric Power Authority (000-UA2QU-00)		
Project Title	FAASt [38kV Line 2000 – Entire Line] (Vegetation) (HM Cost Alignment)			Event	4339DR-PR (4339DR)
Project Size	Large	Declaration Date	9/20/2017		
Activity Completion Date	9/20/2027	Incident Start Date	9/17/2017		
Process Step	Obligated	Incident End Date	11/15/2017		

Damage Description and Dimensions

The Disaster # 4339DR, which occurred between 09/17/2017 and 11/15/2017, caused:

Damage #1872592; FAASt [38kV Transmission Line 2000 – Entire Line] (Vegetation)

General Facility Information:

- **Facility Type:** Power generation, transmission, and distribution facilities
- **Facility:** FAASt [38kV Transmission Line 2000 – Entire Line] (Vegetation)
- **Facility Description:** The Puerto Rico Electric Power Authority (PREPA) owns more than 19,000 miles of transmission and distribution lines, as well as more than 400 substations. The facilities addressed in this project are all the overhead transmission and distribution lines (16,000+ miles), as well as substations. To ensure the functioning of this infrastructure to the level of service needed, keeping this equipment clear from vegetation is significant.
- **Approx. Year Built:** 1950
- **GPS Latitude/Longitude:** [REDACTED]

Final Scope

1872592 FAASt [38kV Transmission Line 2000 – Entire Line] (Vegetation)

Project 136271 (hereinafter PREPA FAASt Project) authorized \$9,459,885,412.39 (Federal Share) to be awarded to the Puerto Rico Electric Power Authority (PREPA, Subrecipient) as a fixed cost estimate (FAASt FCE agreement) based on eligible work without detailed scopes of work to restore disaster-damaged facilities. Eligible work for the Transmission and Distribution (T&D) system included restoration of:

Broken structures due to high winds such as poles/towers (counted as broken when poles were inclined, bent, torn, and/or cracked); and other damages/broken components such as transformers, insulators, conductors, grounding system, jumpers, Gang Operated Air Breakers (GOABs), pole hardware, guy wires and anchors.

FEMA deferred the 406 Hazard Mitigation Proposal (HMP) fixed cost over in the PREPA FAASt Project until the Subrecipient submits its actual recovery solutions. FEMA also issued a clarification letter regarding whether hazard mitigation funding under Section 404 or Section 406 of the Stafford Act may be made available for the execution of a one-time, island-wide vegetation clearing and removal operation intended to mitigate the threat to the existing vegetation, if unintended to, poses to Puerto Rico's electric T&D system. See FEMA's letter to COR3, document Signed Vegetation Management March 24 2023.pdf. The Subrecipient's actual recovery solution seeks a one-time Island-wide vegetation clearance and removal operation intended to mitigate the threat to the existing vegetation, if unintended to, poses to Puerto Rico's electric T&D system. The actual recovery solution seeks to mitigate Puerto Rico's electric T&D system, including areas without infrastructure repairs.

The actual recovery solution (scope and cost) will be captured in multiple individual projects (hereinafter Vegetation clearance HMP Sub-FAAST projects) to provide flexibility and enable multiple programmatic reviews simultaneously. The Vegetation clearance HMP Sub-FAAST projects do not include infrastructure repair work.

This project captures a portion of the Island-wide actual recovery solution, specifically the onetime vegetation clearance and removal operation intended to mitigate the 38kV Line 2000– Entire Line (see project note #1 and #2).

FEMA 406 Hazard Mitigation (HM) team will review this actual recovery solution and issue an FCE order for the portion of the recovery solution that reduces risk of future similar damages. The Work to be Completed will be captured in the 406 HM scope section. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects will be adjusted as describe in FEMA-4339-DR-PR Public Assistance PREPA FAAST Post-Fix Cost Estimate Obligation Vegetation HMP Approach: 38kV. See document 956345 DR4339PR FAASTVegetationHMPApproach_38kVTrans.pdf. The PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope. WTBC Cost (PA) = \$15,433.57 per mile. Therefore, the total cost (PA) for this project will be \$189,579.26.

DI#	PA Vegetation Clearance Overlap per mile	Total miles	WTBC - PA Cost with Subrecipient Management & General Conditions	A&E - PA	Total - PA
1872592	\$15,433.57	12.67	\$195,543.33	\$(5,964.07)	\$189,579.26

Work to be completed total: \$195,543.33

A&E Deduction (Global A&E FAAST 335168): -\$5,964.07

Project Total: \$189,579.26

Project Notes:

1. This is a 38kV Transmission-Vegetation clearance HMP Sub-FAAST project.
2. Vegetation clearance HMP Sub-FAAST projects will be written according to line type (Distribution 13.2kV and down, and Transmission: 38 kV, 115kV, and 230 kV) because of the different ROWs and other characteristics. Multiple projects of each type will be submitted and reviewed for eligible PA 406 HM funding. Vegetation clearing work will only be submitted for those areas that vegetation represents strike potential (may cause future similar damage to the T&D system when subject to high winds). In the submittal of this project the Subrecipient's Authorized Representative attests that only the vegetation clearance submitted is to reduce strike potential and that the ROW for these lines has been, and will be, counted only once to avoid duplication within the vegetation clearance projects.
3. For more details of the requirements and conditions for the execution of a one-time, island-wide vegetation clearance and removal operation considered as an eligible Section 406 hazard mitigation proposal (HMP), please refer to document labeled: Attachment A FEMA letter dated March 24 2023.pdf.
4. For details on the SOW, refer to filename 1070373-FAAST [38kV Line 1200 – Entire Line] (Vegetation) DSOW.pdf
5. Vegetation clearance funds will not be allocated to SubFAAST projects.
6. A&E cost included in this project will be reduced from this project and obligated under the FAAST Project #335168, A&E, as shown in the table above. The A&E project was obligated to track and account for costs associated with individual FAAST projects.
7. This project is part of Donor FAAST 136271 – MEPA078 Puerto Rico Electrical Power Authority (PREPA) Island Wide FAAST Project.

406 HMP Scope

Project number: [1070376] FAAST [38kV Line 2000 – Entire Line] (Vegetation)

Damage #: 1872592; FAAST [38kV Transmission Line 2000 – Entire Line] (Vegetation)

Applicant: PR Electric Power Authority (000-UA2QU-00)

Location: Mayagüez, Puerto Rico

GPS Latitude/Longitude: [REDACTED]

Introduction:

Puerto Rico's electrical grid infrastructure has been severely compromised by extreme weather events, particularly with Hurricane Maria in September 2017. The hurricane caused widespread disruptions to transmission and distribution systems, largely due to vegetation impacts that collapsed distribution and transmission lines. Substantial infrastructure was damaged when trees downed utility power lines and poles, causing most of the transmission/distribution system fail. Post-hurricane vegetation clearance to enable grid repair and restoration progressed slowly, considerably delaying overall electrical recovery. Remaining excess vegetation continues to cause operational outages, as ground faults occur when vegetation contacts power lines even during normal weather events. After the passage of Hurricane María, minimal cleaning work was carried out exclusively to clear the areas to carry out emergency repairs to the electrical system. These works were covered by Category B - Emergency Protective Measure, but excess vegetation on the electrical system remains an outstanding vulnerability.

Puerto Rico's grid modernization and mitigation one time ROW clearance strategy will prioritize effective and proactive vegetation management protocols to prevent prolonged storm-related outages, thereby increasing the reliability of the electric system. These reliability and resiliency gaps are especially impactful to Puerto Rico, which has been facing increasingly frequent natural hazards such as hurricanes. This project is part of the for Vegetation Reset Program which will impact the Transmission and Distribution systems for each of the 78 municipalities.

Hazard Mitigation Narrative:

In order to minimize damages in a future event, the Subrecipient's actual recovery solution seeks a one-time Islandwide vegetation remediation clearance for the above work included in the PREPA FAAS Project, as according to the Public Assistance Alternative Procedures (PAAP) (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (hereinafter PR PAAP Guide) and FEMA's letter to COR3, document Signed Island-Wide Vegetation Clearance March 24, 2023. Section 406 hazard mitigation are funds that can be added to projects for the restoration of disaster damaged facilities and must prevent future damage caused by the declared event. Under DR-4339-PR, Section 406 hazard mitigation funds are based on eligible, technically feasible, and cost-effective mitigation activities proposed to reduce risk to the function of the disaster-damaged facilities. The portion of the recovery solution that reduces risk of future damage may be considered as eligible 406 mitigation.

The island-wide transmission and distribution grid was significantly damaged by the strong winds and heavy rainfall during the atmospheric event hurricane Maria. This resulted in many trees and other vegetation becoming a direct hazard to the electrical grid. A one-time 406 hazard mitigation island-wide vegetation clearance will benefit the reliability and resiliency of the Puerto Rico electrical grid, including the number and duration of customer outages during and after the work to complete the repairs to the electrical grid through other PREPA 428 FAAS Projects. The scope of the global 406 Hazard Mitigation (HM) projects includes vegetation clearing across the entire width of the easement, plus a radius of 12 to 25 feet from energized conductors to directly reduce the potential for future damage to the "transmission and/or distribution" (T&D) systems. Each 406 HM Vegetation Reset project is correlated with an eligible 428 T&D project, in association with PREPA's electrical grid. Different regional projects are developed to impact all lines of the electrical system, including distribution lines and high-voltage transmission lines. Also, projects are defined in terms of line type (distribution or transmission) and population density of the area (high or low) to simplify the evaluation by the Environmental and Historical Preservation team (EHP).

The global project was divided into the following regions:

- Region 1 – San Juan
- Region 2 – Arecibo
- Region 3 – Bayamón
- Region 4 – Caguas
- Region 5 – Mayagüez
- Region 6 – Ponce

For each Region of the island, there will be two types of projects to capture the Vegetation Clearing activities within scopes of work: (1) single transmission line projects based on LUMA's priority list, capturing the lines or segments of lines affected most by vegetation interference, and (2) Regional DSOWs divided into groups (Groups A – F), as follows:

- Region 1 – San Juan
- Region 2 – Arecibo
- Group A – High/Low Density Distribution Lines
- Group B – 38 kV Transmission.
- Group C – Overlapped Distribution and Transmission Lines
- Group D - 115 kV Facilities
- Group E - Substation and Telecommunication Facilities.
- Group F – 230 Kv Facilities (Non-Region – Specific)

This 406 HM work is limited to what is necessary to directly reduce the potential of future damage to the T&D system assets, that exceeds what is necessary to clear vegetation for accessing facilities when carrying out repairs which are already established as eligible for FEMA funding utilizing the 428 FAAS Grant. Each 406 HM will correlate with an eligible 428 Transmission and/or Distribution (T&D) project in association with the PREPA power

grid. There will be 7 Regional DSOW's developed capturing planned actions within scopes of work formulated with established criteria detailed for Distribution and Transmission line's/facility locations. The first DSOW is Group A - High Density areas with a low reflection of infrared light; the second DSOW is Group A Low Density locations where more vegetation density is present, which is determined by a higher level of reflection of infrared associated with Vegetation for 13.2kV and below locations; the third DSOW is Group B locations at 38kV level; the fourth DSOW is Group C - with known local environmental sensitivities at 38kV and below levels locations; the fifth DSOW is 115kV Facilities; and the sixth DSOW is Substation and Telecommunication Facilities. There will also be 230 kV Facilities (these installations have a separate Vegetation Clearance project that is not region-specific).

FAAST [38kV Line 2000 – Entire Line] (Vegetation)

This is a project for 38kV transmission lines in Region 5 Mayagüez. The DSOW captures the scope of work and cost estimate for Vegetation Clearing intended to mitigate the threat that the existing vegetation, along 38kV lines within Mayagüez (if left untended to), poses Puerto Rico's electric grid.

This SOW is aligned with and leverages FEMA's Island-Wide Benefits Cost Analysis (IWBCA), which was used for this purpose and fully supports the mitigation measures employed within this project scope of work.

The Subrecipient's authorized representative (LUMA) estimates that this 406 Hazard Mitigation proposal for island-wide vegetation clearance will have immediate and future widespread benefits, including:

- Mitigation of the hazards due to vegetation impacts and damages.
- 70% annual reduction of outages caused by vegetation.
- 35-45% annual reduction of customer interruptions.
- Faster restoration for impacted customers.
- Improved safety for utility workers and the public.
- Support the rebuilding of the grid and effective execution of large-scale construction projects.

The following terms, when used in this document, shall have the meaning described below.

Compatible Species – Compatible species are those that are congruent with the intended use of the site, and include small trees, shrubs and herbaceous vegetation that will never grow into conflict with overhead conductors.

Incompatible Species – Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors.

Clearance - The minimum distance between two conductors, between conductors and their support or other objects, or between conductors and the ground. The National Electrical Safety Code (NESC) and PREPA's Technical Communication (See 12-02 attached) determine the minimum requirements regarding distances (vertical and horizontal) between an energized conductor or device and a structure, building or surface. Vegetation Clearing will be limited to clearing any vegetation affecting these clearances. This term is not synonymous with easement. Clearances can be met without being within an easement. Clearance requirements must be complied with either when the Authority builds its facilities, as well as when a third party builds a structure. Clearances, in both cases, must be complied with by regulation, regardless of whether an easement exists. regardless of whether an easement exists.

Easement - is a line imposed on a property for the benefit of another belonging to a different owner. The property, in favor of which the easement is constituted, is called the dominant estate; the one who suffers it, servant property. An easement for electrical power lines provides PREPA and Luma as its agent various rights including reasonable access to the electric infrastructure to provide maintenance, repair, expand, operate and is established on the strips or portions of land where facilities of the T & D system are located or will be located, such as lines, poles, towers, equipment, and accessories. These acquired rights make it easier to carry out vegetation clearing work.

The PREPA distribution and transmission systems are populated with millions of plants but only some have the conditions, growth characteristics, and/or locations that make them compatible or incompatible with the safe and reliable energy delivery service. The Subrecipient's authorized representative recognizes the diversity of species in tropical ecosystems, and the general remediation strategy is to control incompatible species while encouraging the growth of compatible species. Compatible species may, on occasion, need control if their height or density impedes the necessary line of sight for inspections or access to perform resilience work. Within Appendix A and B are lists of protected flora species and incompatible flora species expected to be encountered during scope performance.

(I) Proposed 428 Public Assistance Scope of Work (SOW):

This project includes Public Assistance (PA) works; however, PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope, \$15,433.57 / mile calculation represents the PA Overlap.

PA incidental works will be deducted from the Section 406 Hazard Mitigation project costs to avoid duplication of works. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects.

FEMA performed an analysis to the PREPA FAAST documents and determined that vegetation clearing on each mile of 38 kV line requiring repair was

on average 8.34%% related to the repair (428 PA) and 91.66% related to a mitigation measure (406 HM). The fixed-cost estimate for the PA scope is \$15,433.57 per 12.67 miles, with a total project cost of \$195,543.33. For further details, refer to the document "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

(II) Hazard Mitigation Proposal (HMP) Scope of Work:

Damage #: 1872592; FAAsT [38kV Transmission Line 2000 – Entire Line] (Vegetation)

As a result of DR-4339-PR, vegetation surrounding T&D assets are falling onto these facilities and interfering with the safe and reliable operation of the assets. The vegetation at present is currently causing outages when vegetation is in contact with the T&D assets. To mitigate the future damage across T&D assets and protect the 428 repairs and replacement along these facilities, clearing vegetation materials will be required. This 406 Hazard Mitigation Scope of Work is to directly reduce the potential of future, damages to the T&D system by clearing vegetative materials that pose an immediate threat to the power distribution lines, and identification for corrective actions related to clearing vegetation (consisting of shrubs, branches, limbs, stumps, bamboo, and trees that are directly impacting the resilience and productivity of the power grid) applicable to the existing PREPA electrical grid within Region 5 Mayagüez TL of Puerto Rico.

The extent and execution of this scope includes performing verification of facilities, assets and condition assessments for determining the most appropriate remediation, preparing work orders for executing the necessary vegetation remediation, by ways of tree felling, vegetation remediation, mechanical vegetation remediation, vegetative debris disposal via chipping, mulching, hauling, and recycling where applicable in easement of the PREPA power Distribution lines. LUMA is not planning to construct access roads. If the work to be done is not adjacent to an existing road, our contractor tree crews will minimize environmental disturbance by utilizing vegetation crews hiking by foot in and out of our existing easement.

Parameters for Performing 406 Hazard Mitigation Vegetation Clearing

Regulation 7282 requires that only shrubs and plants (no trees) be planted within the easement under power lines. Climbing plants and vines, as well as bamboo, are prohibited from being planted within an easement. The branches of trees planted outside the easement must not obstruct free passage of the power lines. The National Electrical Safety Code (NESC) and PREPA’s Technical Communication establish the minimum required distances, both vertical and horizontal, between an energized conductor or device and any structure, building, or surface. Vegetation clearing will be restricted to removing any vegetation that interferes with these clearances. For power distribution lines, NESC and Regulation 7282 define the vertical distance from vegetation as 12-15 feet. By law, any trees, shrubs, or plants planted in violation of Regulation 7282 may be uprooted, removed, or cut down in accordance with the provisions of Regulation 7282 – for both compatible and incompatible species.

Industry standard practices will determine how the work will be performed. A healthy tree is less likely to fall over in a storm and damage overhead lines; therefore, vegetation will be pruned according to ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Vegetation that is improperly pruned could become susceptible to disease and decay, resulting in a hazard to both the line and public safety. ANSI A300 is the tree care industry standard of care in the USA. It was developed by Tree Care Industry Association and maintained by a consensus of various industry stakeholders through periodically reviewing and updating the guidelines. These standards provide guidance on how and where to prune vegetation to achieve clearances and maintain a healthy plant. In all cases, Subrecipient’s authorized representative’s vegetation clearing contractors will be required to perform clearing activities in a manner consistent with ANSI A300, NESC, and Regulation 7282 alignment with Resolution 4987, Organic Law 83 (amended version), Communication 12-02, and PREPA ’s Comprehensive Management Plan establishing standard Distribution easement widths. Easement Clearance widths for distribution lines are given in the table below.

Recommended Easement width for overhead Transmission & Sub-Transmission Lines (feet)				
Construction type	Area	Voltage(Kv)		
		38	115	230
Single Circuit	Urban	25 ft	30 ft	40 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Same Structure	Urban	25 ft	40 ft	60 ft
	Rural	50 ft	100 ft	100 ft

Double Circuit, Different Structures	Rural	50 ft	100 ft	100 ft
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Scope of Work Inside Easement – Incompatible Species

Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors. For the power distribution lines, all Incompatible Species will be cleared from the full width of the easement. "Clearing" in this context includes the following activities: tree removal, severing of vines, cutting, vegetation mastication.

- **Tree removal:** Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- **Severing of vines:** Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified working at ground level. The upper portion of the vine remains attached and is not removed.
- **Cutting:** Cutting typically involves the removal of small diameter Incompatible Species by hand.
- **Vegetation mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

Scope of Work Inside Easement – Compatible Species:

Compatible vegetation species will be cleared consistent with the distances identified in Regulation 7282, which means that any species with the potential to encroach within 12 feet of the conductors at full size will be removed using the same methods discussed above. Even though the distances identified in Regulation 7282 are vertical clearances, Compatible Species encroaching on the conductors from any direction can pose a hazard to the distribution system, with the maximum edge of the conductors to be 12 feet wide centered on the pole. Therefore, the 12-foot clearance is being applied to both vertical and horizontal clearances. For areas with overhead distribution systems located in the backyard or side yard, the certified easement width from LUMA Land Records office will use for clearing.

In rare cases where Subrecipient's authorized representative encounters significant resistance from landowners or stakeholders to remediate vegetation, Subrecipient's authorized representative will work with landowners or stakeholders to determine if Incompatible and Compatible Species can be pruned to mitigate the hazard to the lines instead of being completely removed.

Vegetation with the potential to encroach within 12 feet of conductor — Compatible or Incompatible.

Any vegetation species—whether Compatible or Incompatible—that have the potential (when at full size) to encroach within 20 feet of the conductor will be cleared using one of the methods discussed below:

- **Tree Removal:** Removing above-ground portions of trees while leaving stumps in place.
- **Severing of Vines:** Cutting vines at the base to create an air gap between the root system and the structure.
- **Cutting:** Hand removal of small-diameter incompatible species.
- **Vegetation Mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch. Using heavy equipment to reduce standing trees to woody debris.

All Other Incompatible Species within the Recommended Easement Width:

- All other Incompatible Species will be cleared from the full width of the recommended easement width. The clearing methods described above (tree removal, severing of vines, cutting, and vegetation mastication) will be utilized.

Scope of Work Outside Easement – Species Growing into the Easement

There is the potential for vegetation outside or along the boundary of the easement to interfere with the operation of power distribution lines. Appropriate clearances around the conductors must be achieved to protect the lines from future damage. For distribution lines, Subrecipient's authorized representative has established a minimum clearance distance of 12 feet from all conductors, with the maximum edge of the conductors to be 12 feet wide centered on the pole. This distance is consistent with the vertical distance established in Regulation 7282. If there are species encroaching on the 12-foot clearance outside or along the boundary of the easement, these species will be pruned to obtain at least 20 feet of clearance from the conductors at the time clearance work occurs. In cases where following ANSI A300 best practices require clearance beyond 12 feet, the maximum distance cleared will not exceed an additional 3 feet from set clearing distance. Diagrams illustrating these clearing distances are

provided as attachments within Grants Portal. The following clearing methods will be provided as Attachment B-“FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf”

- Tree pruning: Qualified personnel work from an aerial platform or while climbing within a crown of trees to prune the tree. All pruning work wounds the tree. Done poorly, pruning can result in an exaggerated regrowth response by adversely altering tree architecture and increasing exposure to decay organisms that can weaken the tree. These adverse consequences increase the likelihood of tree-initiated faults causing system interruptions and customer outages. Proper arboriculture techniques will be utilized.
- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified worker at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter species by hand.
- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

FEMA 38kV Assessment & Methodology:

LUMA documentation claims a 100% clearance for the entire project segment based on the total length of the feeder. This analysis would not be considered as the method for validation purposes.

Consequently, FEMA perform a 100% evaluation of each feeder to determine the quantity of miles of vegetation non-compatible. The tools used for this analysis are Google Earth, that allows a street view evaluation where the HM Specialist uses the imagery data for analyze the feeder lines adjacent to roads. Where the feeder is through mountains FEMA use top and 3D view maps that allows determine the elevations for mountains, forested areas (assess vegetation), and the topography of the land. When poles are at the top of mountains and lines run between mountains, only the vegetation around the poles will be considered. The total percentage of each line is the result of compiling all the sections analyzed. It is important to emphasize that after work completed, the subrecipient can submit additional eligible vegetation clearance distance not included in this vegetation clearance percent analysis.

