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

IN RE:	**CASE NO. NEPR-MI-2021-0002**
REVIEW OF THE PUERTO RICO ELECTRIC POWER AUTHORITY'S 10-YEAR INFRASTRUCTURE PLAN-DECEMBER 2020	**SUBJECT: Informative Motion on the Status of SOW: 4 x 25 MW BESS Interconnections at LUMA 38kV System, Request for Confidentiality and Supporting Memorandum of Law**

INFORMATIVE MOTION ON THE STATUS OF SOW: 4 X 25 MW BESS INTERCONNECTIONS AT LUMA 38KV SYSTEM, REQUEST FOR CONFIDENTIALITY 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 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, the progress of all ongoing efforts related to the approval of the submitted projects not yet approved by the Energy Bureau. This Energy Bureau thereafter determined this directive applied to PREPA and LUMA. *See* Resolution and Order of August 20, 2021.

2. On August 25, 2023, LUMA filed a *Motion Submitting One Scope of Work, Request for Confidentiality, and Supporting Memorandum of Law*. Therein, LUMA submitted the scope of work ("SOW") for the "4 x 25 MW BESS Interconnections at LUMA 38kV System" transmission and distribution project ("T&D Project"), for the Energy Bureau's review and approval before submitting it to COR3 and FEMA ("August 25th Motion").

3. On August 30, 2023, the Energy Bureau entered a Resolution and Order in which it approved the "4 x 25 MW BESS Interconnections at LUMA 38kV System" T&D Project SOW. It determined that this project was necessary to improve the system's reliability ("August 30th Order").

4. Then, on January 3, 2025, the Energy Bureau entered a Resolution and Order in which it ordered LUMA "to inform, on or before January 9, 2025, the status of the approval process, the actual contracted cost to construct, and the status of the project" ("January 3rd Order"). *See* January 3rd Order, p.2.

5. On January 9, 2025, LUMA filed its *Informative Motion on the Status of SOW: 4 x 25 MW BESS Interconnections at LUMA 38kV System* to comply with the January 3rd Order.

6. On January 14, 2025, the Energy Bureau issued a Resolution and Order whereby it ordered LUMA to file a status report of the project until its June 2025 completion date ("January 14th Order"). *See* January 14th Order at 2. The status report should include:

> i) The locations of the twenty (20) sites studied;
> ii) The final four selected sites;
> iii) The cost to complete the studies of the twenty sites.
> iv) Indicate the funds utilized to pay for these studies and the amount spent to date.
> v) The reimbursement status of these funds, or if they were advanced by FEMA
> vi) The DSOW presented to FEMA and COR3;

vii) The ROT and LUMA responses to such ROT requested by FEMA and COR3;
viii) The FAASt number for the project; and
ix) An updated cost estimate based on the DSOW.

See Id.

7. In compliance with the January 14th Order, LUMA hereby submits its monthly status report as *Exhibit 1* to this Motion. Furthermore, LUMA hereby submits, as *Exhibit 2 and 3*, the Detailed Scopes of Work ("DSOWs") for "FEMA Project 750502 (Aguadilla)" and "FEMA Project 750503 (San Juan)," respectively.

II. Request for Confidentiality and Supporting Memorandum of Law

8. LUMA hereby requests that *Exhibits 2 and 3* be maintained confidential. LUMA is submitting the redacted versions for public disclosure and the unredacted non-public versions under seal of confidentiality.

9. LUMA submits a Memorandum of Law stating the legal basis for which the unredacted versions of *Exhibits 2 and 3* should be filed under seal of confidentiality. As will be explained below, the unredacted versions of the DSOWs in *Exhibits 2 and 3* should be protected from public disclosure as these documents contain confidential information associated with Critical Energy Infrastructure Information ("CEII") as defined in federal regulations, 18 C.F.R. §388.113; 6 U.S.C. §§ 671-674, and per the Energy Bureau's Policy on Management of Confidential Information. *See* Energy Bureau's Policy on Management of Confidential Information, CEPR-MI-2016-0009 ("Policy on Management of Confidential Information"), issued on August 31, 2016, as amended by the Resolution dated September 20, 2016.

10. In addition, the DSOWs include personal identifying information of individuals who are LUMA staff or contractors protected under Puerto Rico's legal framework on privacy

emanating from the Puerto Rico Constitution and should also be protected pursuant to the Energy Bureau's Policy on Management of Confidential Information.

III. Memorandum of Law in Support of Request for Confidentiality

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

11. 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 (2024). 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).

12. 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).

13. 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 Puerto Rico Rules of Evidence.

14. 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.

15. The Energy Bureau's Policy on Management of Confidential Information states the following with regard to access to 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).