FEMA Analysis:

The total miles to be addressed in the Hazard Mitigation Proposal (HMP) is **14.14 miles**, which includes a 10% buffer due the method of assessment (desktop review), providing sufficient funds to ensure vegetation works are covered. This amount is estimated value, that will be adjusted based on the amount of actual work performed.

The cost estimate is based on two vegetation clearance scenarios, (1) the full clearance represents those lines that at both side sides of the right of way have vegetation that needs to be cleared. (2) is the half clearance represented for those circuits alongside roadways and only needs clearance at one side of the right of way. As a result, the total miles used for the cost estimate is **12.67 miles**, which reflects these adjustments for segments that do not require full clearing. This amount is estimated value, based on a desktop review that will be adjusted based on the amount of actual work performed and evidence of the actual work performed.

		HMP	Cost Estimate
Total Project Miles:		28.20	28.20
Vegetation Miles at 100% of Work		10.19	10.19
Vegetation Miles at 50% of Work		2.66	1.33
Total Miles to Clean		12.85	11.52
Buffer Acceptance:		0.10	10%
Vegetation Miles at 100% + Buffer		11.21	11.21

Vegetation Miles at 50% + Buffer	2.93	1.46
Total Miles to Clean with Buffer	14.14	12.67
% of Miles to Clean with Buffer	50%	45%

(III) Hazard Mitigation Proposal (HMP) Cost:

¹ Vegetation Clearance Cost per Mile (Base Cost) =	\$176,173.47 / mile
Risk Factor approved by the DR4339-PR leadership (5%) =	<u>\$8,808.67 / mile</u>
Vegetation Clearance Cost per Mile (w/Soft Cost) =	<u>\$184,982.14 /mile</u>
	-
² PA Vegetation Clearance Overlap per Mile (Deduction) =	<u>(\$15,433.57/ mile)</u>
Hazard Mitigation Total Cost per Mile =	\$169,548.57 / mile
Project Total Miles with Vegetation:	11.52-miles
Buffer Acceptance:	10%
Project Total Miles with Vegetation:	<u>12.67 miles</u>
Hazard Mitigation Total Cost =	\$2,148,180.38

Note: The \$169,548.57 / mile calculation represents the total cost (base costs + soft costs – PA Overlap). For this project, breaking down that total cost further yields the approximate figures below. For additional information please see the attached document.³

Total Net Hazard Mitigation Cost (Base Cost) =	\$2,045,
+ HM (Management & General Conditions Factors) =	<u>\$102,</u>
Hazard Mitigation Total Cost =	\$2,148,

(IV) Hazard Mitigation Proposal (HMP) Cost Distribution:

Architecture and Engineering (A&E) =	\$65,519.50
Remaining Vegetation Clearance Cost =	<u>\$2,082,660.88</u>
Hazard Mitigation Total Cost =	\$2,148,180.38

(V) HMP Cost-Effectiveness Calculations:

FEMA's Benefit-Cost Analysis, BCA, methodology evaluates the expected risk reduction benefits of a hazard mitigation project and compares those benefits to the cost of the mitigation project. FEMA Public Assistance Program and Policy Guide, PAPPG, Version 3.1, April 2018, Chapter 2, Section VII.C, page 98, considers mitigation measures to be cost-effective when they are demonstrated through an acceptable BCA using FEMA's BCA methodologies and have a resulting Benefit-Cost Ratio, or BCR, equal to or greater than 1.0.

For PREPA infrastructure under FEMA DR-4339-PR, FEMA developed an Island Wide Benefit Cost Analysis, or IWBCA, to evaluate cost-effectiveness at the electrical system level rather than through separate project-specific BCAs. The IWBCA characterizes the PREPA/LUMA system as a single project for mitigation purposes, focuses on system-wide resiliency, and supports the development of cost-effective mitigation projects while avoiding double counting, or duplication, of benefits. The IWBCA applies one BCA to the entire FAAsT project and includes benefits based on future costs avoided from physical damage to infrastructure, costs related to the response and reconnection effort, and loss of function for electric service caused by the storm.

The IWBCA established a maximum potential mitigation benefit for the PREPA system of \$7.6 billion. This figure represents the estimated total potential mitigation benefit with the highest confidence and was developed using the incurred costs of the PREPA FEMA Accelerated Award Strategy, FAAsT, fixed cost estimate, FCE, the mission assignments used for the reconnection effort, and costs associated with loss of service. The IWBCA results were developed by the PA Mitigation team using the best available data and were further refined and concurred with by FEMA Region 2 PA Mitigation team members and FEMA HQ groups, including the Community Infrastructure Resilience, CIR, Branch and Disaster Implementation, DI, Branch. This maximum potential benefit must be tracked to ensure that the combined cost of all approved mitigation proposals does not exceed the maximum potential benefit.

The Hazard Mitigation Proposal, HMP, described herein has a total Hazard Mitigation cost of **\$2,148,180.38**. In accordance with FEMA's internal IWBCA benefit tracking, the maximum potential benefit remaining in the IWBCA is **\$4,985,652,528.25**. The cost of this HMP, when combined with all other approved IWBCA-related proposals funded, does not exceed the remaining available IWBCA benefit. Therefore, this HMP is deemed cost-effective under the FEMA PAPPG Version 3.1, April 2018, Chapter 2, Section VII.C, BCA Rule, because the IWBCA demonstrates an acceptable BCA with a Benefit-Cost Ratio equal to or greater than 1.0.

For validation, reviewers should refer to the attached IWBCA Package, including the IWBCA narrative and backup documentation, which define the IWBCA methodology, inputs, and supporting calculations. Reviewers should also confirm that the project has been included in the current IWBCA benefit tracking record to verify that the total approved IWBCA-related mitigation costs remain below the maximum potential benefit and that no duplication of benefits has occurred.

This Hazard Mitigation Proposal meets the eligible repair and restoration cost-effectiveness requirements. See the Mitigation Profile Documents Tab in Grants Manager for the complete supporting documentation, including the HMP cost estimate and supporting documents file.

***See Mitigation Profile Documents Tab in Grants Manager for complete version of this HMP and supporting documents (HMP, HMP cost estimate, Supporting documents file).*

(VI) Compliance and Assurance Requirements:

A) HMP GENERAL NOTES:

By agreeing to implement the hazard mitigation measures in this HMP, the Applicant/Sub-Applicant is bound by the specific guidelines listed within this document.

COSTS AND GENERAL CONDITIONS: The vegetation removal cost is established according to the average base cost of **\$176,173.47 / mile**. Additionally, DR4339-PR leadership has approved the application of a 5% risk factor to the average cost per mile, resulting in **\$184,982.14 / mile**. After deducting Public Assistance (PA) \$15,433.57 amount (incidental work- refer to document FAAsTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf), the final total obligated amount through PA 406 is **\$169,548.57 / mile**.

DOCUMENTATION REQUIREMENTS: The subrecipient shall document all vegetation removal work, including but not limited to the following:

- Before and after photographs of the total distance included in the HMP Scope of work that clearly show the condition of the area before and after the vegetation clearance.
- A digital map in ArcGIS format showing all areas where vegetation removal was performed. Location information must be provided, including the physical address, GPS coordinates from start to finish of clearance work, and contact information for private property (when applicable).
- Work orders must account for the entire feeder length distance and include a description of the sections both with and without vegetation. Material disposal documentation must specify whether the material was chipped and removed, left on-site, or transported to a landfill.

Note: All vegetation clearance projects must include the above documentation to define the work completed prior to project closeout.

COST DISTRIBUTION: Recognizing that the established cost is an average per mile, it is understood that actual expenses for each feeder or area may deviate (either underrun or overrun) from the estimated project amount. The 406 HMP scope and cost agreement sets an average cost per mile for vegetation clearance, allowing the subrecipient to manage funds across the various projects that comprise the vegetation asset. The *Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, January 1, 2022 (PR PAAP Guide)*, states that if funds for 406 Mitigation are included in the fixed-cost subaward, the subrecipient must complete the approved Scope of Work (SOW) of the Hazard Mitigation Proposal (HMP) in order to retain the 406 Mitigation funding. Consequently, only completed distance in the HM Scope of work, supported by the necessary back-up documentation (e.g., verified mitigated clearance distance), will be eligible for fund retention. Any uncompleted work from the HM SOW (e.g., miles not documented with mitigated clearance distance) will be de-obligated during the closeout process.

SCOPE OF WORK DEVELOPMENT OF HAZARD MITIGATION: FEMA will evaluate each mitigation opportunity to first determine what measures or portions of solutions could be funded through Section 406 mitigation. FEMA analyzes the proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and Eos. FEMA, the Applicant, Recipient, and Sub-recipients will develop and agree to scopes of work (SOW) and cost estimates to repair, restore, or replace eligible facilities including 406 Hazard Mitigation" (Page 6).

COMPLETION OF HAZARD MITIGATION SCOPE OF WORK: If this HMP is approved and the mitigation is not performed, the Applicant must apply for a change in the Scope of Work and a de-obligation of the HMP funding. Failure to complete the work of the HMP may limit future FEMA funding of repairs at the site in the event that a similar disaster event results in similar damage at the site.

CHANGES TO THE HAZARD MITIGATION SCOPE OF WORK FOR LARGE PROJECTS:

Per PAAP PA Process (Section 428), Guide for Permanent Work, February 10, 2020, "A Subrecipient may alter the 406-hazard mitigation SOW (HMP) after FEMA, the Recipient, and Subrecipient agree on the cost estimate for the initial proposal. After the project is obligated, the SOW for the HMP can be changed only once and the timeline for this change will be established based on a facility-by-facility basis. The proposed change will require evaluation by FEMA for eligibility and EHP. As part of the eligibility review, FEMA will evaluate the SOW, technical feasibility, the level of protection, the revised cost estimate, and cost effectiveness of the new hazard mitigation proposal, and, if approved, will adjust the scope and cost estimate accordingly." (Page 14)

HAZARD MITIGATION DESIGN: This HMP is for estimating purposes only and not to be construed as a project design. If the site's final placement and configuration are different than the preliminary estimate, the Applicant should submit a change in scope request. This HMP is subject to further review prior to award.

HAZARD MITIGATION CONSTRUCTION: The Applicant must provide & maintain competent & adequate engineering design & supervision during the construction phase to ensure that the completed work conforms to the approved plans & specifications & all applicable material & construction standards.

As a condition of the FEMA mitigation grant, the Applicant is responsible for the determination of and compliance with all applicable requirements, codes, standards and specifications in connection with the project, including but not limited to the Puerto Rico Building Code of 2018 (2018 PRBC), IBC, IRBC, NFIP Floodplain Management Regulations outlined in 44 C.F.R 60.3, ASCE 24, ASCE 7, and receiving all applicable permits & approvals prior to construction.

MAINTENANCE OF HAZARD MITIGATION: The Applicant shall ensure proper maintenance of the installed mitigation measures, per manufacturer and designer specifications. Any adaptations or installations not approved or that renders the hazard mitigation measure ineffective shall be removed by the Applicant. Examples include, but are not limited to, improper installation of roof-mounted equipment or installation of window-mounted air-conditioning units.

ENVIRONMENTAL AND HISTORIC PRESERVATION: Eligibility and funding for the mitigation at this site on this project will be subject to the compliance of all environmental laws, regulations, and executive orders applicable to the site. This project will undergo a EHP compliance review, after obligation any changes to the SOW will likely trigger an additional EHP compliance review of the revised SOW.

ATTACHMENTS:

Please refer to the following documents.

1. "Island-Wide Vegetation Clearance - FEMA letter dated March 24, 2023.pdf"
2. "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"
3. "Appendix A and B - Protected Flora and Incompatible Flora Species.pdf"

4. "IWBCA HMP Package.pdf"
5. "PN1070376-DR4339PR-HMP_20260914_MAP.pdf"
6. "PN1070376-38KV_TL2000.kmz"
7. "PN1070376-DR4339PR-HMCE -IEP_20260914_MAP.xlsm"

Cost

Code	Quantity	Unit	Total Cost	Section
9001	1	Lump Sum	\$195,543.33	Uncompleted
3510	1	Lump Sum	(\$5,964.07)	Uncompleted

CRC Gross Cost	\$189,579.26
Total 406 HMP Cost	\$0.00
Total Insurance Reductions	\$0.00
CRC Net Cost	\$189,579.26
Federal Share (90.00%)	\$170,621.34
Non-Federal Share (10.00%)	\$18,957.92

Subgrant Conditions

- Applicants must retain all source documentation for each large project for three years after the date the Recipient submits to FEMA certification of completion of the project and all source documentation for small projects for three years after the Recipient submits to FEMA certification of the applicant's last small project. See Title 2 Code of Federal Regulations (C.F.R.) § 200.334. Recipients may require longer retention periods. Real property and equipment disposition, audits, and litigation may also require longer retention periods. If requested, Applicants must provide documentation to FEMA. Recipients may require documentation not otherwise required by FEMA (such as actual cost documentation for Small Projects). In such cases, the Applicant must provide the documentation to the Recipient.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance in effect at the time of the declaration. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise. DHS Standard Terms and Conditions are viewable at <https://www.dhs.gov/publication/dhs-standard-terms-and-conditions>.
- The applicant acknowledges that the Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 200.110.
- The applicant acknowledges that PA funding must be used exclusively for the work specified in the approved project. If a change to the approved scope of work is needed, the applicant must submit a written request through the Recipient to FEMA before it commences work associated with a change.
- Applicants must inform FEMA of each purchased equipment item with a fair market value over \$10,000 after it is no longer needed for federally funded programs or projects. Applicants must also inform FEMA of any unused residual supplies when the aggregate total exceeds \$10,000. See Title 2 C.F.R. §§ 200.313 and 200.314. FEMA reduces eligible funding by this amount.
- The Recipient must submit its certification of the subrecipient's completion of this project, the final claim for payment, and supporting documentation within 180 days from the date that the applicant completes the scope of work, or the project deadline, whichever occurs first. FEMA reimburses Large Projects (those with costs above the large project threshold) based on the actual eligible final project costs. Therefore, during the final project reconciliation (closeout), the project may be amended to reflect the reconciliation of actual eligible costs.
- The Subrecipient provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.
- The Applicant certifies that all work claimed was or will be delivered in an impartial manner without discrimination as required by Title VI of the Civil Rights Act, Section 308 of the Stafford Act, 42 U.S.C. § 5151, and applicable provisions of laws and authorities prohibiting discrimination.
- The Applicant certifies that all impacts/damage claimed was a direct result of the Presidential declaration, was not pre-existing damage, and did not result from a lack of maintenance.
- The applicant certifies that all work claimed was required as a direct result of the major disaster declaration, is located within the designated area, and is the Applicant's legal responsibility.
- The applicant certifies that all costs claimed are reasonable and of a type recognized as ordinary and necessary for the type of work as required by 44 C.F.R. § 206.228 and 2 C.F.R. § 200.404.
- The applicant certifies that no work or costs claimed are covered by another funding source. Pursuant to section 312 of the Stafford Act, 42 U.S.C. § 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The applicant acknowledges it is required to notify FEMA through the recipient if it receives assistance for the same work or costs from another Federal agency, insurance, or any other source and return any duplicated funds to FEMA.
- The applicant certifies that all facilities are being restored in accordance with all federal and SLTT code and standard requirements.

- The applicant acknowledges it must comply with EHP laws, regulations, and Executive Orders (EO), including but not limited to, the Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA). The applicant must afford FEMA the opportunity to perform EHP reviews prior to starting any work that has potential to impact the environment or historic properties, including archaeological resources. If the applicant starts work prior to FEMA's completion of the EHP review, it jeopardizes PA funding for the entire project.
- The applicant acknowledges that under 2 C.F.R. Part 200, it must follow their documented procurement procedures, provided they conform to federal procurement and contracting requirements. The applicant certifies that it is using the most restrictive of either its own documented policies and procedures for procurement or federal procurement and contracting laws in accordance with 2 C.F.R. §§ 200.317 - 200.327. The Applicant is following Environmental Protection Agency guidelines for procurement of recovered materials; and including all applicable required contract provisions.
- The applicant certifies that all information provided is true and correct. Upon submittal this project application becomes a legal document. The False Claims Act (31 U.S.C. §§ 3729-3733) prohibits the submission of false or fraudulent claims for payment to the federal government. It is a violation of federal law to intentionally make false statements or hide information when applying for Public Assistance. This can carry severe criminal and civil penalties including a fine of up to \$250,000, imprisonment, or both (18 U.S.C. §§ 287, 1001, 1040, and 3571).
- The applicant acknowledges that it must obtain and maintain insurance coverage for all buildings, contents, equipment, and vehicles in an amount equal to or greater than the total cost, prior to any reductions as required by the Stafford Act § 311, 42 U.S.C. §5154, 44 C.F.R §§ 206.251 - 206.253, and in accordance with FEMA Policy 206-086-1 Public Assistance Policy on Insurance.

Insurance

Additional Information

9/14/2026

Does the Applicant have a Commercial Policy: Yes.

Does the Applicant's Commercial Policy extend coverage for the damage described in this project: No.

Property insurance coverage for the electrical distribution facilities represented on this project are not insured or insurable. No insurance relief is anticipated. No Obtain and Maintain requirement will be made.

FEMA requires the applicant to take reasonable efforts to pursue claims to recover insurance proceeds that it is entitled to receive from its insurer(s). In the event that any insurance proceeds are received for these expenses those proceeds must be reduced from FEMA Public Assistance funding to ensure no duplication of benefits has occurred.

No duplication of benefits from insurance is anticipated for work described in this application. In the event any part or all costs are paid by an insurance policy, a duplication of benefits from insurance will occur. Applicant must notify grantee and FEMA of such recoveries and the Sub-Grant award amount must be reduced by actual insurance proceeds.

No insurance requirements will be required for this project. Insurance requirements are specific to permanent work to replace, restore, repair, reconstruct, or construct buildings, contents, equipment, or vehicles. (FEMA Recovery Policy FP 206-086-1).

No insurance narrative will be produced or uploaded into documents or attachments.

Jesus M. Vela Ayala, PA Senior Insurance Specialist - CRC Atlantic, Guaynabo, PR

O&M Requirements

There are no Obtain and Maintain Requirements on **FAAST [38kV Line 2000 – Entire Line] (Vegetation) (HM Cost Alignment)**.

406 Mitigation

There is no additional mitigation information on **FAAST [38kV Line 2000 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and executive orders?

Yes

EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- On May 16, 2025, the Secretary of the U.S. Department of Energy (DOE) issued Order 202-25-2 (Order), pursuant to the authority vested in him by section 202(c) of the Federal Power Act (FPA), 16 U.S.C. § 824a(c), and section 301(b) of the Department of Energy Organization Act, 42 U.S.C. § 7151(b). The Order sought to expedite repair and maintenance efforts to the electrical grid of Puerto Rico by directing the Puerto Rico Electric Power Authority (PREPA) to perform vegetation management, including vegetation clearing to reestablish a right-of-way, for particular transmission and distribution facilities in the Territory as specified in the Order. The Order required PREPA to identify certain parameters by which the directed work would be performed, and required that all work be performed, to the maximum extent practicable, in a manner consistent with all applicable Federal, State, or local environmental laws or regulations and minimize any adverse environmental impacts. However, pursuant to Section 202(c)(3) of the FPA, to the extent any omission or action taken by PREPA that was necessary to comply with the Order, including any omission or action taken to voluntarily comply with the Order, caused PREPA to not comply with any Federal, State, or local environmental law or regulation, including any environmental conditions in this REC's "Standard Conditions," such omission or action shall not be considered a violation of such environmental law or regulation, or subject PREPA to any requirement, civil or criminal liability, or citizen suit under such environmental law or regulation. On August 15, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. To renew/reissue the Order, DOE was required to consult with the primary Federal agency with expertise in the environmental interest protected by such law or regulation and include in the Order conditions necessary to minimize any adverse environmental impacts to the extent practicable. Pursuant to Section 202(c)(4)(B) of the FPA, DOE provided the relevant agencies the opportunity to submit conditions for work performed under the Order, to be included in the Order. According to DOE, no conditions were submitted by the agencies for inclusion in the Order. On November 12, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. DOE and FEMA have agreed that DOE is the lead agency for activities that fall under the prior and any future DOE 202(c) orders issued under the Federal Power Act to resolve the current and related emergencies in Puerto Rico. FEMA has requested that DOE provide FEMA with all documentation relating to their EHP compliance. FEMA will review and incorporate all available information and data for this project pertaining to applicable environmental laws and regulations into this REC when it is received from DOE. On February 10, 2026, and again on May 7, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities. On August 07, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities.
- If ground disturbing activities occur during construction, the applicant will monitor ground disturbance, and if any previously unidentified historic properties, including archeological resources, are discovered, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA. Should any unanticipated effects to previously identified historic properties, including archaeological resources, be identified during construction activities, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA.

EHP Additional Info

There is no additional environmental historical preservation on **FAAST [38kV Line 2000 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Final Reviews

Final Review

Reviewed By LEFRANC-GARCIA, CARLOS L.

Reviewed On 09/25/2026 8:09 PM PDT

Review Comments

Version 0 contemplates \$170,621.34 (federal share) for incidental vegetation clearance associated with 12.67 miles of the 38kV Line 2000 – Entire Line. No permanent infrastructure repairs are included in the approved Scope of Work. The Work to Be Completed cost is \$195,543.33, based on \$15,433.57 per mile, and the final PA project cost is \$189,579.26.

Recipient Review

Reviewed By Mulero, Noel

Reviewed On 10/06/2026 7:52 PM PDT

Review Comments

Recipient review completed. Applicant must ensure to compliance with all regulatory requirements, Record of Environmental Consideration (REC) Special Conditions and PA policy. This project applies to the Department of Energy's executive order. This means that DOE is the lead agency for environmental matters. Project is ready for applicant review.

Project Signatures

Reviewed By Unsigned

Reviewed On Unsigned

Award Information

EMMIE Imported Version Information

Version #	Eligibility Status	Current Location	Bundle Number	Project Amount	Cost Share	Federal Share Obligated	Date Obligated
No Records							

Drawdown History

EMMIE Drawdown Status As of Date	IFMIS Obligation #	Expenditure Number	Expended Date	Expended Amount
No Records				

Obligation History

Version #	Date Obligated	Obligated Cost	Cost Share	IFMIS Status	IFMIS Obligation #
0	10/14/2026	\$170,621.34	90%	Accepted	4339DRPRP01083401

**Department of Homeland Security
Federal Emergency Management Agency**

v0

General Info

Project #	1070377	P/W #	108341	Project Type	Specialized
Project Category	F - Utilities	Applicant	PR Electric Power Authority (000-UA2QU-00)		
Project Title	FAASt [38kV Line 2100 – Entire Line] (Vegetation) (HM Cost Alignment)			Event	4339DR-PR (4339DR)
Project Size	Small	Declaration Date	9/20/2017		
Activity Completion Date	9/20/2027	Incident Start Date	9/17/2017		
Process Step	Obligated	Incident End Date	11/15/2017		

Damage Description and Dimensions

The Disaster # 4339DR, which occurred between 09/17/2017 and 11/15/2017, caused:

Damage #1872593; FAASt [38kV Transmission Line 2100 – Entire Line] (Vegetation)

General Facility Information:

- **Facility Type:** Power generation, transmission, and distribution facilities
- **Facility:** FAASt [38kV Transmission Line 2100 – Entire Line] (Vegetation)
- **Facility Description:** The Puerto Rico Electric Power Authority (PREPA) owns more than 19,000 miles of transmission and distribution lines, as well as more than 400 substations. The facilities addressed in this project are all the overhead transmission and distribution lines (16,000+ miles), as well as substations. To ensure the functioning of this infrastructure to the level of service needed, keeping this equipment clear from vegetation is significant.
- **Approx. Year Built:** 1950
- **GPS Latitude/Longitude:** [REDACTED]

Final Scope

1872593 FAASt [38kV Transmission Line 2100 – Entire Line] (Vegetation)

Project 136271 (hereinafter PREPA FAASt Project) authorized \$9,459,885,412.39 (Federal Share) to be awarded to the Puerto Rico Electric Power Authority (PREPA, Subrecipient) as a fixed cost estimate (FAASt FCE agreement) based on eligible work without detailed scopes of work to restore disaster-damaged facilities. Eligible work for the Transmission and Distribution (T&D) system included restoration of:

Broken structures due to high winds such as poles/towers (counted as broken when poles were inclined, bent, torn, and/or cracked); and other damages/broken components such as transformers, insulators, conductors, grounding system, jumpers, Gang Operated Air Breakers (GOABs), pole hardware, guy wires and anchors.

FEMA deferred the 406 Hazard Mitigation Proposal (HMP) fixed cost offer in the PREPA FAASt Project until the Subrecipient submits its actual recovery solutions. FEMA also issued a clarification letter regarding whether hazard mitigation funding under Section 404 or Section 406 of the Stafford Act may be made available for the execution of a one-time, island-wide vegetation clearing and removal operation intended to mitigate the threat to the existing vegetation, if unintended to, poses to Puerto Rico's electric T&D system. See FEMA's letter to COR3, document Signed Vegetation

Management March 24 2023.pdf. The Subrecipient's actual recovery solution seeks a one-time Island-wide vegetation clearance and

removal operation intended to mitigate the threat to the existing vegetation, if untended to, poses to Puerto Rico's electric T&D system. The actual recovery solution seeks to mitigate Puerto Rico's electric T&D system, including areas without infrastructure repairs.

The actual recovery solution (scope and cost) will be captured in multiple individual projects (hereinafter Vegetation clearance HMP Sub-FAAST projects) to provide flexibility and enable multiple programmatic reviews simultaneously. The Vegetation clearance HMP Sub-FAAST projects do not include infrastructure repair work.

This project captures a portion of the Island-wide actual recovery solution, specifically the onetime vegetation clearance and removal operation intended to mitigate the 38kV Line 2100 – Entire Line (see project note #1 and #2).

FEMA 406 Hazard Mitigation (HM) team will review this actual recovery solution and issue an FCE offer for the portion of the recovery solution that reduces risk of future similar damages. The Work to be Completed will be captured in the 406 HM scope section. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects will be adjusted as describe in FEMA-4339-DR-PR Public Assistance PREPA FAAST Post-Fix Cost Estimate Obligation Vegetation HMP Approach: 38kV. See document 956345 DR4339PR FAASTVegetationHMPApproach_38kVTrans.pdf. The PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope. WTBC Cost (PA) = \$15,433.57 per mile. Therefore, the total cost (PA) for this project will be \$97,648.91.

D#	PA Vegetation Clearance Overlap per mile	Total miles	WTBC - PA Cost with Subrecipient Management & General Conditions	A&E - PA	Total - PA
1872593	\$15,433.57	6.38	\$98,466.18	\$(817.27)	\$97,648.91

Work to be completed total: \$98,466.18

A&E Deduction (Global A&E FAAST 335168): -\$817.27

Project Total: \$97,648.91

Project Notes:

1. This is a 38kV Transmission-Vegetation clearance HMP Sub-FAAST project.
2. Vegetation clearance HMP Sub-FAAST projects will be written according to line type (Distribution: 13.2kV and down, and Transmission: 38 kV, 115kV, and 230 kV) because of the different ROWs and other characteristics. Multiple projects of each type will be submitted and reviewed for eligible PA 406 HM funding. Vegetation clearing work will only be submitted for those areas that vegetation represents strike potential (may cause future similar damage to the T&D system when subject to high winds). In the submittal of this project the Subrecipient's Authorized Representative attests that only the vegetation clearance submitted is to reduce strike potential and that the ROW for these lines has been, and will be, counted only once to avoid duplication within the vegetation clearance projects.
3. For more details of the requirements and conditions for the execution of a one-time, island-wide vegetation clearance and removal operation considered as an eligible Section 406 hazard mitigation proposal (HMP), please refer to document labeled: Attachment A FEMA letter dated March 24 2023.pdf.
4. For details on the SOW, refer to filename 1070377-FAAST [38kV Line 2100 – Entire Line] (Vegetation) DSOW.pdf
5. Vegetation clearance funds will not be allocated to SubFAAST projects.
6. A&E cost included in this project will be reduced from this project and obligated under the FAAST Project #335168, A&E, as shown in the table above. The A&E project was obligated to track and account for costs associated with individual FAAST projects.
7. This project is part of Donor FAAST 136271 – MEPA078 Puerto Rico Electrical Power Authority (PREPA) Island Wide FAAST Project.

406 HMP Scope

Project number: [1070377] FAAST [38kV Line 2100 – Entire Line] (Vegetation)

(vegetation)

Damage #: 1872593

Applicant: PR Electric Power Authority (000-UA2QU-00)

Location: Arecibo, Puerto Rico

GPS Latitude/Longitude: From: [REDACTED]

Introduction:

Puerto Rico's electrical grid infrastructure has been severely compromised by extreme weather events, particularly with Hurricane Maria in September 2017. The hurricane caused widespread disruptions to transmission and distribution systems, largely due to vegetation impacts that collapsed distribution and transmission lines. Substantial infrastructure was damaged when trees downed utility power lines and poles, causing most of the transmission/distribution system to fail. Post-hurricane vegetation clearance to enable grid repair and restoration progressed slowly, considerably delaying overall electrical recovery. Remaining excess vegetation continues to cause operational outages, as ground faults occur when vegetation contacts power lines even during normal weather events. After the passage of Hurricane Maria, minimal cleaning work was carried out exclusively to clear the areas to carry out emergency repairs to the electrical system. These works were covered by Category B - Emergency Protective Measure, but excess vegetation on the electrical system remains an outstanding vulnerability.

Puerto Rico's grid modernization and mitigation one-time ROW clearance strategy will prioritize effective and proactive vegetation management protocols to prevent prolonged storm-related outages, thereby increasing the reliability of the electric system. These reliability and resiliency gaps are especially impactful to Puerto Rico, which has been facing increasingly frequent natural hazards such as hurricanes. This project is part of the Vegetation Reset Program which will impact the Transmission and Distribution systems for each of the 78 municipalities.

Hazard Mitigation Narrative:

In order to minimize damages in a future event, the Subrecipient's actual recovery solution seeks a one-time Islandwide vegetation remediation clearance for the above work included in the PREPA FAAS Project, as according to the Public Assistance Alternative Procedures (PAAP) (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (hereinafter PR PAAP Guide) and FEMA's letter to COR3, document Signed Island-Wide Vegetation Clearance March 24, 2023. Section 406 hazard mitigation are funds that can be added to projects for the restoration of disaster damaged facilities and must prevent future damage caused by the declared event. Under DR-4339-PR, Section 406 hazard mitigation funds are based on eligible, technically feasible, and cost-effective mitigation activities proposed to reduce risk to the function of the disaster-damaged facilities. The portion of the recovery solution that reduces risk of future damage may be considered as eligible 406 mitigation.

The island-wide transmission and distribution grid was significantly damaged by the strong winds and heavy rainfall during the atmospheric event hurricane Maria. This resulted in many trees and other vegetation becoming a direct hazard to the electrical grid. A one-time 406 hazard mitigation island-wide vegetation clearance will benefit the reliability and resiliency of the Puerto Rico electrical grid, including the number and duration of customer outages during and after the work to complete the repairs to the electrical grid through other PREPA 428 FAAS Projects. The scope of the global 406 Hazard Mitigation (HM) projects includes vegetation clearing across the entire width of the easement, plus a radius of 12 to 25 feet from energized conductors to directly reduce the potential for future damage to the "transmission and/or distribution" (T&D) systems. Each 406 HM Vegetation Reset project is correlated with an eligible 428 T&D project, in association with PREPA's electrical grid. Different regional projects are developed to impact all lines of the electrical system, including distribution lines and high-voltage transmission lines. Also, projects are defined in terms of line type (distribution or transmission) and population density of the area (high or low) to simplify the evaluation by the Environmental and Historical Preservation team (EHP).

The global project was divided into the following regions:

Region 1 – San Juan

Region 2 – Arecibo

Region 3 – Bayamón

Region 4 – Caguas

Region 5 – Mayagüez

Region 6 – Ponce

For each Region of the island, there will be two types of projects to capture the Vegetation Clearing activities within scopes of work: (1) single transmission line projects based on LUMA's priority list, capturing the lines or segments of lines affected most by vegetation interference, and (2) Regional DSOWs divided into groups (Groups A – F), as follows:

Region 1 – San Juan

Region 2 – Arecibo

Group A – High/Low Density Distribution Lines

Group B – 38 kV Transmission.

Group C – Overlapped Distribution and Transmission Lines

Group D - 115 kV Facilities

Group E - Substation and Telecommunication Facilities.

Group F – 230 Kv Facilities (Non-Region – Specific)

This 406 HM work is limited to what is necessary to directly reduce the potential of future damage to the T&D system assets, that exceeds what is necessary to clear vegetation for accessing facilities when carrying out repairs which are already established as eligible for FEMA funding utilizing the 428 FAAS Grant. Each 406 HM will correlate with an eligible 428 Transmission and/or Distribution (T&D) project in association with the PREPA power grid. There will be 7 Regional DSOW's developed capturing planned actions within scopes of work formulated with established criteria detailed for Distribution and Transmission lines/facility locations. The first DSOW is Group A - High Density areas with a low reflection of infrared light; the second DSOW is Group A Low Density locations where more vegetation density is present, which is determined by a higher level of reflection of infrared associated with Vegetation for 13.2kV and below locations; the third DSOW is Group B locations at 38kV level; the fourth DSOW is Group C - with known local environmental sensitivities at 38kv and below levels locations; the fifth DSOW is 115kV Facilities; and the sixth DSOW is Substation and Telecommunication Facilities. There will also be 230 kV Facilities (these installations have a separate Vegetation Clearance project that is not region- specific).

FAAST [38kV Line 2100 – Entire Line] (Vegetation)

This is a project for 38kV transmission lines in Region 2 Arecibo. The DSOW captures the scope of work and cost estimate for Vegetation Clearing intended to mitigate the threat that the existing vegetation, along 38kV lines within Arecibo (if left untended to), poses Puerto Rico's electric grid.

This SOW is aligned with and leverages FEMA's Island-Wide Benefits Cost Analysis (IWBCA), which was used for this purpose and fully supports the mitigation measures employed within this project scope of work.

The Subrecipient's authorized representative (LUMA) estimates that this 406 Hazard Mitigation proposal for island-wide vegetation clearance will have immediate and future widespread benefits, including:

- Mitigation of the hazards due to vegetation impacts and damages.
- 70% annual reduction of outages caused by vegetation.
- 35-45% annual reduction of customer interruptions.
- Faster restoration for impacted customers.
- Improved safety for utility workers and the public.

Support the rebuilding of the grid and effective execution of large-scale construction projects.

The following terms, when used in this document, shall have the meaning described below.

Compatible Species – Compatible species are those that are congruent with the intended use of the site, and include small trees, shrubs and herbaceous vegetation that will never grow into conflict with overhead conductors.

Incompatible Species – Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors.

Clearance - The minimum distance between two conductors, between conductors and their support or other objects, or between conductors and the ground. The National Electrical Safety Code (NESC) and PREPA's Technical Communication (See 12-02 attached) determine the minimum requirements regarding distances (vertical and horizontal) between an energized conductor or device and a structure, building or surface. Vegetation Clearing will be limited to clearing any vegetation affecting these clearances. This term is not synonymous with easement. Clearances can be met without being within an easement. Clearance requirements must be complied with either when the Authority builds its facilities, as well as when a third party builds a structure. Clearances, in both cases, must be complied

with by regulation, regardless of whether an easement exists. regardless of whether an easement exists.

Easement - is a line imposed on a property for the benefit of another belonging to a different owner. The property, in favor of which the easement is constituted, is called the dominant estate; the one who suffers it, servant property. An easement for electrical power lines provides PREPA and Luma as its agent various rights including reasonable access to the electric infrastructure to provide maintenance, repair, expand, operate and is established on the strips or portions of land where facilities of the T & D system are located or will be located, such as lines, poles, towers, equipment, and accessories. These acquired rights make it easier to carry out vegetation clearing work.

The PREPA distribution and transmission systems are populated with millions of plants but only some have the conditions, growth characteristics, and/or locations that make them compatible or incompatible with the safe and reliable energy delivery service. The Subrecipient's authorized representative recognizes the diversity of species in tropical ecosystems, and the general remediation strategy is to control incompatible species while encouraging the growth of compatible species. Compatible species may, on occasion, need control if their height or density impedes the necessary line of sight for inspections or access to perform resilience work. Within Appendix A and B are lists of protected flora species and incompatible flora species expected to be encountered during scope performance.

(I) Proposed 428 Public Assistance Scope of Work (SOW):

This project includes Public Assistance (PA) works; however, PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope, \$15,433.57 / mile calculation represents the PA Overlap.

PA incidental works will be deducted from the Section 406 Hazard Mitigation project costs to avoid duplication of works. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects.

FEMA performed an analysis to the PREPA FAAST documents and determined that vegetation clearing on each mile of 38 kV line requiring repair was on average 8.34%% related to the repair (428 PA) and 91.66% related to a mitigation measure (406 HM). The fixed-cost estimate for the PA scope is \$15,433.57 per **6.38 miles**, with a total project cost of **\$98,466.18**. For further details, refer to the document "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

(II) Hazard Mitigation Proposal (HMP) Scope of Work:

[1872593]; FAAST [38kV Transmission Line 2100 – Entire Line] (Vegetation)

As a result of DR-4339-PR, vegetation surrounding T&D assets are falling onto these facilities and interfering with the safe and reliable operation of the assets. The vegetation at present is currently causing outages when vegetation is in contact with the T&D assets. To mitigate the future damage across T&D assets and protect the 428 repairs and replacement along these facilities, clearing vegetation materials will be required. This 406 Hazard Mitigation Scope of Work is to directly reduce the potential of future, damages to the T&D system by clearing vegetative materials that pose an immediate threat to the power distribution lines, and identification for corrective actions related to clearing vegetation (consisting of shrubs, branches, limbs, stumps, bamboo, and trees that are directly impacting the resilience and productivity of the power grid) applicable to the existing PREPA electrical grid within Region 2 Arecibo TL of Puerto Rico.

The extent and execution of this scope includes performing verification of facilities, assets and condition assessments for determining the most appropriate remediation, preparing work orders for executing the necessary vegetation remediation, by ways of tree felling, vegetation remediation, mechanical vegetation remediation, vegetative debris disposal via chipping, mulching, hauling, and recycling where applicable in easement of the PREPA power Distribution lines. LUMA is not planning to construct access roads. If the work to be done is not adjacent to an existing road, our contractor tree crews will minimize environmental disturbance by utilizing vegetation crews hiking by foot in and out of our existing easement.

Parameters for Performing 406 Hazard Mitigation Vegetation Clearing

Regulation 7282 requires that only shrubs and plants (no trees) be planted within the easement under power lines. Climbing plants and vines, as well as bamboo, are prohibited from being planted within an easement. The branches of trees planted outside the easement must not obstruct free passage of the power lines. The National Electrical Safety Code (NESC) and PREPA's Technical Communication establish the minimum required distances, both vertical and horizontal, between an energized conductor or device and any structure, building, or surface. Vegetation clearing will be restricted to removing any vegetation that interferes with these clearances. For power distribution lines, NESC and Regulation 7282 define the vertical distance from vegetation as 12-15 feet. By law, any trees, shrubs, or plants planted in violation of Regulation 7282 may be uprooted, removed, or cut down in accordance with the provisions of Regulation 7282 – for both compatible and incompatible species.

Industry standard practices will determine how the work will be performed. A healthy tree is less likely to fall over in a storm and damage overhead lines; therefore, vegetation will be pruned according to ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant

Management – Standard Practices (Pruning). Vegetation that is improperly pruned could become susceptible to disease and decay, resulting in a hazard to both the line and public safety. ANSI A300 is the tree care industry standard of care in the USA. It was developed by Tree Care Industry Association and maintained by a consensus of various industry stakeholders through periodically reviewing and updating the guidelines. These standards provide guidance on how and where to prune vegetation to achieve clearances and maintain a healthy plant. In all cases, Subrecipient's authorized representative's vegetation clearing contractors will be required to perform clearing activities in a manner consistent with ANSI A300, NESC, and Regulation 7282 alignment with Resolution 4987, Organic Law 83 (amended version), Communication 12-02, and PREPA 's Comprehensive Management Plan establishing standard Distribution easement widths. Easement Clearance widths for distribution lines are given in the table below:

Recommended Easement width for overhead Transmission & Sub-Transmission Lines (feet)				
Construction type	Area	Voltage(Kv)		
		38	115	230
Single Circuit	Urban	25 ft	30 ft	40 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Same Structure	Urban	25 ft	40 ft	60 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Different Structures	Rural	50 ft	100 ft	100 ft

Scope of Work Inside Easement – Incompatible Species

Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors. For the power distribution lines, all Incompatible Species will be cleared from the full width of the easement. "Clearing" in this context includes the following activities: tree removal, severing of vines, cutting, vegetation mastication.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified working at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter Incompatible Species by hand.
- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

Scope of Work Inside Easement – Compatible Species:

Compatible vegetation species will be cleared consistent with the distances identified in Regulation 7282, which means that any species with the potential to encroach within 12 feet of the conductors at full size will be removed using the same methods discussed above. Even though the distances identified in Regulation 7282 are vertical clearances, Compatible Species encroaching on the conductors from any direction can pose a hazard to the distribution system, with the maximum edge of the conductors to be 12 feet wide centered on the pole. Therefore, the 12-foot clearance is being applied to both vertical and horizontal clearances. For areas with overhead distribution systems located in the backyard or side yard, the certified easement width from LUMA Land Records office will use for clearing.

In rare cases where Subrecipient's authorized representative encounters significant resistance from landowners or stakeholders to remediate vegetation, Subrecipient's authorized representative will work with landowners or stakeholders to determine if Incompatible and Compatible Species can be pruned to mitigate the hazard to the lines instead of being completely removed

Vegetation with the potential to encroach within 12 feet of conductor — Compatible or Incompatible.

Any vegetation species—whether Compatible or Incompatible—that have the potential (when at full size) to encroach within 20 feet of the conductor will be cleared using one of the methods discussed below:

- **Tree Removal:** Removing above-ground portions of trees while leaving stumps in place.
- **Severing of Vines:** Cutting vines at the base to create an air gap between the root system and the structure.
- **Cutting:** Hand removal of small-diameter incompatible species.
- **Vegetation Mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch. Using heavy equipment to reduce standing trees to woody debris.

All Other Incompatible Species within the Recommended Easement Width:

- All other Incompatible Species will be cleared from the full width of the recommended easement width. The clearing methods described above (tree removal, severing of vines, cutting, and vegetation mastication) will be utilized.

Scope of Work Outside Easement – Species Growing into the Easement

There is the potential for vegetation outside or along the boundary of the easement to interfere with the operation of power distribution lines. Appropriate clearances around the conductors must be achieved to protect the lines from future damage. For distribution lines, Subrecipient's authorized representative has established a minimum clearance distance of 12 feet from all conductors, with the maximum edge of the conductors to be 12 feet wide centered on the pole. This distance is consistent with the vertical distance established in Regulation 7282. If there are species encroaching on the 12-foot clearance outside or along the boundary of the easement, these species will be pruned to obtain at least 20 feet of clearance from the conductors at the time clearance work occurs. In cases where following ANSI A300 best practices require clearance beyond 12 feet, the maximum distance cleared will not exceed an additional 3 feet from set clearing distance. Diagrams illustrating these clearing distances are provided as attachments within Grants Portal. The following clearing methods will be provided as Attachment B-*“FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf”*

- **Tree pruning:** Qualified personnel work from an aerial platform or while climbing within a crown of trees to prune the tree. All pruning work wounds the tree. Done poorly, pruning can result in an exaggerated regrowth response by adversely altering tree architecture and increasing exposure to decay organisms that can weaken the tree. These adverse consequences increase the likelihood of tree-initiated faults causing system interruptions and customer outages. Proper arboriculture techniques will be utilized.
- **Tree removal:** Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- **Severing of vines:** Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified worker at ground level. The upper portion of the vine remains attached and is not removed.
- **Cutting:** Cutting typically involves the removal of small diameter species by hand.

- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

FEMA 38kV Assessment & Methodology:

LUMA documentation claims a 100% clearance for the entire project segment based on the total length of the feeder. This analysis would not be considered as the method for validation purposes.

Consequently, FEMA perform a 100% evaluation of each feeder to determine the quantity of miles of vegetation non-compatible. The tools used for this analysis are Google Earth, that allows a street view evaluation where the HM Specialist uses the imagery data for analyze the feeder lines adjacent to roads. Where the feeder is through mountains FEMA use top and 3D view maps that allows determine the elevations for mountains, forested areas (assess vegetation), and the topography of the land. When poles are at the top of mountains and lines run between mountains, only the vegetation around the poles will be considered. The total percentage of each line is the result of compiling all the sections analyzed. It is important to emphasize that after work completed, the subrecipient can submit additional eligible vegetation clearance distance not included in this vegetation clearance percent analysis.

FEMA Analysis:

The total miles to be addressed in the Hazard Mitigation Proposal (HMP) is **9.90 miles**, which includes a 10% buffer due the method of assessment (desktop review), providing sufficient funds to ensure vegetation works are covered. This amount is estimated value, that will be adjusted based on the amount of actual work performed.

The cost estimate is based on two vegetation clearance scenarios, (1) the full clearance represents those lines that at both side sides of the right of way have vegetation that needs to be cleared. (2) is the half clearance represented for those circuits alongside roadways and only needs clearance at one side of the right of way. As a result, the total miles used for the cost estimate is **6.38 miles**, which reflects these adjustments for segments that do not require full clearing. This amount is estimated value, based on a desktop review that will be adjusted based on the amount of actual work performed and evidence of the actual work performed.

	HMP	Cost Estimate
Total Project Miles:	28.31	28.31
Vegetation Miles at 100% of Work	2.60	2.60
Vegetation Miles at 50% of Work	6.40	3.20
Total Miles to Clean	9.00	5.80
Buffer Acceptance:	0.10	10%
Vegetation Miles at 100% + Buffer	2.86	2.86
Vegetation Miles at 50% + Buffer	7.04	3.52
Total Miles to Clean with Buffer	9.90	6.38
% of Miles to Clean with Buffer	35%	23%

(III) Hazard Mitigation Proposal (HMP) Cost:

¹ Vegetation Clearance Cost per Mile (Base Cost) =	\$176,173.47 / mile
Risk Factor approved by the DR4339-PR leadership (5%) =	<u>\$8,808.67 / mile</u>
Vegetation Clearance Cost per Mile (w/Soft Cost) =	<u>\$184,982.14 /mile</u>
² PA Vegetation Clearance Overlap per Mile (Deduction) =	<u>(\$15,433.57/ mile)</u>
Hazard Mitigation Total Cost per Mile =	\$169,548.57 / mile
Project Total Miles with Vegetation:	5.80-miles
Buffer Acceptance:	10%
Project Total Miles with Vegetation:	<u>6.38 miles</u>
Hazard Mitigation Total Cost =	\$1,081,719.88

Note: The \$169,548.57 / mile calculation represents the total cost (base costs + soft costs – PA Overlap). For this project, breaking down that total cost further yields the approximate figures below. For additional information please see the attached document.³

Total Net Hazard Mitigation Cost (Base Cost) =	\$1,030,741.60
+ HM (Management & General Conditions Factors) =	<u>\$51,978.28</u>
Hazard Mitigation Total Cost =	\$1,081,719.88

(IV) Hazard Mitigation Proposal (HMP) Cost Distribution:

Architecture and Engineering (A&E) =	\$8,978.28	
Remaining Vegetation Clearance Cost =	<u>\$1,072,741.60</u>	

Hazard Mitigation Total Cost =	\$1,081,719.88	

(V) HMP Cost-Effectiveness Calculations:

FEMA's Benefit-Cost Analysis, BCA, methodology evaluates the expected risk reduction benefits of a hazard mitigation project and compares those benefits to the cost of the mitigation project. FEMA Public Assistance Program and Policy Guide, PAPPG, Version 3.1, April 2018, Chapter 2, Section VII.C, page 98, considers mitigation measures to be cost-effective when they are demonstrated through an acceptable BCA using FEMA's BCA methodologies and have a resulting Benefit-Cost Ratio, or BCR, equal to or greater than 1.0.

For PREPA infrastructure under FEMA DR-4339-PR, FEMA developed an Island Wide Benefit Cost Analysis, or IWBCA, to evaluate cost-effectiveness at the electrical system level rather than through separate project-specific BCAs. The IWBCA characterizes the PREPA/LUMA system as a single project for mitigation purposes, focuses on system-wide resiliency, and supports the development of cost-effective mitigation projects while avoiding double counting, or duplication, of benefits. The IWBCA applies one BCA to the entire FAASt project and includes benefits based on future costs avoided from physical damage to infrastructure, costs related to the response and reconnection effort, and loss of function for electric service caused by the storm.

The IWBCA established a maximum potential mitigation benefit for the PREPA system of \$7.6 billion. This figure represents the estimated total potential mitigation benefit with the highest confidence and was developed using the incurred costs of the PREPA FEMA Accelerated Award Strategy, FAASt, fixed cost estimate, FCE, the mission assignments used for the reconnection effort, and costs associated with loss of service. The IWBCA results were developed by the PA Mitigation team using the best available data and were further refined and concurred with by FEMA Region 2 PA Mitigation team members and FEMA HQ groups, including the Community Infrastructure Resilience, CIR, Branch and Disaster Implementation, DI, Branch. This maximum potential benefit must be tracked to ensure that the combined cost of all approved mitigation proposals does not exceed the maximum potential benefit.

The Hazard Mitigation Proposal, HMP, described herein has a total Hazard Mitigation cost of **[\$1,081,719.88]**. In accordance with FEMA's internal IWBCA benefit tracking, the maximum potential benefit remaining in the IWBCA is **[\$4,975,821,703.89]**. The cost of this HMP, when combined with all other approved IWBCA-related proposals funded, does not exceed the remaining available IWBCA benefit. Therefore, this HMP is deemed cost-effective under the FEMA PAPPG Version 3.1, April 2018, Chapter 2, Section VII.C, BCA Rule, because the IWBCA demonstrates an acceptable BCA with a Benefit-Cost Ratio equal to or greater than 1.0.

For validation, reviewers should refer to the attached IWBCA Package, including the IWBCA narrative and backup documentation, which define the IWBCA methodology, inputs, and supporting calculations. Reviewers should also confirm that the project has been included in the current IWBCA benefit tracking record to verify that the total approved IWBCA-related mitigation costs remain below the maximum potential benefit and that no duplication of benefits has occurred.

This Hazard Mitigation Proposal meets the eligible repair and restoration cost-effectiveness requirements. See the Mitigation Profile Documents Tab in Grants Manager for the complete supporting documentation, including the HMP cost estimate and supporting documents file.

(VI) Compliance and Assurance Requirements:

A) HMP GENERAL NOTES:

By agreeing to implement the hazard mitigation measures in this HMP, the Applicant/Sub-Applicant is bound by the specific guidelines listed within this document.

COSTS AND GENERAL CONDITIONS: The vegetation removal cost is established according to the average base cost of **\$176,173.47 / mile**. Additionally, DR4339-PR leadership has approved the application of a 5% risk factor to the average cost per mile, resulting in **\$184,982.14 / mile**. After deducting Public Assistance (PA) \$15,433.57 amount (incidental work- refer to document FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf), the final total obligated amount through PA 406 is **\$169,548.57 / mile**.

DOCUMENTATION REQUIREMENTS: The subrecipient shall document all vegetation removal work, including but not limited to the following:

- Before and after photographs of the total distance included in the HMP Scope of work that clearly show the condition of the area before and after the vegetation clearance.
- A digital map in ArcGIS format showing all areas where vegetation removal was performed. Location information must be provided, including the physical address, GPS coordinates from start to finish of clearance work, and contact information for private property (when

applicable).

- Work orders must account for the entire feeder length distance and include a description of the sections both with and without vegetation. Material disposal documentation must specify whether the material was chipped and removed, left on-site, or transported to a landfill.

Note: All vegetation clearance projects must include the above documentation to define the work completed prior to project closeout.

COST DISTRIBUTION: Recognizing that the established cost is an average per mile, it is understood that actual expenses for each feeder or area may deviate (either underrun or overrun) from the estimated project amount. The 406 HMP scope and cost agreement sets an average cost per mile for vegetation clearance, allowing the subrecipient to manage funds across the various projects that comprise the vegetation asset. The *Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, January 1, 2022 (PR PAAP Guide)*, states that if funds for 406 Mitigation are included in the fixed-cost subaward, the subrecipient must complete the approved Scope of Work (SOW) of the Hazard Mitigation Proposal (HMP) in order to retain the 406 Mitigation funding. Consequently, only completed distance in the HM Scope of work, supported by the necessary back-up documentation (e.g., verified mitigated clearance distance), will be eligible for fund retention. Any uncompleted work from the HM SOW (e.g., miles not documented with mitigated clearance distance) will be de-obligated during the closeout process.

SCOPE OF WORK DEVELOPMENT OF HAZARD MITIGATION: FEMA will evaluate each mitigation opportunity to first determine what measures or portions of solutions could be funded through Section 406 mitigation. FEMA analyzes the proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and Eos. FEMA, the Applicant, Recipient, and Sub-recipients will develop and agree to scopes of work (SOW) and cost estimates to repair, restore, or replace eligible facilities including 406 Hazard Mitigation" (Page 6).

COMPLETION OF HAZARD MITIGATION SCOPE OF WORK: If this HMP is approved and the mitigation is not performed, the Applicant must apply for a change in the Scope of Work and a de-obligation of the HMP funding. Failure to complete the work of the HMP may limit future FEMA funding of repairs at the site in the event that a similar disaster event results in similar damage at the site.

CHANGES TO THE HAZARD MITIGATION SCOPE OF WORK FOR LARGE PROJECTS:

Per PAAP PA Process (Section 428), Guide for Permanent Work, February 10, 2020, "A Subrecipient may alter the 406-hazard mitigation SOW (HMP) after FEMA, the Recipient, and Subrecipient agree on the cost estimate for the initial proposal. After the project is obligated, the SOW for the HMP can be changed only once and the timeline for this change will be established based on a facility-by-facility basis. The proposed change will require evaluation by FEMA for eligibility and EHP. As part of the eligibility review, FEMA will evaluate the SOW, technical feasibility, the level of protection, the revised cost estimate, and cost effectiveness of the new hazard mitigation proposal, and, if approved, will adjust the scope and cost estimate accordingly." (Page 14)

HAZARD MITIGATION DESIGN: This HMP is for estimating purposes only and not to be construed as a project design. If the site's final placement and configuration are different than the preliminary estimate, the Applicant should submit a change in scope request. This HMP is subject to further review prior to award.

HAZARD MITIGATION CONSTRUCTION: The Applicant must provide & maintain competent & adequate engineering design & supervision during the construction phase to ensure that the completed work conforms to the approved plans & specifications & all applicable material & construction standards.

As a condition of the FEMA mitigation grant, the Applicant is responsible for the determination of and compliance with all applicable requirements, codes, standards and specifications in connection with the project, including but not limited to the Puerto Rico Building Code of 2018 (2018 PRBC), IBC, IRBC, NFIP Floodplain Management Regulations outlined in 44 C.F.R 60.3, ASCE 24, ASCE 7, and receiving all applicable permits & approvals prior to construction.

MAINTENANCE OF HAZARD MITIGATION: The Applicant shall ensure proper maintenance of the installed mitigation measures, per manufacturer and designer specifications. Any adaptations or installations not approved or that renders the hazard mitigation measure ineffective shall be removed by the Applicant. Examples include, but are not limited to, improper installation of roof-mounted equipment or installation of window-mounted air-conditioning units.

ENVIRONMENTAL AND HISTORIC PRESERVATION: Eligibility and funding for the mitigation at this site on this project will be subject to the compliance of all environmental laws, regulations, and executive orders applicable to the site. This project will undergo a EHP compliance review, after obligation any changes to the SOW will likely trigger an additional EHP compliance review of the revised SOW.

ATTACHMENTS:

Please refer to the following documents.

1. "Island-Wide Vegetation Clearance - FEMA letter dated March 24, 2023.pdf"
2. "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

3. "Appendix A and B - Protected Flora and Incompatible Flora Species.pdf"
4. "IWBCA HMP Package.pdf"
5. "PN1070377 TL2100 38Kv Arecibo.kmz"
6. "PN1070377-DR4339PR-HMCE-IEP-20260910-RFP"
7. "PN1070377-DR4339PR-HMP-20260910-RFP (rev).pdf"

Cost

Code	Quantity	Unit	Total Cost	Section
9001	1	Lump Sum	\$98,466.18	Uncompleted
3510	1	Lump Sum	(\$817.27)	Uncompleted

CRC Gross Cost	\$97,648.91
Total 406 HMP Cost	\$0.00
Total Insurance Reductions	\$0.00
CRC Net Cost	\$97,648.91
Federal Share (90.00%)	\$87,884.02
Non-Federal Share (10.00%)	\$9,764.89

Subgrant Conditions

- Applicants must retain all source documentation for each large project for three years after the date the Recipient submits to FEMA certification of completion of the project and all source documentation for small projects for three years after the Recipient submits to FEMA certification of the applicant's last small project. See Title 2 Code of Federal Regulations (C.F.R.) § 200.334. Recipients may require longer retention periods. Real property and equipment disposition, audits, and litigation may also require longer retention periods. If requested, Applicants must provide documentation to FEMA. Recipients may require documentation not otherwise required by FEMA (such as actual cost documentation for Small Projects). In such cases, the Applicant must provide the documentation to the Recipient.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance in effect at the time of the declaration. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise. DHS Standard Terms and Conditions are viewable at <https://www.dhs.gov/publication/dhs-standard-terms-and-conditions>.
- The applicant acknowledges that the Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 200.110.
- The applicant acknowledges that PA funding must be used exclusively for the work specified in the approved project. If a change to the approved scope of work is needed, the applicant must submit a written request through the Recipient to FEMA before it commences work associated with a change.
- Applicants must inform FEMA of each purchased equipment item with a fair market value over \$10,000 after it is no longer needed for federally funded programs or projects. Applicants must also inform FEMA of any unused residual supplies when the aggregate total exceeds \$10,000. See Title 2 C.F.R. §§ 200.313 and 200.314. FEMA reduces eligible funding by this amount.
- The Recipient must submit its certification of the subrecipient's completion of all of its small projects and compliance with all environmental and historic preservation requirements within 180 days of the applicant's completion of its last small project, or the latest approved deadline, whichever is sooner.
- The Applicant certifies that all work claimed was or will be delivered in an impartial manner without discrimination as required by Title VI of the Civil Rights Act, Section 308 of the Stafford Act, 42 U.S.C. § 5151, and applicable provisions of laws and authorities prohibiting discrimination.
- The Applicant certifies that all impacts/damage claimed was a direct result of the Presidential declaration, was not pre-existing damage, and did not result from a lack of maintenance.
- The applicant certifies that all work claimed was required as a direct result of the major disaster declaration, is located within the designated area, and is the Applicant's legal responsibility.
- The applicant certifies that all costs claimed are reasonable and of a type recognized as ordinary and necessary for the type of work as required by 44 C.F.R. § 206.228 and 2 C.F.R. § 200.404.
- The applicant certifies that no work or costs claimed are covered by another funding source. Pursuant to section 312 of the Stafford Act, 42 U.S.C. § 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The applicant acknowledges it is required to notify FEMA through the recipient if it receives assistance for the same work or costs from another Federal agency, insurance, or any other source and return any duplicated funds to FEMA.
- The applicant certifies that all facilities are being restored in accordance with all federal and SLTT code and standard requirements.
- The applicant acknowledges it must comply with EHP laws, regulations, and Executive Orders (EO), including but not limited to, the Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA). The applicant must afford FEMA the opportunity to perform EHP reviews prior to starting any work that has potential to impact the environment or historic properties, including archaeological resources. If the applicant starts work prior to FEMA's completion of

the EHP review, it jeopardizes PA funding for the entire project.

- The applicant acknowledges that under 2 C.F.R. Part 200, it must follow their documented procurement procedures, provided they conform to federal procurement and contracting requirements. The applicant certifies that it is using the most restrictive of either its own documented policies and procedures for procurement or federal procurement and contracting laws in accordance with 2 C.F.R. §§ 200.317 - 200.327. The Applicant is following Environmental Protection Agency guidelines for procurement of recovered materials; and including all applicable required contract provisions.
- The applicant certifies that all information provided is true and correct. Upon submittal this project application becomes a legal document. The False Claims Act (31 U.S.C. §§ 3729-3733) prohibits the submission of false or fraudulent claims for payment to the federal government. It is a violation of federal law to intentionally make false statements or hide information when applying for Public Assistance. This can carry severe criminal and civil penalties including a fine of up to \$250,000, imprisonment, or both (18 U.S.C. §§ 287, 1001, 1040, and 3571).
- The applicant acknowledges that it must obtain and maintain insurance coverage for all buildings, contents, equipment, and vehicles in an amount equal to or greater than the total cost, prior to any reductions as required by the Stafford Act § 311, 42 U.S.C. § 5154, 44 C.F.R §§ 206.251 - 206.253, and in accordance with FEMA Policy 206-086-1 Public Assistance Policy on Insurance.

Insurance

Additional Information

9/15/2026

Does the Applicant have a Commercial Policy: Yes.

Does the Applicant's Commercial Policy extend coverage for the damage described in this project: No.

Property insurance coverage for the electrical distribution facilities represented on this project are not insured or insurable. No insurance relief is anticipated. No Obtain and Maintain requirement will be made.

FEMA requires the applicant to take reasonable efforts to pursue claims to recover insurance proceeds that it is entitled to receive from its insurer(s). In the event that any insurance proceeds are received for these expenses those proceeds must be reduced from FEMA Public Assistance funding to ensure no duplication of benefits has occurred.

No duplication of benefits from insurance is anticipated for work described in this application. In the event any part or all costs are paid by an insurance policy, a duplication of benefits from insurance will occur. Applicant must notify grantee and FEMA of such recoveries and the Sub-Grant award amount must be reduced by actual insurance proceeds.

No insurance requirements will be required for this project. Insurance requirements are specific to permanent work to replace, restore, repair, reconstruct, or construct buildings, contents, equipment, or vehicles. (FEMA Recovery Policy FP 206-086-1).

No insurance narrative will be produced or uploaded into documents or attachments.

Jean-Carlo Echevarria, PA Insurance Specialist, CRC Atlantic, Guaynabo, PR

O&M Requirements

There are no Obtain and Maintain Requirements on **FAAST [38kV Line 2100 – Entire Line] (Vegetation) (HM Cost Alignment)**.

406 Mitigation

There is no additional mitigation information on **FAAST [38kV Line 2100 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and executive orders?

Yes

EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- On May 16, 2025, the Secretary of the U.S. Department of Energy (DOE) issued Order 202-25-2 (Order), pursuant to the authority vested in him by section 202(c) of the Federal Power Act (FPA), 16 U.S.C. § 824a(c), and section 301(b) of the Department of Energy Organization Act, 42 U.S.C. § 7151(b). The Order sought to expedite repair and maintenance efforts to the electrical grid of Puerto Rico by directing the Puerto Rico Electric Power Authority (PREPA) to perform vegetation management, including vegetation clearing to reestablish a right-of-way, for particular transmission and distribution facilities in the Territory as specified in the Order. The Order required PREPA to identify certain parameters by which the directed work would be performed, and required that all work be performed, to the maximum extent practicable, in a manner consistent with all applicable Federal, State, or local environmental laws or regulations and minimize any adverse environmental impacts. However, pursuant to Section 202(c)(3) of the FPA, to the extent any omission or action taken by PREPA that was necessary to comply with the Order, including any omission or action taken to voluntarily comply with the Order, caused PREPA to not comply with any Federal, State, or local environmental law or regulation, including any environmental conditions in this REC's "Standard Conditions," such omission or action shall not be considered a violation of such environmental law or regulation, or subject PREPA to any requirement, civil or criminal liability, or citizen suit under such environmental law or regulation. On August 15, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. To renew/reissue the Order, DOE was required to consult with the primary Federal agency with expertise in the environmental interest protected by such law or regulation and include in the Order conditions necessary to minimize any adverse environmental impacts to the extent practicable. Pursuant to Section 202(c)(4)(B) of the FPA, DOE provided the relevant agencies the opportunity to submit conditions for work performed under the Order, to be included in the Order. According to DOE, no conditions were submitted by the agencies for inclusion in the Order. On November 12, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. DOE and FEMA have agreed that DOE is the lead agency for activities that fall under the prior and any future DOE 202(c) orders issued under the Federal Power Act to resolve the current and related emergencies in Puerto Rico. FEMA has requested that DOE provide FEMA with all documentation relating to their EHP compliance. FEMA will review and incorporate all available information and data for this project pertaining to applicable environmental laws and regulations into this REC when it is received from DOE. On February 10, 2026, and again on May 7, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities. On August 07, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities.
- If ground disturbing activities occur during construction, the applicant will monitor ground disturbance, and if any previously unidentified historic properties, including archeological resources, are discovered, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA. Should any unanticipated effects to previously identified historic properties, including archaeological resources, be identified during construction activities, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA.

EHP Additional Info

There is no additional environmental historical preservation on **FAASt [38kV Line 2100 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Final Reviews

Final Review

Reviewed By LEFRANC-GARCIA, CARLOS L.

Reviewed On 09/25/2026 8:09 PM PDT

Review Comments

Version 0 contemplates \$87,884.02 (federal share) for incidental vegetation clearance associated with 6.38 miles of the 38kV Line 2100 – Entire Line. No permanent infrastructure repairs are included in the approved Scope of Work. The Work to Be Completed cost is \$98,466.18, based on \$15,433.57 per mile, and the final PA project cost is \$97,648.91.

Recipient Review

Reviewed By Mulero, Noel

Reviewed On 10/06/2026 9:56 PM PDT

Review Comments

Recipient review completed. Applicant must ensure to compliance with all regulatory requirements, Record of Environmental Consideration (REC) Special Conditions and PA policy. This project applies to the Department of Energy's executive order. This means that DOE is the lead agency for environmental matters. Project is ready for applicant review.

Project Signatures

Reviewed By Unsigned

Reviewed On Unsigned

Award Information

EMMIE Imported Version Information

Version #	Eligibility Status	Current Location	Bundle Number	Project Amount	Cost Share	Federal Share Obligated	Date Obligated
No Records							

Drawdown History

EMMIE Drawdown Status As of Date	IFMIS Obligation #	Expenditure Number	Expended Date	Expended Amount
No Records				

Obligation History

Version #	Date Obligated	Obligated Cost	Cost Share	IFMIS Status	IFMIS Obligation #
0	10/14/2026	\$87,884.02	90%	Accepted	4339DRPRP01083411

**Department of Homeland Security
Federal Emergency Management Agency**

v0

General Info

Project #	1070380	P/W #	108344	Project Type	Specialized
Project Category	F - Utilities	Applicant	PR Electric Power Authority (000-UA2QU-00)		
Project Title	FAASt [38kV Line 2500 – Entire Line] (Vegetation) (HM Cost Alignment)			Event	4339DR-PR (4339DR)
Project Size	Small	Declaration Date	9/20/2017		
Activity Completion Date	9/20/2027	Incident Start Date	9/17/2017		
Process Step	Obligated	Incident End Date	11/15/2017		

Damage Description and Dimensions

The Disaster # 4339DR, which occurred between 09/17/2017 and 11/15/2017, caused:

Damage #1872595; FAASt [38kV Transmission Line 2500 – Entire Line] (Vegetation)

General Facility Information:

- **Facility Type:** Power generation, transmission, and distribution facilities
- **Facility:** FAASt [38kV Transmission Line 2500 – Entire Line] (Vegetation)
- **Facility Description:** The Puerto Rico Electric Power Authority (PREPA) owns more than 19,000 miles of transmission and distribution lines, as well as more than 400 substations. The facilities addressed in this project are all the overhead transmission and distribution lines (16,000+ miles), as well as substations. To ensure the functioning of this infrastructure to the level of service needed, keeping this equipment clear from vegetation is significant.
- **Approx. Year Built:** 1950
- **GPS Latitude/Longitude:** [REDACTED]

Final Scope

1872595 FAASt [38kV Transmission Line 2500 – Entire Line] (Vegetation)

Project 136271 (hereinafter PREPA FAASt Project) authorized \$9,459,885,412.39 (Federal Share) to be awarded to the Puerto Rico Electric Power Authority (PREPA, Subrecipient) as a fixed cost estimate (FAASt FCE agreement) based on eligible work without detailed scopes of work to restore disaster-damaged facilities. Eligible work for the Transmission and Distribution (T&D) system included restoration of:

Broken structures due to high winds such as poles/towers (counted as broken when poles were inclined, bent, torn, and/or cracked); and other damages/broken components such as transformers, insulators, conductors, grounding system, jumpers, Gang Operated Air Breakers (GOABs), pole hardware, guy wires and anchors.

FEMA deferred the 406 Hazard Mitigation Proposal (HMP) fixed cost offer in the PREPA FAASt Project until the Subrecipient submits its actual recovery solutions. FEMA also issued a clarification letter regarding whether hazard mitigation funding under Section 404 or Section 406 of the Stafford Act may be made available for the execution of a one-time, island-wide vegetation clearing and removal operation intended to mitigate the threat to the existing vegetation, if untended to, poses to Puerto Rico's electric T&D system. See FEMA's letter to COR3, document Signed Vegetation

Management March 24 2023.pdf. The Subrecipient's actual recovery solution seeks a one-time Island-wide vegetation clearance and removal

operation intended to mitigate the threat to the existing vegetation, if untended to, poses to Puerto Rico's electric T&D system. The actual recovery solution seeks to mitigate Puerto Rico's electric T&D system, including areas without infrastructure repairs.

The actual recovery solution (scope and cost) will be captured in multiple individual projects (hereinafter Vegetation clearance HMP Sub-FAAST projects) to provide flexibility and enable multiple programmatic reviews simultaneously. The Vegetation clearance HMP Sub-FAAST projects do not include infrastructure repair work.

This project captures a portion of the Island-wide actual recovery solution, specifically the onetime vegetation clearance and removal operation intended to mitigate the 38kV Line 2500– Entire Line (see project note #1 and #2).

FEMA 406 Hazard Mitigation (HM) team will review this actual recovery solution and issue an FCE offer for the portion of the recovery solution that reduces risk of future similar damages. The Work to be Completed will be captured in the 406 HM scope section. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects will be adjusted as describe in FEMA-4339-DR-PR Public Assistance PREPA FAAST Post-Fixed Cost Estimate Obligation Vegetation HMP Approach: 38kV. See document 956345 DR4339PR FAASTVegetationHMPApproach_38kVTrans.pdf. The PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope. WTBC Cost (PA) = \$15,433.57 per mile. Therefore, the total cost (PA) for this project will be \$66,435.04

DI#	PA Vegetation Clearance Overlap per mile	Total miles	WTBC - PA Cost with Subrecipient Management & General Conditions	A&E - PA	Total - PA
1872595	\$15,433.77	4.44	\$68,525.05	\$(2,090.01)	\$66,435.04

Work to be completed total: \$68,525.05

A&E Deduction (Global A&E FAAST 335168): -\$2,090.01

Project Total: \$66,435.04

roject Notes:

1. This is a 38kV Transmission-Vegetation clearanceHMP Sub-FAAST project.
2. Vegetation clearance HMP Sub-FAAST projects will be written according to line type (Distribution: 13.2kV and down, and Transmission: 38 kV, 115kV, and 230 kV) because of the different ROWs and other characteristics. Multiple projects of each type will be submitted and reviewed for eligible PA 406 HM funding. Vegetation clearing work will only be submitted for those areas that vegetation represents strike potential (may cause future similar damage to the T&D system when subject to high winds). In the submittal of this project the Subrecipient's Authorized Representative attests that only the vegetation clearance submitted is to reduce strike potential and that the ROW for these lines has been, and will be, counted only once to avoid duplication within the vegetation clearance projects.
3. For more details of the requirements and conditions for the execution of a one-time, island-wide vegetation clearance and removal operation considered as an eligible Section 406 hazard mitigation proposal (HMP), please refer to document labeled: Attachment A FEMA letter dated March 24 2023.pdf.
4. For details on the SOW, refer to filename 1070380 -FAAST [38kV Line 2500 – Entire Line] (Vegetation) DSOW.pdf
5. Vegetation clearance funds will not be allocated to SubFAAST projects.
6. A&E cost included in this project will be reduced from this project and obligated under the FAAST Project #335168, A&E, as shown in the table

above. The A&E project was obligated to track and account for costs associated with individual FAASSt projects.

7. This project is part of Donor FAASSt 136271 – MEPA078 Puerto Rico Electrical Power Authority (PREPA) Island Wide FAASSt Project.

406 HMP Scope

Project number: [1070380] FAASSt [38kV Transmission Line 2500 – Entire Line] (Vegetation

Damage #: 1872595

Applicant: PR Electric Power Authority (000-UA2QU-00)

Location: Mayaguez, Puerto Rico

GPS Latitude/Longitude: From: [REDACTED]

Introduction:

Puerto Rico's electrical grid infrastructure has been severely compromised by extreme weather events, particularly with Hurricane Maria in September 2017. The hurricane caused widespread disruptions to transmission and distribution systems, largely due to vegetation impacts that collapsed distribution and transmission lines. Substantial infrastructure was damaged when trees downed utility power lines and poles, causing most of the transmission/distribution system fail. Post-hurricane vegetation clearance to enable grid repair and restoration progressed slowly, considerably delaying overall electrical recovery. Remaining excess vegetation continues to cause operational outages, as ground faults occur when vegetation contacts power lines even during normal weather events. After the passage of Hurricane Maria, minimal cleaning work was carried out exclusively to clear the areas to carry out emergency repairs to the electrical system. These works were covered by Category B - Emergency Protective Measure, but excess vegetation on the electrical system remains an outstanding vulnerability.

Puerto Rico's grid modernization and mitigation one time ROW clearance strategy will prioritize effective and proactive vegetation management protocols to prevent prolonged storm-related outages, thereby increasing the reliability of the electric system. These reliability and resiliency gaps are especially impactful to Puerto Rico, which has been facing increasingly frequent natural hazards such as hurricanes. This project is part of the for Vegetation Reset Program which will impact the Transmission and Distribution systems for each of the 78 municipalities.

Hazard Mitigation Narrative:

In order to minimize damages in a future event, the Subrecipient's actual recovery solution seeks a one-time Islandwide vegetation remediation clearance for the above work included in the PREPA FAASSt Project, as according to the Public Assistance Alternative Procedures (PAAP) (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (hereinafter PR PAAP Guide) and FEMA's letter to COR3, document Signed Island-Wide Vegetation Clearance March 24, 2023. Section 406 hazard mitigation are funds that can be added to projects for the restoration of disaster damaged facilities and must prevent future damage caused by the declared event. Under DR-4339-PR, Section 406 hazard mitigation funds are based on eligible, technically feasible, and cost-effective mitigation activities proposed to reduce risk to the function of the disaster-damaged facilities. The portion of the recovery solution that reduces risk of future damage may be considered as eligible 406 mitigation.

The island-wide transmission and distribution grid was significantly damaged by the strong winds and heavy rainfall during the atmospheric event hurricane Maria. This resulted in many trees and other vegetation becoming a direct hazard to the electrical grid. A one-time 406 hazard mitigation island-wide vegetation clearance will benefit the reliability and resiliency of the Puerto Rico electrical grid, including the number and duration of customer outages during and after the work to complete the repairs to the electrical grid through other PREPA 428 FAASSt Projects. The scope of the global 406 Hazard Mitigation (HM) projects includes vegetation clearing across the entire width of the easement, plus a radius of 12 to 25 feet from energized conductors to directly reduce the potential for future damage to the "transmission and/or distribution" (T&D) systems. Each 406 HM Vegetation Reset project is correlated with an eligible 428 T&D project, in association with PREPA's electrical grid. Different regional projects are developed to impact all lines of the electrical system, including distribution lines and high-voltage transmission lines. Also, projects are defined in terms of line type (distribution or transmission) and population density of the area (high or low) to simplify the evaluation by the Environmental and Historical Preservation team (EHP).

The global project was divided into the following regions:

- Region 1 – San Juan
- Region 2 – Arecibo

- Region 3 – Bayamón
- Region 4 – Caguas
- Region 5 – Mayagüez
- Region 6 – Ponce

For each Region of the island, there will be two types of projects to capture the Vegetation Clearing activities within scopes of work: (1) single transmission line projects based on LUMA's priority list, capturing the lines or segments of lines affected most by vegetation interference, and (2) Regional DSOWs divided into groups (Groups A – F), as follows:

- Region 1 – San Juan
- Region 2 – Arecibo
- Group A – High/Low Density Distribution Lines
- Group B – 38 kV Transmission.
- Group C – Overlapped Distribution and Transmission Lines
- Group D - 115 kV Facilities
- Group E - Substation and Telecommunication Facilities.
- Group F – 230 Kv Facilities (Non-Region – Specific)

This 406 HM work is limited to what is necessary to directly reduce the potential of future damage to the T&D system assets, that exceeds what is necessary to clear vegetation for accessing facilities when carrying out repairs which are already established as eligible for FEMA funding utilizing the 428 FFASt Grant. Each 406 HM will correlate with an eligible 428 Transmission and/or Distribution (T&D) project in association with the PREPA power grid. There will be 7 Regional DSOW's developed capturing planned actions within scopes of work formulated with established criteria detailed for Distribution and Transmission lines/facility locations. The first DSOW is Group A - High Density areas with a low reflection of infrared light; the second DSOW is Group A Low Density locations where more vegetation density is present, which is determined by a higher level of reflection of infrared associated with Vegetation for 13.2kV and below locations; the third DSOW is Group B locations at 38kV level; the fourth DSOW is Group C - with known local environmental sensitivities at 38kv and below levels locations; the fifth DSOW is 115kV Facilities; and the sixth DSOW is Substation and Telecommunication Facilities. There will also be 230 kV Facilities (these installations have a separate Vegetation Clearance project that is not region- specific).

FAAST [38kV Transmission Line 2500 – Entire Line] (Vegetation)

This is a project for 38kV transmission lines in Region 5 Mayaguez. The DSOW captures the scope of work and cost estimate for Vegetation Clearing intended to mitigate the threat that the existing vegetation, along 38kV lines within Mayaguez (if left untended to), poses Puerto Rico's electric grid.

This SOW is aligned with and leverages FEMA's Island-Wide Benefits Cost Analysis (IWBCA), which was used for this purpose and fully supports the mitigation measures employed within this project scope of work.

The Subrecipient's authorized representative (LUMA) estimates that this 406 Hazard Mitigation proposal for island-wide vegetation clearance will have immediate and future widespread benefits, including:

- Mitigation of the hazards due to vegetation impacts and damages.
- 70% annual reduction of outages caused by vegetation.
- 35-45% annual reduction of customer interruptions.
- Faster restoration for impacted customers.
- Improved safety for utility workers and the public.
- Support the rebuilding of the grid and effective execution of large-scale construction projects.

The following terms, when used in this document, shall have the meaning described below.

Compatible Species – Compatible species are those that are congruent with the intended use of the site, and include small trees, shrubs and herbaceous vegetation that will never grow into conflict with overhead conductors.

Incompatible Species – Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors.

Clearance - The minimum distance between two conductors, between conductors and their support or other objects, or between conductors and the ground. The National Electrical Safety Code (NESC) and PREPA's Technical Communication (See 12-02 attached) determine the minimum requirements regarding distances (vertical and horizontal) between an energized conductor or device and a structure, building or surface. Vegetation Clearing will be limited to clearing any vegetation affecting these clearances. This term is not synonymous with easement. Clearances can be met without being within an easement. Clearance requirements must be complied with either when the Authority builds its facilities, as well as when a third party builds a structure. Clearances, in both cases, must be complied with by regulation, regardless of whether an easement exists. regardless of whether an easement exists.

Easement - is a line imposed on a property for the benefit of another belonging to a different owner. The property, in favor of which the easement is constituted, is called the dominant estate; the one who suffers it, servant property. An easement for electrical power lines provides PREPA and Luma as its agent various rights including reasonable access to the electric infrastructure to provide maintenance, repair, expand, operate and is established on the strips or portions of land where facilities of the T & D system are located or will be located, such as lines, poles, towers, equipment, and accessories. These acquired rights make it easier to carry out vegetation clearing work.

The PREPA distribution and transmission systems are populated with millions of plants but only some have the conditions, growth characteristics, and/or locations that make them compatible or incompatible with the safe and reliable energy delivery service. The Subrecipient's authorized representative recognizes the diversity of species in tropical ecosystems, and the general remediation strategy is to control incompatible species while encouraging the growth of compatible species. Compatible species may, on occasion, need control if their height or density impedes the necessary line of sight for inspections or access to perform resilience work. Within Appendix A and B are lists of protected flora species and incompatible flora species expected to be encountered during scope performance.

(I) Proposed 428 Public Assistance Scope of Work (SOW):

This project includes Public Assistance (PA) works; however, PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope, \$15,433.57 / mile calculation represents the PA Overlap.

PA incidental works will be deducted from the Section 406 Hazard Mitigation project costs to avoid duplication of works. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects.

FEMA performed an analysis to the PREPA FAAST documents and determined that vegetation clearing on each mile of 38 kV line requiring repair was on average 8.34%% related to the repair (428 PA) and 91.66% related to a mitigation measure (406 HM). The fixed-cost estimate for the PA scope is \$15,433.57 per **4.44 miles**, with a total project cost of **\$68,525.05**. For further details, refer to the document "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

(II) Hazard Mitigation Proposal (HMP) Scope of Work:

[1872595; FAAST [38kV Transmission Line 2500 – Entire Line] (Vegetation)

As a result of DR-4339-PR, vegetation surrounding T&D assets are falling onto these facilities and interfering with the safe and reliable operation of the assets. The vegetation at present is currently causing outages when vegetation is in contact with the T&D assets. To mitigate the future damage across T&D assets and protect the 428 repairs and replacement along these facilities, clearing vegetation materials will be required. This 406 Hazard Mitigation Scope of Work is to directly reduce the potential of future, damages to the T&D system by clearing vegetative materials that pose an immediate threat to the power distribution lines, and identification for corrective actions related to clearing vegetation (consisting of shrubs, branches, limbs, stumps, bamboo, and trees that are directly impacting the resilience and productivity of the power grid) applicable to the existing PREPA electrical grid within Region 5 Mayaguez TL of Puerto Rico.

The extent and execution of this scope includes performing verification of facilities, assets and condition assessments for determining the most appropriate remediation, preparing work orders for executing the necessary vegetation remediation, by ways of tree felling, vegetation remediation, mechanical vegetation remediation, vegetative debris disposal via chipping, mulching, hauling, and recycling where applicable in easement of the PREPA power Distribution lines. LUMA is not planning to construct access roads. If the work to be done is not adjacent to an existing road, our contractor tree crews will minimize environmental disturbance by utilizing vegetation crews hiking by foot in and out of our existing easement.

Parameters for Performing 406 Hazard Mitigation Vegetation Clearing

Regulation 7282 requires that only shrubs and plants (no trees) be planted within the easement under power lines. Climbing plants and vines, as well as bamboo, are prohibited from being planted within an easement. The branches of trees planted outside the easement must not obstruct free passage of the power lines. The National Electrical Safety Code (NESC) and PREPA's Technical Communication

establish the minimum required distances, both vertical and horizontal, between an energized conductor or device and any structure, building, or surface. Vegetation clearing will be restricted to removing any vegetation that interferes with these clearances. For power distribution lines, NESC and Regulation 7282 define the vertical distance from vegetation as 12-15 feet. By law, any trees, shrubs, or plants planted in violation of Regulation 7282 may be uprooted, removed, or cut down in accordance with the provisions of Regulation 7282 – for both compatible and incompatible species.

Industry standard practices will determine how the work will be performed. A healthy tree is less likely to fall over in a storm and damage overhead lines; therefore, vegetation will be pruned according to ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Vegetation that is improperly pruned could become susceptible to disease and decay, resulting in a hazard to both the line and public safety. ANSI A300 is the tree care industry standard of care in the USA. It was developed by Tree Care Industry Association and maintained by a consensus of various industry stakeholders through periodically reviewing and updating the guidelines. These standards provide guidance on how and where to prune vegetation to achieve clearances and maintain a healthy plant. In all cases, Subrecipient's authorized representative's vegetation clearing contractors will be required to perform clearing activities in a manner consistent with ANSI A300, NESC, and Regulation 7282 alignment with Resolution 4987, Organic Law 83 (amended version), Communication 12-02, and PREPA 's Comprehensive Management Plan establishing standard Distribution easement widths. Easement Clearance widths for distribution lines are given in the table below:

Recommended Easement width for overhead Transmission & Sub-Transmission Lines (feet)				
Construction type	Area	Voltage(Kv)		
		38	115	230
Single Circuit	Urban	25 ft	30 ft	40 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Same Structure	Urban	25 ft	40 ft	60 ft
	Rural	50 ft	100 ft	100 ft
Double Circuit, Different Structures	Rural	50 ft	100 ft	100 ft

Scope of Work Inside Easement – Incompatible Species

Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors. For the power distribution lines, all Incompatible Species will be cleared from the full width of the easement. “Clearing” in this context includes the following activities: tree removal, severing of vines, cutting, vegetation mastication.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine

climbing on the structure. Vines are severed and treated by a qualified working at ground level. The upper portion of the vine remains attached and is not removed.

- **Cutting:** Cutting typically involves the removal of small diameter Incompatible Species by hand.
- **Vegetation mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

Scope of Work Inside Easement – Compatible Species:

Compatible vegetation species will be cleared consistent with the distances identified in Regulation 7282, which means that any species with the potential to encroach within 12 feet of the conductors at full size will be removed using the same methods discussed above. Even though the distances identified in Regulation 7282 are vertical clearances, Compatible Species encroaching on the conductors from any direction can pose a hazard to the distribution system, with the maximum edge of the conductors to be 12 feet wide centered on the pole. Therefore, the 12-foot clearance is being applied to both vertical and horizontal clearances. For areas with overhead distribution systems located in the backyard or side yard, the certified easement width from LUMA Land Records office will use for clearing.

In rare cases where Subrecipient's authorized representative encounters significant resistance from landowners or stakeholders to remediate vegetation, Subrecipient's authorized representative will work with landowners or stakeholders to determine if Incompatible and Compatible Species can be pruned to mitigate the hazard to the lines instead of being completely removed

Vegetation with the potential to encroach within 12 feet of conductor — Compatible or Incompatible.

Any vegetation species—whether Compatible or Incompatible—that have the potential (when at full size) to encroach within 20 feet of the conductor will be cleared using one of the methods discussed below:

- **Tree Removal:** Removing above-ground portions of trees while leaving stumps in place.
- **Severing of Vines:** Cutting vines at the base to create an air gap between the root system and the structure.
- **Cutting:** Hand removal of small-diameter incompatible species.
- **Vegetation Mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch. Using heavy equipment to reduce standing trees to woody debris.

All Other Incompatible Species within the Recommended Easement Width:

- All other Incompatible Species will be cleared from the full width of the recommended easement width. The clearing methods described above (tree removal, severing of vines, cutting, and vegetation mastication) will be utilized.

Scope of Work Outside Easement – Species Growing into the Easement

There is the potential for vegetation outside or along the boundary of the easement to interfere with the operation of power distribution lines. Appropriate clearances around the conductors must be achieved to protect the lines from future damage. For distribution lines, Subrecipient's authorized representative has established a minimum clearance distance of 12 feet from all conductors, with the maximum edge of the conductors to be 12 feet wide centered on the pole. This distance is consistent with the vertical distance established in Regulation 7282. If there are species encroaching on the 12-foot clearance outside or along the boundary of the easement, these species will be pruned to obtain at least 20 feet of clearance from the conductors at the time clearance work occurs. In cases where following ANSI A300 best practices require clearance beyond 12 feet, the maximum distance cleared will not exceed an additional 3 feet from set clearing distance. Diagrams illustrating these clearing distances are provided as attachments within Grants Portal. The following clearing methods will be provided as Attachment B-*“FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf”*

- **Tree pruning:** Qualified personnel work from an aerial platform or while climbing within a crown of trees to prune the tree. All pruning work wounds the tree. Done poorly, pruning can result in an exaggerated regrowth response by adversely altering tree architecture and increasing exposure to decay organisms that can weaken the tree. These adverse consequences increase the likelihood of tree-initiated faults causing system interruptions and customer outages. Proper arboriculture techniques will be utilized.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified worker at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter species by hand.
- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

FEMA 38kV Assessment & Methodology:

LUMA documentation claims a 100% clearance for the entire project segment based on the total length of the feeder. This analysis would not be considered as the method for validation purposes.

Consequently, FEMA perform a 100% evaluation of each feeder to determine the quantity of miles of vegetation non-compatible. The tools used for this analysis are Google Earth, that allows a street view evaluation where the HM Specialist uses the imagery data for analyze the feeder lines adjacent to roads. Where the feeder is through mountains FEMA use top and 3D view maps that allows determine the elevations for mountains, forested areas (assess vegetation), and the topography of the land. When poles are at the top of mountains and lines run between mountains, only the vegetation around the poles will be considered. The total percentage of each line is the result of compiling all the sections analyzed. It is important to emphasize that after work completed, the subrecipient can submit additional eligible vegetation clearance distance not included in this vegetation clearance percent analysis.

FEMA Analysis:

The total miles to be addressed in the Hazard Mitigation Proposal (HMP) is **8.21 miles**, which includes a 10% buffer due the method of assessment (desktop review), providing sufficient funds to ensure vegetation works are covered. This amount is estimated value, that will be adjusted based on the amount of actual work performed.

The cost estimate is based on two vegetation clearance scenarios, (1) the full clearance represents those lines that at both side sides of the right of way have vegetation that needs to be cleared. (2) is the half clearance represented for those circuits alongside roadways and only needs clearance at one side of the right of way. As a result, the total miles used for the cost estimate is **4.44 miles**, which reflects these adjustments for segments that do not require full clearing. This amount is estimated value, based on a desktop review that will be adjusted based on the amount of actual work performed and evidence of the actual work performed.

	HMP	Cost Estimate
Total Project Miles:	22.62	22.62
Vegetation Miles at 100% of Work	0.61	0.61
Vegetation Miles at 50% of Work	6.86	3.43
Total Miles to Clean	7.47	4.04
Buffer Acceptance:	0.10	10%
Vegetation Miles at 100% + Buffer	0.67	0.67
Vegetation Miles at 50% + Buffer	7.54	3.77

Total Miles to Clean with Buffer	8.21	4.44
% of Miles to Clean with Buffer	36%	20%

(III) Hazard Mitigation Proposal (HMP) Cost:

¹ Vegetation Clearance Cost per Mile (Base Cost) =	\$176,173.47 / mile
Risk Factor approved by the DR4339-PR leadership (5%) =	<u>\$8,808.67 / mile</u>
Vegetation Clearance Cost per Mile (w/Soft Cost) =	<u>\$184,982.14 /mile</u>
² PA Vegetation Clearance Overlap per Mile (Deduction) =	<u>(\$15,433.57/ mile)</u>
Hazard Mitigation Total Cost per Mile =	\$169,548.57 / mile
Project Total Miles with Vegetation:	4.04-miles
Buffer Acceptance:	10%
Project Total Miles with Vegetation:	<u>4.44 miles</u>
Hazard Mitigation Total Cost =	\$752,795.65

Note: The \$169,548.57 / mile calculation represents the total cost (base costs + soft costs – PA Overlap). For this project, breaking down that total cost further yields the approximate figures below. For additional information please see the attached document.³

Total Net Hazard Mitigation Cost (Base Cost) =	\$716,948.25
+ HM (Management & General Conditions Factors) =	<u>\$ 35,847.40</u>
Hazard Mitigation Total Cost =	\$752,795.65

(IV) Hazard Mitigation Proposal (HMP) Cost Distribution:

Architecture and Engineering (A&E) =	\$22,960.27	
Remaining Vegetation Clearance Cost =	<u>\$729,835.38</u>	
Hazard Mitigation Total Cost =	\$752,795.65	

(V) HMP Cost-Effectiveness Calculations:

FEMA's Benefit-Cost Analysis, BCA, methodology evaluates the expected risk reduction benefits of a hazard mitigation project and compares those benefits to the cost of the mitigation project. FEMA Public Assistance Program and Policy Guide, PAPPG, Version 3.1, April 2018, Chapter 2, Section VII.C, page 98, considers mitigation measures to be cost-effective when they are demonstrated through an acceptable BCA using FEMA's BCA methodologies and have a resulting Benefit-Cost Ratio, or BCR, equal to or greater than 1.0.

For PREPA infrastructure under FEMA DR-4339-PR, FEMA developed an Island Wide Benefit Cost Analysis, or IWBCA, to evaluate cost-effectiveness at the electrical system level rather than through separate project-specific BCAs. The IWBCA characterizes the PREPA/LUMA system as a single project for mitigation purposes, focuses on system-wide resiliency, and supports the development of cost-effective mitigation projects while avoiding double counting, or duplication, of benefits. The IWBCA applies one BCA to the entire FAAS project and includes benefits based on future costs avoided from physical damage to infrastructure, costs related to the response and reconnection effort, and loss of function for electric service caused by the storm.

The IWBCA established a maximum potential mitigation benefit for the PREPA system of \$7.6 billion. This figure represents the estimated total potential mitigation benefit with the highest confidence and was developed using the incurred costs of the PREPA FEMA Accelerated Award Strategy, FAAS, fixed cost estimate, FCE, the mission assignments used for the reconnection effort, and costs associated with loss of service. The IWBCA results were developed by the PA Mitigation team using the best available data and were further refined and concurred with by FEMA Region 2 PA Mitigation team members and FEMA HQ groups, including the Community Infrastructure Resilience, CIR, Branch and Disaster Implementation, DI, Branch. This maximum potential benefit must be tracked to ensure that the combined cost of all approved mitigation proposals does not exceed the maximum potential benefit.

The Hazard Mitigation Proposal, HMP, described herein has a total Hazard Mitigation cost of **\$752,795.65**. In accordance with FEMA's internal IWBCA benefit tracking, the maximum potential benefit remaining in the IWBCA is **\$4,984,899,732.60**. The cost of this HMP, when combined with all other approved IWBCA-related proposals funded, does not exceed the remaining available IWBCA benefit. Therefore, this HMP is deemed cost-effective under the FEMA PAPPG Version 3.1, April 2018, Chapter 2, Section VII.C, BCA Rule, because the IWBCA demonstrates an acceptable BCA with a Benefit-Cost Ratio equal to or greater than 1.0.

For validation, reviewers should refer to the attached IWBCA Package, including the IWBCA narrative and backup documentation, which define the IWBCA methodology, inputs, and supporting calculations. Reviewers should also confirm that the project has been included in the current IWBCA benefit tracking record to verify that the total approved IWBCA-related mitigation costs remain below the maximum potential benefit and that no duplication of benefits has occurred.

This Hazard Mitigation Proposal meets the eligible repair and restoration cost-effectiveness requirements. See the Mitigation Profile Documents tab in Grants Manager for the complete supporting documentation, including the HMP cost estimate and supporting documents file.

(VI) Compliance and Assurance Requirements:

A) HMP GENERAL NOTES:

By agreeing to implement the hazard mitigation measures in this HMP, the Applicant/Sub-Applciant is bound by the specific guidelines listed within this document.

COSTS AND GENERAL CONDITIONS: The vegetation removal cost is established according to the average base cost of **\$176,173.47 / mile**. Additionally, DR4339-PR leadership has approved the application of a 5% risk factor to the average cost per mile, resulting in **\$184,982.14 / mile**. After deducting Public Assistance (PA) \$15,433.57 amount (incidental work- refer to document FAASVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf), the final total obligated amount through PA 406 is

\$169,548.57 / mile.

DOCUMENTATION REQUIREMENTS: The subrecipient shall document all vegetation removal work, including but not limited to the following:

- Before and after photographs of the total distance included in the HMP Scope of work that clearly show the condition of the area before and after the vegetation clearance.
- A digital map in ArcGIS format showing all areas where vegetation removal was performed. Location information must be provided, including the physical address, GPS coordinates from start to finish of clearance work, and contact information for private property (when applicable).
- Work orders must account for the entire feeder length distance and include a description of the sections both with and without vegetation. Material disposal documentation must specify whether the material was chipped and removed, left on-site, or transported to a landfill.

Note: All vegetation clearance projects must include the above documentation to define the work completed prior to project closeout.

COST DISTRIBUTION: Recognizing that the established cost is an average per mile, it is understood that actual expenses for each feeder or area may deviate (either underrun or overrun) from the estimated project amount. The 406 HMP scope and cost agreement sets an average cost per mile for vegetation clearance, allowing the subrecipient to manage funds across the various projects that comprise the vegetation asset. The *Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, January 1, 2022 (PR PAAP Guide)*, states that if funds for 406 Mitigation are included in the fixed-cost subaward, the subrecipient must complete the approved Scope of Work (SOW) of the Hazard Mitigation Proposal (HMP) in order to retain the 406 Mitigation funding. Consequently, only completed distance in the HM Scope of work, supported by the necessary back-up documentation (e.g., verified mitigated clearance distance), will be eligible for fund retention. Any uncompleted work from the HM SOW (e.g., miles not documented with mitigated clearance distance) will be de-obligated during the closeout process.

SCOPE OF WORK DEVELOPMENT OF HAZARD MITIGATION: FEMA will evaluate each mitigation opportunity to first determine what measures or portions of solutions could be funded through Section 406 mitigation. FEMA analyzes the proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and Eos. FEMA, the Applicant, Recipient, and Sub-recipients will develop and agree to scopes of work (SOW) and cost estimates to repair, restore, or replace eligible facilities including 406 Hazard Mitigation" (Page 6).

COMPLETION OF HAZARD MITIGATION SCOPE OF WORK: If this HMP is approved and the mitigation is not performed, the Applicant must apply for a change in the Scope of Work and a de-obligation of the HMP funding. Failure to complete the work of the HMP may limit future FEMA funding of repairs at the site in the event that a similar disaster event results in similar damage at the site.

CHANGES TO THE HAZARD MITIGATION SCOPE OF WORK FOR LARGE PROJECTS:

Per PAAP PA Process (Section 428), Guide for Permanent Work, February 10, 2020, "A Subrecipient may alter the 406-hazard mitigation SOW (HMP) after FEMA, the Recipient, and Subrecipient agree on the cost estimate for the initial proposal. After the project is obligated, the SOW for the HMP can be changed only once and the timeline for this change will be established based on a facility-by-facility basis. The proposed change will require evaluation by FEMA for eligibility and EHP. As part of the eligibility review, FEMA will evaluate the SOW, technical feasibility, the level of protection, the revised cost estimate, and cost effectiveness of the new hazard mitigation proposal, and, if approved, will adjust the scope and cost estimate accordingly." (Page 14)

HAZARD MITIGATION DESIGN: This HMP is for estimating purposes only and not to be construed as a project design. If the site's final placement and configuration are different than the preliminary estimate, the Applicant should submit a change in scope request. This HMP is subject to further review prior to award.

HAZARD MITIGATION CONSTRUCTION: The Applicant must provide & maintain competent & adequate engineering design & supervision during the construction phase to ensure that the completed work conforms to the approved plans & specifications & all applicable material & construction standards.

As a condition of the FEMA mitigation grant, the Applicant is responsible for the determination of and compliance with all applicable requirements, codes, standards and specifications in connection with the project, including but not limited to the Puerto Rico Building Code of 2018 (2018 PRBC), IBC, IRBC, NFIP Floodplain Management Regulations outlined in 44 C.F.R 60.3, ASCE 24, ASCE 7, and receiving all applicable permits & approvals prior to construction.

MAINTENANCE OF HAZARD MITIGATION: The Applicant shall ensure proper maintenance of the installed mitigation measures, per manufacturer and designer specifications. Any adaptations or installations not approved or that renders the hazard mitigation measure ineffective shall be removed by the Applicant. Examples include, but are not limited to, improper installation of roof-mounted equipment or

installation of window-mounted air-conditioning units.

ENVIRONMENTAL AND HISTORIC PRESERVATION: Eligibility and funding for the mitigation at this site on this project will be subject to the compliance of all environmental laws, regulations, and executive orders applicable to the site. This project will undergo a EHP compliance review, after obligation any changes to the SOW will likely trigger an additional EHP compliance review of the revised SOW.

ATTACHMENTS:

Please refer to the following documents.

1. "Island-Wide Vegetation Clearance - FEMA letter dated March 24, 2023.pdf"
2. "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"
3. "Appendix A and B - Protected Flora and Incompatible Flora Species.pdf"
4. "WBCA HMP Package.pdf"
5. "PN1070380- TL2500_38KV.kmz"
6. "PN1070380-DR4339PR-HMCE-IEP-20260910-RIBR"
7. "PN1070380-DR4339PR-HMP-20260910-RIBR.pdf"

Cost

Code	Quantity	Unit	Total Cost	Section
9001	1	Lump Sum	\$68,525.05	Uncompleted
3510	1	Lump Sum	(\$2,090.01)	Uncompleted

CRC Gross Cost	\$66,435.04
Total 406 HMP Cost	\$0.00
Total Insurance Reductions	\$0.00
CRC Net Cost	\$66,435.04
Federal Share (90.00%)	\$59,791.54
Non-Federal Share (10.00%)	\$6,643.50

Subgrant Conditions

- Applicants must retain all source documentation for each large project for three years after the date the Recipient submits to FEMA certification of completion of the project and all source documentation for small projects for three years after the Recipient submits to FEMA certification of the applicant's last small project. See Title 2 Code of Federal Regulations (C.F.R.) § 200.334. Recipients may require longer retention periods. Real property and equipment disposition, audits, and litigation may also require longer retention periods. If requested, Applicants must provide documentation to FEMA. Recipients may require documentation not otherwise required by FEMA (such as actual cost documentation for Small Projects). In such cases, the Applicant must provide the documentation to the Recipient.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance in effect at the time of the declaration. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise. DHS Standard Terms and Conditions are viewable at <https://www.dhs.gov/publication/dhs-standard-terms-and-conditions>.
- The applicant acknowledges that the Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 200.110.
- The applicant acknowledges that PA funding must be used exclusively for the work specified in the approved project. If a change to the approved scope of work is needed, the applicant must submit a written request through the Recipient to FEMA before it commences work associated with a change.
- Applicants must inform FEMA of each purchased equipment item with a fair market value over \$10,000 after it is no longer needed for federally funded programs or projects. Applicants must also inform FEMA of any unused residual supplies when the aggregate total exceeds \$10,000. See Title 2 C.F.R. §§ 200.313 and 200.314. FEMA reduces eligible funding by this amount.
- The Recipient must submit its certification of the subrecipient's completion of all of its small projects and compliance with all environmental and historic preservation requirements within 180 days of the applicant's completion of its last small project, or the latest approved deadline, whichever is sooner.
- The Subrecipient provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.
- The Applicant certifies that all work claimed was or will be delivered in an impartial manner without discrimination as required by Title VI of the Civil Rights Act, Section 308 of the Stafford Act, 42 U.S.C. § 5151, and applicable provisions of laws and authorities prohibiting discrimination.
- The Applicant certifies that all impacts/damage claimed was a direct result of the Presidential declaration, was not pre-existing damage, and did not result from a lack of maintenance.
- The applicant certifies that all work claimed was required as a direct result of the major disaster declaration, is located within the designated area, and is the Applicant's legal responsibility.
- The applicant certifies that all costs claimed are reasonable and of a type recognized as ordinary and necessary for the type of work as required by 44 C.F.R. § 206.228 and 2 C.F.R. § 200.404.
- The applicant certifies that no work or costs claimed are covered by another funding source. Pursuant to section 312 of the Stafford Act, 42 U.S.C. § 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The applicant acknowledges it is required to notify FEMA through the recipient if it receives assistance for the same work or costs from another Federal agency, insurance, or any other source and return any duplicated funds to FEMA.
- The applicant certifies that all facilities are being restored in accordance with all federal and SLTT code and standard requirements.
- The applicant acknowledges it must comply with EHP laws, regulations, and Executive Orders (EO), including but not limited to, the

Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA). The applicant must afford FEMA the opportunity to perform EHP reviews prior to starting any work that has potential to impact the environment or historic properties, including archaeological resources. If the applicant starts work prior to FEMA's completion of the EHP review, it jeopardizes PA funding for the entire project.

- The applicant acknowledges that under 2 C.F.R. Part 200, it must follow their documented procurement procedures, provided they conform to federal procurement and contracting requirements. The applicant certifies that it is using the most restrictive of either its own documented policies and procedures for procurement or federal procurement and contracting laws in accordance with 2 C.F.R. §§ 200.317 - 200.327. The Applicant is following Environmental Protection Agency guidelines for procurement of recovered materials; and including all applicable required contract provisions.
- The applicant certifies that all information provided is true and correct. Upon submittal this project application becomes a legal document. The False Claims Act (31 U.S.C. §§ 3729-3733) prohibits the submission of false or fraudulent claims for payment to the federal government. It is a violation of federal law to intentionally make false statements or hide information when applying for Public Assistance. This can carry severe criminal and civil penalties including a fine of up to \$250,000, imprisonment, or both (18 U.S.C. §§ 287, 1001, 1040, and 3571).
- The applicant acknowledges that it must obtain and maintain insurance coverage for all buildings, contents, equipment, and vehicles in an amount equal to or greater than the total cost, prior to any reductions as required by the Stafford Act § 311, 42 U.S.C. §5154, 44 C.F.R §§ 206.251 - 206.253, and in accordance with FEMA Policy 206-086-1 Public Assistance Policy on Insurance.

Insurance

Additional Information

9/16/2026

Does the Applicant have a Commercial Policy: Yes.

Does the Applicant's Commercial Policy extend coverage for the damage described in this project: No.

Property insurance coverage for the electrical distribution facilities represented on this project are not insured or insurable. No insurance relief is anticipated. No Obtain and Maintain requirement will be made.

FEMA requires the applicant to take reasonable efforts to pursue claims to recover insurance proceeds that it is entitled to receive from its insurer(s). In the event that any insurance proceeds are received for these expenses those proceeds must be reduced from FEMA Public Assistance funding to ensure no duplication of benefits has occurred.

No duplication of benefits from insurance is anticipated for work described in this application. In the event any part or all costs are paid by an insurance policy, a duplication of benefits from insurance will occur. Applicant must notify grantee and FEMA of such recoveries and the Sub-Grant award amount must be reduced by actual insurance proceeds.

No insurance requirements will be required for this project. Insurance requirements are specific to permanent work to replace, restore, repair, reconstruct, or construct buildings, contents, equipment, or vehicles. (FEMA Recovery Policy FP 206-086-1).

No insurance narrative will be produced or uploaded into documents or attachments.

Jean-Carlo Echevarria, PA Insurance Specialist, CRC Atlantic, Guaynabo, PR

O&M Requirements

There are no Obtain and Maintain Requirements on **FAAST [38kV Line 2500 – Entire Line] (Vegetation) (HM Cost Alignment)**.

406 Mitigation

Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and executive orders?

Yes

EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- On May 16, 2025, the Secretary of the U.S. Department of Energy (DOE) issued Order 202-25-2 (Order), pursuant to the authority vested in him by section 202(c) of the Federal Power Act (FPA), 16 U.S.C. § 824a(c), and section 301(b) of the Department of Energy Organization Act, 42 U.S.C. § 7151(b). The Order sought to expedite repair and maintenance efforts to the electrical grid of Puerto Rico by directing the Puerto Rico Electric Power Authority (PREPA) to perform vegetation management, including vegetation clearing to reestablish a right-of-way, for particular transmission and distribution facilities in the Territory as specified in the Order. The Order required PREPA to identify certain parameters by which the directed work would be performed, and required that all work be performed, to the maximum extent practicable, in a manner consistent with all applicable Federal, State, or local environmental laws or regulations and minimize any adverse environmental impacts. However, pursuant to Section 202(c)(3) of the FPA, to the extent any omission or action taken by PREPA that was necessary to comply with the Order, including any omission or action taken to voluntarily comply with the Order, caused PREPA to not comply with any Federal, State, or local environmental law or regulation, including any environmental conditions in this REC's "Standard Conditions," such omission or action shall not be considered a violation of such environmental law or regulation, or subject PREPA to any requirement, civil or criminal liability, or citizen suit under such environmental law or regulation. On August 15, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. To renew/reissue the Order, DOE was required to consult with the primary Federal agency with expertise in the environmental interest protected by such law or regulation and include in the Order conditions necessary to minimize any adverse environmental impacts to the extent practicable. Pursuant to Section 202(c)(4)(B) of the FPA, DOE provided the relevant agencies the opportunity to submit conditions for worked performed under the Order, to be included in the Order. According to DOE, no conditions were submitted by the agencies for inclusion in the Order. On November 12, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. DOE and FEMA have agreed that DOE is the lead agency for activities that fall under the prior and any future DOE 202(c) orders issued under the Federal Power Act to resolve the current and related emergencies in Puerto Rico. FEMA has requested that DOE provide FEMA with all documentation relating to their EHP compliance. FEMA will review and incorporate all available information and data for this project pertaining to applicable environmental laws and regulations into this REC when it is received from DOE. On February 10, 2026, and again on May 7, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities. On August 07, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities.
- If ground disturbing activities occur during construction, the applicant will monitor ground disturbance, and if any previously unidentified historic properties, including archeological resources, are discovered, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA. Should any unanticipated effects to previously identified historic properties, including archaeological resources, be identified during construction activities, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA.

EHP Additional Info

There is no additional environmental historical preservation on **FAAST [38kV Line 2500 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Final Reviews

Final Review

Reviewed By LEFRANC-GARCIA, CARLOS L.

Reviewed On 09/25/2026 8:09 PM PDT

Review Comments

Version 0 contemplates \$59,791.54 (federal share) for incidental vegetation clearance associated with 4.44 miles of the 38kV Line 2500 – Entire Line. No permanent infrastructure repairs are included in the approved Scope of Work. The Work to Be Completed cost is \$68,525.05, based on \$15,433.57 per mile, and the final PA project cost is \$66,435.04.

Recipient Review

Reviewed By Mulero, Noel

Reviewed On 10/06/2026 5:54 PM PDT

Review Comments

Recipient review completed. Applicant must ensure to compliance with all regulatory requirements, Record of Environmental Consideration (REC) Special Conditions and PA policy. This project applies to the Department of Energy's executive order. This means that DOE is the lead agency for environmental matters. Project is ready for applicant review.

Project Signatures

Reviewed By Unsigned

Reviewed On Unsigned

Award Information

EMMIE Imported Version Information

Version #	Eligibility Status	Current Location	Bundle Number	Project Amount	Cost Share	Federal Share Obligated	Date Obligated
No Records							

Drawdown History

EMMIE Drawdown Status As of Date	IFMIS Obligation #	Expenditure Number	Expended Date	Expended Amount
No Records				

Obligation History

Version #	Date Obligated	Obligated Cost	Cost Share	IFMIS Status	IFMIS Obligation #
0	10/14/2026	\$59,791.54	90%	Accepted	4339DRPRP01083441

**Department of Homeland Security
Federal Emergency Management Agency**

v0

General Info

Project #	1070382	PW #	108346	Project Type	Specialized
Project Category	F - Utilities	Applicant	PR Electric Power Authority (000-UA2QU-00)		
Project Title	FAASt [38kV Line 3000 – Entire Line] (Vegetation) (HM Cost Alignment)			Event	4339DR-PR (4339DR)
Project Size	Small	Declaration Date	9/20/2017		
Activity Completion Date	9/20/2027	Incident Start Date	9/17/2017		
Process Step	Obligated	Incident End Date	11/15/2017		

Damage Description and Dimensions

The Disaster # 4339DR, which occurred between 09/17/2017 and 11/15/2017, caused:

Damage #1872598; FAASt [38kV Transmission Line 3000 – Entire Line] (Vegetation)

General Facility Information:

- **Facility Type:** Power generation, transmission, and distribution facilities
- **Facility:** FAASt [38kV Transmission Line 3000 – Entire Line] (Vegetation)
- **Facility Description:** The Puerto Rico Electric Power Authority (PREPA) owns more than 19,000 miles of transmission and distribution lines, as well as more than 400 substations. The facilities addressed in this project are all the overhead transmission and distribution lines (16,000+ miles), as well as substations. To ensure the functioning of this infrastructure to the level of service needed, keeping this equipment clear from vegetation is significant.
- **Approx. Year Built:** 1950
- **GPS Latitude/Longitude:** [REDACTED]

Final Scope

1872598 **FAASt [38kV Transmission Line 3000 – Entire Line] (Vegetation)**

Project 136271 (hereinafter PREPA FAASt Project) authorized \$9,459,885,412.39 (Federal Share) to be awarded to the Puerto Rico Electric Power Authority (PREPA, Subrecipient) as a fixed cost estimate (FAASt FCE agreement) based on eligible work without detailed scopes of work to restore disaster-damaged facilities. Eligible work for the Transmission and Distribution (T&D) system included restoration of:

Broken structures due to high winds such as poles/towers (counted as broken when poles were inclined, bent, torn, and/or cracked); and other damages/broken components such as transformers, insulators, conductors, grounding system, jumpers, Gang Operated Air Breakers (GOABs), pole hardware, guy wires and anchors.

FEMA deferred the 406 Hazard Mitigation Proposal (HMP) fixed cost offer in the PREPA FAASt Project until the Subrecipient submits its actual recovery solutions. FEMA also issued a clarification letter regarding whether hazard mitigation funding under Section 404 or Section 406 of the Stafford Act may be made available for the execution of a one-time, island-wide vegetation clearing and removal operation intended to mitigate the threat to the existing vegetation, if untended to, poses to Puerto Rico's electric T&D system. See FEMA's letter to COR3, document Signed Vegetation Management March 24 2023.pdf. The Subrecipient's actual recovery solution seeks a one-time Island-wide vegetation clearance

and removal operation intended to mitigate the threat to the existing vegetation, if untended to, poses to Puerto Rico's electric T&D system. The actual recovery solution seeks to mitigate Puerto Rico's electric T&D system, including areas without infrastructure repairs.

The actual recovery solution (scope and cost) will be captured in multiple individual projects (hereinafter Vegetation clearance HMP Sub-FAAST projects) to provide flexibility and enable multiple programmatic reviews simultaneously. The Vegetation clearance HMP Sub-FAAST projects do not include infrastructure repair work.

This project captures a portion of the Island-wide actual recovery solution, specifically the onetime vegetation clearance and removal operation intended to mitigate the 38kV Line 3000— Entire Line (see project note #1 and #2).

FEMA 406 Hazard Mitigation (HM) team will review this actual recovery solution and issue an FCE offer for the portion of the recovery solution that reduces risk of future similar damages. The Work to be Completed will be captured in the 406 HM scope section. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects will be adjusted as describe in FEMA-4339-DR-PR Public Assistance PREPA FAAST Post-Fixed Cost Estimate Obligation Vegetation HMP Approach: 38kV. See document 956345 DR4339PR FAASTVegetationHMPApproach_38kVTrans.pdf. The PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope. WTBC Cost (PA) = \$15,433.57 per mile. Therefore, the total cost (PA) for this project will be \$72,700.99

DI#	PA Vegetation Clearance Overlap per mile	Total miles	WTBC - PA Cost with Subrecipient Management & General Conditions	A&E - PA	Total - PA
1872598	\$15,433.57	4.75	\$73,309.46	(\$608.47)	\$72,700.99

Work to be completed total: \$73,309.46

A&E Deduction (Global A&E FAAST 335168): -\$608.47

Project Total: \$72,700.99

Project Notes:

1. This is a 38kV Transmission-Vegetation clearanceHMP Sub-FAAST project.
2. Vegetation clearance HMP Sub-FAAST projects will be written according to line type (Distribution: 13.2kV and down, and Transmission: 38 kV, 115kV, and 230 kV) because of the different ROWs and other characteristics. Multiple projects of each type will be submitted and reviewed for eligible PA 406 HM funding. Vegetation clearing work will only be submitted for those areas that vegetation represents strike potential (may cause future similar damage to the T&D system when subject to high winds). In the submittal of this project the Subrecipient's Authorized Representative attests that only the vegetation clearance submitted is to reduce strike potential and that the ROW for these lines has been, and will be, counted only once to avoid duplication within the vegetation clearance projects.
3. For more details of the requirements and conditions for the execution of a one-time, island-wide vegetation clearance and removal operation considered as an eligible Section
4. 406 hazard mitigation proposal (HMP), please refer to document labeled: Attachment A FEMA letter dated March 24 2023.pdf.
5. For details on the SOW, refer to filename 1070382 -FAAST [38kV Line 3000 – Entire Line] (Vegetation) DSOW.pdf
6. Vegetation clearance funds will not be allocated to SubFAAST projects.
7. A&E cost included in this project will be reduced from this project and obligated under the FAAST Project #335168, A&E, as shown in the table above. The A&E project was obligated to track and account for costs associated with individual FAAST projects.
8. This project is part of Donor FAAST 136271 – MEPA078 Puerto Rico Electrical Power Authority (PREPA) Island Wide FAAST

Project.

406 HMP Scope

Project number: 1070382 FAASSt [38kV Line 3000 – Entire Line] (Vegetation)

Damage #: 1872598

Applicant: PR Electric Power Authority (000-UA2QU-00)

Location: Caguas, Puerto Rico

GPS Latitude/Longitude: From: [REDACTED]

Introduction:

Puerto Rico's electrical grid infrastructure has been severely compromised by extreme weather events, particularly with Hurricane Maria in September 2017. The hurricane caused widespread disruptions to transmission and distribution systems, largely due to vegetation impacts that collapsed distribution and transmission lines. Substantial infrastructure was damaged when trees downed utility power lines and poles, causing most of the transmission/distribution system fail. Post-hurricane vegetation clearance to enable grid repair and restoration progressed slowly, considerably delaying overall electrical recovery. Remaining excess vegetation continues to cause operational outages, as ground faults occur when vegetation contacts power lines even during normal weather events. After the passage of Hurricane Maria, minimal cleaning work was carried out exclusively to clear the areas to carry out emergency repairs to the electrical system. These works were covered by Category B - Emergency Protective Measure, but excess vegetation on the electrical system remains an outstanding vulnerability.

Puerto Rico's grid modernization and mitigation one time ROW clearance strategy will prioritize effective and proactive vegetation management protocols to prevent prolonged storm-related outages, thereby increasing the reliability of the electric system. These reliability and resiliency gaps are especially impactful to Puerto Rico, which has been facing increasingly frequent natural hazards such as hurricanes. This project is part of the for Vegetation Reset Program which will impact the Transmission and Distribution systems for each of the 78 municipalities.

Hazard Mitigation Narrative:

In order to minimize damages in a future event, the Subrecipient's actual recovery solution seeks a one-time Island wide vegetation remediation clearance for the above work included in the PREPA FAASSt Project, as according to the Public Assistance Alternative Procedures (PAAP) (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (hereinafter PR PAAP Guide) and FEMA letter to COR3, document Signed Island-Wide Vegetation Clearance March 24, 2023. Section 406 hazard mitigation are funds that can be added to projects for the restoration of disaster damaged facilities and must prevent future damage caused by the declared event. Under DR-4339-PR, Section 406 hazard mitigation funds are based on eligible, technically feasible, and cost-effective mitigation activities proposed to reduce risk to the function of the disaster-damaged facilities. The portion of the recovery solution that reduces risk of future damage may be considered as eligible 406 mitigation.

The island-wide transmission and distribution grid was significantly damaged by the strong winds and heavy rainfall during the atmospheric event hurricane Maria. This resulted in many trees and other vegetation becoming a direct hazard to the electrical grid. A one-time 406 hazard mitigation island-wide vegetation clearance will benefit the reliability and resiliency of the Puerto Rico electrical grid, including the number and duration of customer outages during and after the work to complete the repairs to the electrical grid through other PREPA 428 FAASSt Projects. The scope of the global 406 Hazard Mitigation (HM) projects includes vegetation clearing across the entire width of the easement, plus a radius of 12 to 25 feet from energized conductors to directly reduce the potential for future damage to the "transmission and/or distribution" (T&D) systems. Each 406 HM Vegetation Reset project is correlated with an eligible 428 T&D project, in association with PREPA's electrical grid. Different regional projects are developed to impact all lines of the electrical system, including distribution lines and high-voltage transmission lines. Also, projects are defined in terms of line type (distribution or transmission) and population density of the area (high or low) to simplify the evaluation by the Environmental and Historical Preservation team (EHP).

The global project was divided into the following regions:

- Region 1 – San Juan
- Region 2 – Arecibo
- Region 3 – Bayamón

- Region 4 – Caguas
- Region 5 – Mayagüez
- Region 6 – Ponce

For each Region of the island, there will be two types of projects to capture the Vegetation Clearing activities within scopes of work: (1) single transmission line projects based on LUMA's priority list, capturing the lines or segments of lines affected most by vegetation interference, and (2) Regional DSOWs divided into groups (Groups A – F), as follows:

- Region 1 – San Juan
- Region 2 – Arecibo
- Group A – High/Low Density Distribution Lines
- Group B – 38 kV Transmission.
- Group C – Overlapped Distribution and Transmission Lines
- Group D - 115 kV Facilities
- Group E - Substation and Telecommunication Facilities.
- Group F – 230 kV Facilities (Non-Region – Specific)

This 406 HM work is limited to what is necessary to directly reduce the potential of future damage to the T&D system assets, that exceeds what is necessary to clear vegetation for accessing facilities when carrying out repairs which are already established as eligible for FEMA funding utilizing the 428 FAAS Grant. Each 406 HM will correlate with an eligible 428 Transmission and/or Distribution (T&D) project in association with the PREPA power grid. There will be 7 Regional DSOW's developed capturing planned actions within scopes of work formulated with established criteria detailed for Distribution and Transmission lines/facility locations. The first DSOW is Group A - High Density areas with a low reflection of infrared light; the second DSOW is Group A Low Density locations where more vegetation density is present, which is determined by a higher level of reflection of infrared associated with Vegetation for 13.2kV and below locations; the third DSOW is Group B locations at 38kV level; the fourth DSOW is Group C - with known local environmental sensitivities at 38kV and below levels locations; the fifth DSOW is 115kV Facilities; and the sixth DSOW is Substation and Telecommunication Facilities. There will also be 230 kV Facilities (these installations have a separate Vegetation Clearance project that is not region- specific).

FAAS [38kV Transmission Line 3000 – Entire Line] (Vegetation)

This is a project for 38kV transmission lines in Region 4 – Caguas. The DSOW captures the scope of work and cost estimate for Vegetation Clearing intended to mitigate the threat that the existing vegetation, along 38kV lines within Caguas (if left untended to), poses Puerto Rico's electric grid.

This SOW is aligned with and leverages FEMA's Island-Wide Benefits Cost Analysis (IWBCA), which was used for this purpose and fully supports the mitigation measures employed within this project scope of work.

The Subrecipient's authorized representative (LUMA) estimates that this 406 Hazard Mitigation proposal for island-wide vegetation clearance will have immediate and future widespread benefits, including:

- Mitigation of the hazards due to vegetation impacts and damages.

- 70% annual reduction of outages caused by vegetation.
- 35-45% annual reduction of customer interruptions.
- Faster restoration for impacted customers.
- Improved safety for utility workers and the public.
- Support the rebuilding of the grid and effective execution of large-scale construction projects.

The following terms, when used in this document, shall have the meaning described below.

Compatible Species – Compatible species are those that are congruent with the intended use of the site, and include small trees, shrubs and herbaceous vegetation that will never grow into conflict with overhead conductors.

Incompatible Species – Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors.

Clearance - The minimum distance between two conductors, and their support or other objects, or between conductors and the ground. The National Electrical Safety Code (NESC) and PREPA's Technical Communication (See 12-02 attached) determine the minimum requirements regarding distances (vertical and horizontal) between an energized conductor or device and a structure, building or surface. Vegetation Clearing will be limited to clearing any vegetation affecting these clearances. This term is not synonymous with easement. Clearances can be met without being within an easement. Clearance requirements must be complied with either when the Authority builds its facilities, as well as when a third party builds a structure. Clearances, in both cases, must be complied with by regulation, regardless of whether an easement exists. regardless of whether an easement exists.

Easement - is a line imposed on a property for the benefit of another belonging to a different owner. The property, in favor of which the easement is constituted, is called the dominant estate; the one who suffers it, servant property. An easement for electrical power lines provides PREPA and Luma as its agent various rights including: reasonable access to the electric infrastructure to provide maintenance, repair, expand, operate and is established on the strips or portions of land where facilities of the T & D system are located or will be located, such as: lines, poles, towers, equipment, and accessories. These acquired rights make it easier to carry out vegetation clearing work.

The PREPA distribution and transmission systems are populated with millions of plants but only some have the conditions, growth characteristics, and/or locations that make them compatible or incompatible with the safe and reliable energy delivery service. The Subrecipient's authorized representative recognizes the diversity of species in tropical ecosystems, and the general remediation strategy is to control incompatible species while encouraging the growth of compatible species. Compatible species may, on occasion, need control if their height or density impedes the necessary line of sight for inspections or access to perform resilience work. Within Appendix A and B are lists of protected flora species and incompatible flora species expected to be encountered during scope performance.

(I) Proposed 428 Public Assistance Scope of Work (SOW):

This project includes Public Assistance (PA) works; however, PA Scope of Work and Cost is limited to the incidental vegetation clearance. No permanent infrastructure repairs are included as part of this scope, \$15,433.57 / mile calculation represents the PA Overlap.

PA incidental works will be deducted from the Section 406 Hazard Mitigation project costs to avoid duplication of works. To address the overlap between the incidental vegetation work needed to carry out the repairs and the mitigation work, the Vegetation clearance HMP Sub-FAAST projects.

FEMA performed an analysis to the PREPA FAAST documents and determined that vegetation clearing on each mile of 38 kV line requiring repair was on average 8.34% related to the repair (428 PA) and 91.66% related to a mitigation measure (406 HM). The fixed-cost estimate for the PA scope is \$15,433.57 per **4.75** miles, with a total project cost of **\$73,309.46** For further details, refer to the document "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf".

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(II) Hazard Mitigation Proposal (HMP) Scope of Work:

[1070382] FAAST [38kV Line 3000 – Entire Line] (Vegetation)

As a result of DR-4339-PR, vegetation surrounding T&D assets are falling onto these facilities and interfering with the safe and reliable operation of the assets. The vegetation at present is currently causing outages when vegetation is in contact with the T&D assets. To mitigate the future damage across T&D assets and protect the 428 repairs and replacement along these facilities, clearing vegetation materials will be required. This 406 Hazard Mitigation Scope of Work is to directly reduce the potential of future, damages to the T&D system by clearing vegetative materials that pose an immediate threat to the power distribution lines, and identification for corrective actions related to clearing vegetation (consisting of shrubs, branches, limbs, stumps, bamboo, and trees that are directly impacting the resilience and productivity of the power grid) applicable to the existing PREPA electrical grid within Region 4 Caguas. TL of Puerto Rico.

The extent and execution of this scope include performing verification of facilities, assets and condition assessments for determining the most appropriate remediation, preparing work orders for executing the necessary vegetation remediation, by ways of tree felling, vegetation remediation, mechanical vegetation remediation, vegetative debris disposal via chipping, mulching, hauling, and recycling where applicable in easement of the PREPA power Distribution lines. LUMA is not planning to construct access roads. If the work to be done is not adjacent to an existing road, our contractor tree crews will minimize environmental disturbance by utilizing vegetation crews hiking by foot in and out of our existing easement.

Parameters for Performing 406 Hazard Mitigation Vegetation Clearing

Regulation 7282 requires that only shrubs and plants (no trees) be planted within the easement under power lines. Climbing plants and vines, as well as bamboo, are prohibited from being planted within an easement. The branches of trees planted outside the easement must not obstruct free passage of the power lines. The National Electrical Safety Code (NESC) and PREPA's Technical Communication establish the minimum required distances, both vertical and horizontal, between an energized conductor or device and any structure, building, or surface. Vegetation clearing will be restricted to removing any vegetation that interferes with these clearances. For power distribution lines, NESC and Regulation 7282 define the vertical distance from vegetation as 12-15 feet. By law, any trees, shrubs, or plants planted in violation of Regulation 7282 may be uprooted, removed, or cut down in accordance with the provisions of Regulation 7282 – for both compatible and incompatible species.

Industry standard practices will determine how the work will be performed. A healthy tree is less likely to fall over in a storm and damage overhead lines; therefore, vegetation will be pruned according to ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Vegetation that is improperly pruned could become susceptible to disease and decay, resulting in a hazard to both the line and public safety. ANSI A300 is the tree care industry standard of care in the USA. It was developed by Tree Care Industry Association and maintained by a consensus of various industry stakeholders through periodically reviewing and updating the guidelines. These standards provide guidance on how and where to prune vegetation to achieve clearances and maintain a healthy plant. In all cases, Subrecipient's authorized representative's vegetation clearing contractors will be required to perform clearing activities in a manner consistent with ANSI A300, NESC, and Regulation 7282 alignment with Resolution 4987, Organic Law 83 (amended version), Communication 12-02, and PREPA 's Comprehensive Management Plan establishing standard Distribution easement widths. Easement Clearance widths for distribution lines are given in the table below:

-

Scope of Work Inside Easement – Incompatible Species

Incompatible species are those that are not congruent with the intended use of the site and include tall growing trees and other plant forms (e.g., bamboo and palms) with the potential to conflict with overhead conductors. For the power distribution lines, all Incompatible Species will be cleared from the full width of the easement. "Clearing" in this context includes the following activities: tree removal, severing of vines, cutting, vegetation mastication.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified working at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter Incompatible Species by hand.

- **Vegetation mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

Scope of Work Inside Easement – Compatible Species:

Compatible vegetation species will be cleared consistently with the distances identified in Regulation 7282, which means that any species with the potential to encroach within 12 feet of the conductors at full size will be removed using the same methods discussed above. Even though the distances identified in Regulation 7282 are vertical clearances, Compatible Species encroaching on the conductors from any direction can pose a hazard to the distribution system, with the maximum edge of the conductors to be 12 feet wide centered on the pole. Therefore, the 12-foot clearance is being applied to both vertical and horizontal clearances. For areas with overhead distribution systems located in the backyard or side yard, the certified easement width from LUMA Land Records office will be used for clearing.

In rare cases where Subrecipient's authorized representative encounters significant resistance from landowners or stakeholders to remediate vegetation, Subrecipient's authorized representative will work with landowners or stakeholders to determine if Incompatible and Compatible Species can be pruned to mitigate the hazard to the lines instead of being completely removed

Vegetation with the potential to encroach within 12 feet of conductor — Compatible or Incompatible.

Any vegetation species—whether Compatible or Incompatible—that have the potential (when at full size) to encroach within 20 feet of the conductor will be cleared using one of the methods discussed below:

- **Tree Removal:** Removing above-ground portions of trees while leaving stumps in place.
- **Severing of Vines:** Cutting vines at the base to create an air gap between the root system and the structure.
- **Cutting:** Hand removal of small-diameter incompatible species.
- **Vegetation Mastication:** also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch. Using heavy equipment to reduce standing trees to woody debris.

All Other Incompatible Species within the Recommended Easement Width:

- All other Incompatible Species will be cleared from the full width of the recommended easement width. The clearing methods described above (tree removal, severing of vines, cutting, and vegetation mastication) will be utilized.

Scope of Work Outside Easement – Species Growing into the Easement

There is the potential for vegetation outside or along the boundary of the easement to interfere with the operation of power distribution lines. Appropriate clearances around the conductors must be achieved to protect the lines from future damage. For distribution lines, Subrecipient's authorized representative has established a minimum clearance distance of 12 feet from all conductors, with the maximum edge of the conductors to be 12 feet wide centered on the pole. This distance is consistent with the vertical distance established in Regulation 7282. If there are species encroaching on the 12-foot clearance outside or along the boundary of the easement, these species will be pruned to obtain at least 20 feet of clearance from the conductors at the time clearance work occurs. In cases where following ANSI A300 best practices require clearance beyond 12 feet, the maximum distance cleared will not exceed an additional 3 feet from set clearing distance. Diagrams illustrating these clearing distances are provided as attachments within Grants Portal. The following clearing methods will be provided as Attachment B-"FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"

- **Tree pruning:** Qualified personnel work from an aerial platform or while climbing within a crown of trees to prune the tree. All pruning work wounds the tree. Done poorly, pruning can result in an exaggerated regrowth response by adversely altering tree architecture and increasing exposure to decay organisms that can weaken the tree. These adverse consequences increase the likelihood of tree-initiated faults causing system interruptions and customer outages. Proper arboriculture techniques will be utilized.

- Tree removal: Qualified line clearance crews work at ground level or on aerial platforms to remove the portion of the tree that is above ground, leaving the stump in place.
- Severing of vines: Vines will be severed at the base with an airgap created between the root system and the portion of the vine climbing on the structure. Vines are severed and treated by a qualified worker at ground level. The upper portion of the vine remains attached and is not removed.
- Cutting: Cutting typically involves the removal of small diameter species by hand.
- Vegetation mastication: also known as mulching, slash-busting, or brush-cutting, involves technique for reducing the size of vegetation and downed material in forests. It involves grinding, shredding, or chopping vegetation into smaller pieces, which are then left on the site as mulch.

FEMA 38kV Assessment & Methodology:

LUMA documentation claims a 100% clearance for the entire project segment based on the total length of the feeder. This analysis would not be considered as the method for validation purposes.

Consequently, FEMA perform a 100% evaluation of each feeder to determine the quantity of miles of vegetation non-compatible. The tools used for this analysis are Google Earth, that allows a street view evaluation where the HM Specialist uses the imagery data for analyzing the feeder lines adjacent to roads. Where the feeder is through mountains FEMA use top and 3D view maps that allows determine the elevations for mountains, forested areas (assess vegetation), and the topography of the land. When poles are at the top of mountains and lines run between mountains, only the vegetation around the poles will be considered. The total percentage of each line is the result of compiling all the sections analyzed. It is important to emphasize that after work completed, the subrecipient can submit additional eligible vegetation clearance distance not included in this vegetation clearance percent analysis.

FEMA Analysis:

The total miles to clean in the Hazard Mitigation Plan (HMP) is **7.57 miles**, which includes a 10% buffer due to the method of assessment (desktop review), providing sufficient funds to ensure vegetation works are covered. This amount is estimated value, that will be adjusted based on the amount of actual work performed.

The cost estimate is based on two vegetation clearance scenarios, (1) the full clearance represents those lines that at both side sides of the right of way have vegetation that needs to be cleared. (2) is the half clearance represented for those circuits alongside roadways and only needs clearance at one side of the right of way. As a result, the total miles used for the cost estimate is **4.75 miles**, which reflects these adjustments for segments that do not require full clearing. This amount is estimated value, based on a desktop review that will be adjusted based on the amount of actual work performed and evidence of the actual work performed.

Cost Summary:

The Hazard Mitigation Proposal is divided into 1ea Sub-Project: Damage #1872606; FAASt [38kV Transmission Line 5600 – Entire Line] (Vegetation) The total HMP Cost is the HM Net Cost (\$767,005.44) + Applicant A&E, Management & General Conditions \$38,350.27 = \$805,355.71

(III) Hazard Mitigation Proposal (HMP) Cost:

1 Vegetation Clearance Cost per Mile (Base Cost) = \$176,173.47 / mile

Risk Factor approved by DR4339-PR leadership (5%) = \$8,808.67 / mile

Vegetation Clearance Cost per Mile (w/Soft Cost) = \$184,982.14 /mile

-
2 PA Vegetation Clearance Overlap per Mile (Deduction) = (\$15,433.57 / mile)

Hazard Mitigation Total Cost per Mile = \$169,548.57 / mile

Project Total Miles to Clear: 4.32-miles

Buffer Acceptance: 10%

Project Total Miles to Clear: **4.75-miles**

Hazard Mitigation Total Cost = **\$805,355.71**

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Note: The 169,548.57 / mile calculation represents the total cost (base costs + soft costs – PA Overlap). For this project, breaking down that total cost further yields the approximate figures below. For additional information please see the attached document.³

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Total Net Hazard Mitigation Cost (Base Cost) = \$767,005.44

+ HM (Management & General Conditions Factors) = \$38,350.27

Hazard Mitigation Total Cost = \$805,355.71

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(IV) Hazard Mitigation Proposal (HMP) Cost Distribution:

Architecture and Engineering (A&E) = \$6,684.45

Remaining Vegetation Clearance Cost = \$798,671.26

Hazard Mitigation Total Cost = \$805,355.71

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1 Validated by FEMA.

2 FEMA cost analysis in "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf".

3 FEMA cost estimate "PN1070382-DR4339PR-HMCE-20260908-ENR-"

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(V) HMP Cost-Effectiveness Calculations:

FEMA's Benefit-Cost Analysis, BCA, methodology evaluates the expected risk reduction benefits of a hazard mitigation project and compares those benefits to the cost of the mitigation project. FEMA Public Assistance Program and Policy Guide, PAPPG, Version 3.1, April 2018, Chapter 2, Section VII.C, page 98, considers mitigation measures to be cost-effective when they are

demonstrated through an acceptable BCA using FEMA's BCA methodologies and have a resulting Benefit-Cost Ratio, or BCR equal to or greater than 1.0.

For PREPA infrastructure under FEMA DR-4339-PR, FEMA developed an Island Wide Benefit Cost Analysis, or IWBCA, evaluate cost-effectiveness at the electrical system level rather than through separate project-specific BCAs. The IWBCA characterizes the PREPA/LUMA system as a single project for mitigation purposes, focuses on system-wide resiliency, and supports the development of cost-effective mitigation projects while avoiding double counting, or duplication, of benefits. The IWBCA applies one BCA to the entire FAASt project and includes benefits based on future costs avoided from physical damage to infrastructure, costs related to the response and reconnection effort, and loss of function for electric service caused by the storm.

The IWBCA established a maximum potential mitigation benefit for the PREPA system of \$7.6 billion. This figure represents the estimated total potential mitigation benefit with the highest confidence and was developed using the incurred costs of the PREPA FEMA Accelerated Award Strategy, FAASt, fixed cost estimate, FCE, the mission assignments used for the reconnection effort, and costs associated with loss of service. The IWBCA results were developed by the PA Mitigation team using the best available data and were further refined and concurred with by FEMA Region 2 PA Mitigation team members and FEMA HQ groups, including the Community Infrastructure Resilience, CIR, Branch and Disaster Implementation, DI, Branch. This maximum potential benefit must be tracked to ensure that the combined cost of all approved mitigation proposals does not exceed the maximum potential benefit.

The Hazard Mitigation Proposal, HMP, described herein has a total Hazard Mitigation cost of **[\$805,355.71]**. In accordance with FEMA's internal IWBCA benefit tracking, the maximum potential benefit remaining in the IWBCA is **[\$4,989,959,061.93]**. The cost of this HMP, when combined with all other approved IWBCA-related proposals funded, does not exceed the remaining available IWBCA benefit. Therefore, this HMP is deemed cost-effective under the FEMA PAPPG Version 3.1, April 2018, Chapter 2, Section VII.C, BCA Rule, because the IWBCA demonstrates an acceptable BCA with a Benefit-Cost Ratio equal to or greater than 1.0.

For validation, reviewers should refer to the attached IWBCA Package, including the IWBCA narrative and backup documentation, which define the IWBCA methodology, inputs, and supporting calculations. Reviewers should also confirm that the project has been included in the current IWBCA benefit tracking record to verify that the total approved IWBCA-related mitigation costs remain below the maximum potential benefit and that no duplication of benefits has occurred.

This Hazard Mitigation Proposal meets the eligible repair and restoration cost-effectiveness requirements. See the Mitigation Profile Documents Tab in Grants Manager for the complete supporting documentation, including the HMP cost estimate and supporting documents file.

(VI) Compliance and Assurance Requirements:

A) HMP GENERAL NOTES:

By agreeing to implement the hazard mitigation measures in this HMP, the Applicant/Sub-Applicant is bound by the specific guidelines listed within this document.

COSTS AND GENERAL CONDITIONS: The vegetation removal cost is established according to the average base cost \$176,173.47 / mile. Additionally, DR4339-PR leadership has approved the application of a 5% risk factor to the average cost per mile, resulting in \$184,982.14 / mile. After deducting Public Assistance (PA) \$15,433.57 amount (incidental work- refer to document FAAStVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf), the final total obligated amount through PA 406 is \$169,548.57 / mile.

DOCUMENTATION REQUIREMENTS: The subrecipient shall document all vegetation removal work, including but not limited to the following:

- Before and after photographs of the total distance included in the HMP Scope of work that clearly show the condition of the area before and after the vegetation clearance.
- A digital map in ArcGIS format showing all areas where vegetation removal was performed. Location information must be provided, including the physical address, GPS coordinates from start to finish of clearance work, and contact information for private property (when applicable).
- Work orders must account for the entire feeder length distance and include a description of the sections both with and without vegetation. Material disposal documentation must specify whether the material was chipped and removed, left on-site, or transported to a landfill.

Note: All vegetation clearance projects must include the above documentation to define the work completed prior to project closeout.

COST DISTRIBUTION Recognizing that the established cost is an average per mile, it is understood that actual expenses for each feeder or area may deviate (either underrun or overrun) from the estimated project amount. The 406 HMP scope and cost agreement sets an average cost per mile for vegetation clearance, allowing the subrecipient to manage funds across the various projects that comprise the vegetation asset. The Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR, January 1, 2022 (PR PAAP Guide), states that if funds for 406 Mitigation are included in the fixed-cost subaward, the subrecipient must complete the approved Scope of Work (SOW) of the Hazard Mitigation Proposal (HMP) in order to retain the 406 Mitigation funding. Consequently, only completed distance in the HM Scope of work, supported by the necessary back-up documentation (e.g., verified mitigated clearance distance), will be eligible for fund retention. Any uncompleted work from the HM SOW (e.g., miles not documented with mitigated clearance distance) will be de-obligated during the closeout process.

SCOPE OF WORK DEVELOPMENT OF HAZARD MITIGATION FEMA will evaluate each mitigation opportunity to first determine what measures or portions of solutions could be funded through Section 406 mitigation. FEMA analyzes the proposed mitigation measures for cost-effectiveness, technical feasibility, and compliance with EHP laws, regulations, and Eos. FEMA, the

Applicant, Recipient, and Sub-recipients will develop and agree to scopes of work (SOW) and cost estimates to repair, restore, or replace eligible facilities including 406 Hazard Mitigation" (Page 6).

COMPLETION OF HAZARD MITIGATION SCOPE OF WORK: If this HMP is approved and the mitigation is not performed Applicant must apply for a change in the Scope of Work and a de-obligation of the HMP funding. Failure to complete the work of the HMP may limit future FEMA funding of repairs at the site in the event that a similar disaster event results in similar damage at the site.

CHANGES TO THE HAZARD MITIGATION SCOPE OF WORK FOR LARGE PROJECTS:

Per PAAP PA Process (Section 428), Guide for Permanent Work, February 10, 2020, "A Subrecipient may alter the 406-hazard mitigation SOW (HMP) after FEMA, the Recipient, and Subrecipient agree on the cost estimate for the initial proposal. After the project is obligated, the SOW for the HMP can be changed only once and the timeline for this change will be established based on a facility-by-facility basis. The proposed change will require evaluation by FEMA for eligibility and EHP. As part of the eligibility review, FEMA will evaluate the SOW, technical feasibility, the level of protection, the revised cost estimate, and cost effectiveness of the new hazard mitigation proposal, and, if approved, will adjust the scope and cost estimate accordingly." (Page 14)

HAZARD MITIGATION DESIGN: This HMP is for estimating purposes only and not to be construed as a project design. If the site final placement and configuration are different than the preliminary estimate, the Applicant should submit a change in scope request. This HMP is subject to further review prior to award.

HAZARD MITIGATION CONSTRUCTION: The Applicant must provide & maintain competent & adequate engineering design supervision during the construction phase to ensure that the completed work conforms to the approved plans & specifications & all applicable material & construction standards.

As a condition of the FEMA mitigation grant, the Applicant is responsible for the determination of and compliance with all applicable requirements, codes, standards and specifications in connection with the project, including but not limited to the Puerto Rico Building Code of 2018 (2018 PRBC), IBC, IRBC, NFIP Floodplain Management Regulations outlined in 44 C.F.R 60.3, ASCE 2 ASCE 7, and receiving all applicable permits & approvals prior to construction.

MAINTENANCE OF HAZARD MITIGATION: The Applicant shall ensure proper maintenance of the installed mitigation measure per manufacturer and designer specifications. Any adaptations or installations not approved or that renders the hazard mitigation measure ineffective shall be removed by the Applicant. Examples include, but are not limited to, improper installation of roof-mounted equipment or installation of window-mounted air-conditioning units.

ENVIRONMENTAL AND HISTORIC PRESERVATION: Eligibility and funding for the mitigation at this site on this project will subject to the compliance of all environmental laws, regulations, and executive orders applicable to the site. This project will undergo a EHP compliance review, after obligation any changes to the SOW will likely trigger an additional EHP compliance review of the revised SOW.

ATTACHMENTS:

Please refer to the following documents.

1. "Island-Wide Vegetation Clearance - FEMA letter dated March 24, 2023.pdf"
2. "FAASTVegetationHMPApproach_38kV Sub-Transmission_05.15.2025.pdf"
3. "Appendix A and B - Protected Flora and Incompatible Flora Species.pdf"
4. "IWBCA HMP Package.pdf"
5. "PN 1070382-TL3000_38KV_Caguas"
6. "PN1070382-DR4339PR-HMCE-20260908-ENR"

Cost

Code	Quantity	Unit	Total Cost	Section
9001	1	Lump Sum	\$73,309.46	Uncompleted
3510	1	Lump Sum	(\$608.47)	Uncompleted

CRC Gross Cost	\$72,700.99
Total 406 HMP Cost	\$0.00
Total Insurance Reductions	\$0.00
CRC Net Cost	\$72,700.99
Federal Share (90.00%)	\$65,430.90
Non-Federal Share (10.00%)	\$7,270.09

Subgrant Conditions

- Applicants must retain all source documentation for each large project for three years after the date the Recipient submits to FEMA certification of completion of the project and all source documentation for small projects for three years after the Recipient submits to FEMA certification of the applicant's last small project. See Title 2 Code of Federal Regulations (C.F.R.) § 200.334. Recipients may require longer retention periods. Real property and equipment disposition, audits, and litigation may also require longer retention periods. If requested, Applicants must provide documentation to FEMA. Recipients may require documentation not otherwise required by FEMA (such as actual cost documentation for Small Projects). In such cases, the Applicant must provide the documentation to the Recipient.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance in effect at the time of the declaration. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise. DHS Standard Terms and Conditions are viewable at <https://www.dhs.gov/publication/dhs-standard-terms-and-conditions>.
- The applicant acknowledges that the Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 200.110.
- The applicant acknowledges that PA funding must be used exclusively for the work specified in the approved project. If a change to the approved scope of work is needed, the applicant must submit a written request through the Recipient to FEMA before it commences work associated with a change.
- Applicants must inform FEMA of each purchased equipment item with a fair market value over \$10,000 after it is no longer needed for federally funded programs or projects. Applicants must also inform FEMA of any unused residual supplies when the aggregate total exceeds \$10,000. See Title 2 C.F.R. §§ 200.313 and 200.314. FEMA reduces eligible funding by this amount.
- The Recipient must submit its certification of the subrecipient's completion of this project, the final claim for payment, and supporting documentation within 180 days from the date that the applicant completes the scope of work, or the project deadline, whichever occurs first. FEMA reimburses Large Projects (those with costs above the large project threshold) based on the actual eligible final project costs. Therefore, during the final project reconciliation (closeout), the project may be amended to reflect the reconciliation of actual eligible costs.
- The Subrecipient provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.
- The Applicant certifies that all work claimed was or will be delivered in an impartial manner without discrimination as required by Title VI of the Civil Rights Act, Section 308 of the Stafford Act, 42 U.S.C. § 5151, and applicable provisions of laws and authorities prohibiting discrimination.
- The Applicant certifies that all impacts/damage claimed was a direct result of the Presidential declaration, was not pre-existing damage, and did not result from a lack of maintenance.
- The applicant certifies that all work claimed was required as a direct result of the major disaster declaration, is located within the designated area, and is the Applicant's legal responsibility.
- The applicant certifies that all costs claimed are reasonable and of a type recognized as ordinary and necessary for the type of work as required by 44 C.F.R. § 206.228 and 2 C.F.R. § 200.404.
- The applicant certifies that no work or costs claimed are covered by another funding source. Pursuant to section 312 of the Stafford Act, 42 U.S.C. § 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The applicant acknowledges it is required to notify FEMA through the recipient if it receives assistance for the same work or costs from another Federal agency, insurance, or

any other source and return any duplicated funds to FEMA.

- The applicant certifies that all facilities are being restored in accordance with all federal and SLTT code and standard requirements.
- The applicant acknowledges it must comply with EHP laws, regulations, and Executive Orders (EO), including but not limited to, the Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA). The applicant must afford FEMA the opportunity to perform EHP reviews prior to starting any work that has potential to impact the environment or historic properties, including archaeological resources. If the applicant starts work prior to FEMA's completion of the EHP review, it jeopardizes PA funding for the entire project.
- The applicant acknowledges that under 2 C.F.R. Part 200, it must follow their documented procurement procedures, provided they conform to federal procurement and contracting requirements. The applicant certifies that it is using the most restrictive of either its own documented policies and procedures for procurement or federal procurement and contracting laws in accordance with 2 C.F.R. §§ 200.317 - 200.327. The Applicant is following Environmental Protection Agency guidelines for procurement of recovered materials; and including all applicable required contract provisions.
- The applicant certifies that all information provided is true and correct. Upon submittal this project application becomes a legal document. The False Claims Act (31 U.S.C. §§ 3729-3733) prohibits the submission of false or fraudulent claims for payment to the federal government. It is a violation of federal law to intentionally make false statements or hide information when applying for Public Assistance. This can carry severe criminal and civil penalties including a fine of up to \$250,000, imprisonment, or both (18 U.S.C. §§ 287, 1001, 1040, and 3571).
- The applicant acknowledges that it must obtain and maintain insurance coverage for all buildings, contents, equipment, and vehicles in an amount equal to or greater than the total cost, prior to any reductions as required by the Stafford Act § 311, 42 U.S.C. §5154, 44 C.F.R §§ 206.251 - 206.253, and in accordance with FEMA Policy 206-086-1 Public Assistance Policy on Insurance.

Insurance

Additional Information

9/14/2026

Does the Applicant have a Commercial Policy: Yes.

Does the Applicant's Commercial Policy extend coverage for the damage described in this project: No.

Property insurance coverage for the electrical distribution facilities represented on this project are not insured or insurable. No insurance relief is anticipated. No Obtain and Maintain requirement will be made.

FEMA requires the applicant to take reasonable efforts to pursue claims to recover insurance proceeds that it is entitled to receive from its insurer(s). In the event that any insurance proceeds are received for these expenses those proceeds must be reduced from FEMA Public Assistance funding to ensure no duplication of benefits has occurred.

No duplication of benefits from insurance is anticipated for work described in this application. In the event any part or all costs are paid by an insurance policy, a duplication of benefits from insurance will occur. Applicant must notify grantee and FEMA of such recoveries and the Sub-Grant award amount must be reduced by actual insurance proceeds.

No insurance requirements will be required for this project. Insurance requirements are specific to permanent work to replace, restore, repair, reconstruct, or construct buildings, contents, equipment, or vehicles. (FEMA Recovery Policy FP 206-086-1).

No insurance narrative will be produced or uploaded into documents or attachments.

Jesus M. Vela Ayala, PA Senior Insurance Specialist - CRC Atlantic, Guaynabo, PR

O&M Requirements

There are no Obtain and Maintain Requirements on **FAASt [38kV Line 3000 – Entire Line] (Vegetation) (HM Cost Alignment)**.

406 Mitigation

There is no additional mitigation information on **FAASt [38kV Line 3000 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and executive orders?

Yes

EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- On May 16, 2025, the Secretary of the U.S. Department of Energy (DOE) issued Order 202-25-2 (Order), pursuant to the authority vested in him by section 202(c) of the Federal Power Act (FPA), 16 U.S.C. § 824a(c), and section 301(b) of the Department of Energy Organization Act, 42 U.S.C. § 7151(b). The Order sought to expedite repair and maintenance efforts to the electrical grid of Puerto Rico by directing the Puerto Rico Electric Power Authority (PREPA) to perform vegetation management, including vegetation clearing to reestablish a right-of-way, for particular transmission and distribution facilities in the Territory as specified in the Order. The Order required PREPA to identify certain parameters by which the directed work would be performed, and required that all work be performed, to the maximum extent practicable, in a manner consistent with all applicable Federal, State, or local environmental laws or regulations and minimize any adverse environmental impacts. However, pursuant to Section 202(c)(3) of the FPA, to the extent any omission or action taken by PREPA that was necessary to comply with the Order, including any omission or action taken to voluntarily comply with the Order, caused PREPA to not comply with any Federal, State, or local environmental law or regulation, including any environmental conditions in this REC's "Standard Conditions," such omission or action shall not be considered a violation of such environmental law or regulation, or subject PREPA to any requirement, civil or criminal liability, or citizen suit under such environmental law or regulation. On August 15, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. To renew/reissue the Order, DOE was required to consult with the primary Federal agency with expertise in the environmental interest protected by such law or regulation and include in the Order conditions necessary to minimize any adverse environmental impacts to the extent practicable. Pursuant to Section 202(c)(4)(B) of the FPA, DOE provided the relevant agencies the opportunity to submit conditions for worked performed under the Order, to be included in the Order. According to DOE, no conditions were submitted by the agencies for inclusion in the Order. On November 12, 2025, DOE reissued the Order to direct PREPA to also perform asset management, including component refurbishment and replacement. DOE and FEMA have agreed that DOE is the lead agency for activities that fall under the prior and any future DOE 202(c) orders issued under the Federal Power Act to resolve the current and related emergencies in Puerto Rico. FEMA has requested that DOE provide FEMA with all documentation relating to their EHP compliance. FEMA will review and incorporate all available information and data for this project pertaining to applicable environmental laws and regulations into this REC when it is received from DOE. On February 10, 2026, and again on May 7, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities. On August 07, 2026, DOE reissued the Order to direct PREPA to perform vegetation management, including vegetation clearing to re-establish the

right-of-way, and asset management, including component refurbishment and replacement, to ensure operational availability of the transmission and distribution facilities.

- If ground disturbing activities occur during construction, the applicant will monitor ground disturbance, and if any previously unidentified historic properties, including archeological resources, are discovered, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA. Should any unanticipated effects to previously identified historic properties, including archaeological resources, be identified during construction activities, the applicant will immediately cease construction in that area and notify the Recipient (if applicable) and FEMA.

EHP Additional Info

There is no additional environmental historical preservation on **FAASt [38kV Line 3000 – Entire Line] (Vegetation) (HM Cost Alignment)**.

Final Reviews

Final Review

Reviewed By LEFRANC-GARCIA, CARLOS L.

Reviewed On 09/18/2026 6:37 PM PDT

Review Comments

Version 0 contemplates \$65,430.90 (federal share) for incidental vegetation clearance associated with 4.75 miles of the 38kV Line 1600 – Entire Line. No permanent infrastructure repairs are included in the approved Scope of Work. The Work to Be Completed cost is \$73,309.46, based on \$15,433.57 per mile, and the final PA project cost is \$72,700.99.

Recipient Review

Reviewed By Mulero, Noel

Reviewed On 10/06/2026 3:12 PM PDT

Review Comments

Recipient review completed. Applicant must ensure to compliance with all regulatory requirements, Record of Environmental Consideration (REC) Special Conditions and PA policy. This project applies to the Department of Energy's executive order. This means that DOE is the lead agency for environmental matters. Project is ready for applicant review.

Project Signatures

Reviewed By Unsigned

Reviewed On Unsigned

Award Information

EMMIE Imported Version Information

Version #	Eligibility Status	Current Location	Bundle Number	Project Amount	Cost Share	Federal Share Obligated	Date Obligated
No Records							

Drawdown History

EMMIE Drawdown Status As of Date	IFMIS Obligation #	Expenditure Number	Expended Date	Expended Amount
No Records				

Obligation History

Version #	Date Obligated	Obligated Cost	Cost Share	IFMIS Status	IFMIS Obligation #
0	10/14/2026	\$65,430.90	90%	Accepted	4339DRPRP01083461