16. Furthermore, Energy Bureau 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."

B. Discussion in Support of Request for Confidential Treatment

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. Generally, CEII or critical infrastructure information is 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(c)(2), states 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.

19. 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.*

20. 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").[1]

[1] 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

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).[2]

21. The DSOWs included in *Exhibits 2 and 3* contain CEII that, under relevant federal law and regulations, is protected from public disclosure. LUMA stresses that the unredacted version of the DSOWs warrants 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. In several proceedings, this Energy Bureau has considered and granted requests by PREPA to submit CEII under seal of

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

[2] 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.

confidentiality.[3] In at least two proceedings on Data Security[4] and Physical Security,[5] this Energy Bureau, *motu proprio*, has conducted proceedings confidentially, thereby recognizing the need to protect CEII from public disclosure.

22. The DSOWs contain a single line diagram that qualifies as CEII because it contains information on the engineering and design of critical infrastructure, as existing and proposed, relating to the transmission of electricity, which is provided in sufficient detail that could potentially be helpful to a person planning an attack on this or other energy infrastructure facilities interconnected with or served by this facility and equipment. The DSOWs also contain a list of Manati's and Barceloneta's critical facilities. In addition, the DSOWs qualify as CEII because they contain the express coordinates of the target areas identified for the BESS site locations, points of interconnection, road ingress, and egress points, utility pole locations, and other transmission and non-transmission structures (18 C.F.R. § 388.113(c)(2)(iv)). These specific coordinates could potentially be helpful to a person planning an attack on the energy facilities listed in the DSOWs. The pages that contain the CEII are identified within the table in Part C of this Motion, which summarizes the hallmark requests for confidentiality for the DSOWs. The information identified

[3] *See e.g., In re Review of LUMA's System Operation Principles,* NEPR-MI-2021-0001 (Resolution and Order of May 3, 2021); *In re Review of the Puerto Rico Power Authority's System Remediation Plan*, NEPR-MI-2020-0019 (order of April 23, 2021); *In re Review of LUMA's Initial Budgets*, NEPR-MI-2021-0004 (order of April 21, 2021); *In re Implementation of Puerto Rico Electric Power Authority Integrated Resource Plan and Modified Action Plan,* NEPR MI 2020-0012 (Resolution of January 7, 2021, granting partial confidential designation of information submitted by PREPA as CEII); *In re Optimization Proceeding of Minigrid Transmission and Distribution Investments*, NEPR MI 2020-0016 (where PREPA filed documents under seal of confidentiality invoking, among others, that a filing included confidential information and CEII); *In re Review of the Puerto Rico Electric Power Authority Integrated Resource Plan*, CEPR-AP-2018-0001 (Resolution and Order of July 3, 2019 granting confidential designated and request made by PREPA that included trade secrets and CEII) *but see* Resolution and Order of February 12, 2021 reversing in part, grant of confidential designation).

[4] *In re Review of the Puerto Rico Electric Power Authority Data Security Plan,* NEPR-MI-2020-0017.

[5] *In re Review of the Puerto Rico Electric Power Authority Physical Security Plan,* NEPR-MI-2020-0018.

as confidential in the table 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 DSOWs with CEII in *Exhibits 2 and 3* from disclosure, given the nature and scope of the details included in those portions of the Exhibit.

23. This Energy Bureau has granted requests by LUMA to protect CEII in connection with LUMA's submissions of ISOWs in the present docket. *See e.g.* Resolution and Order of July 24, 2024, table 1 on page 4 (four (4) ISOWs); Resolution and Order of June 28, 2024, table 2 on page 3 (one (1) ISOW); Resolution and Order of June 28, 2024, table 1 on page 3 (one (1) Amended ISOW); Resolution and Order of May 7, 2024, table 2 on pages 4-5 (one (1) Amended ISOW and eleven (11) ISOWs). Relatedly, the Energy Bureau has also granted LUMA's requests to protect CEII in connection with LUMA's System Operation Principles. *See* Resolution and Order of May 3, 2021, table 2 on page 4, Case No. NEPR-MI-2021-0001 (granting protection to CEII included in LUMA's Responses to Requests for Information).

24. LUMA respectfully submits that the designation of portions of the DSOWs as CEII is a reasonable and necessary measure to protect the specific location and other engineering and design information of the energy facilities listed or discussed in *Exhibits 2 and 3*. Given the importance of ensuring the safe and efficient operation of the generation 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.

25. In addition, a portion of the DSOWs contains the name, signature, and role of individuals who are LUMA employees or contractors who reviewed the DSOWs as part of LUMA's internal review and approval of the document. LUMA respectfully requests that

information on the names, signatures, and roles of these individuals be maintained confidentially in the context that these reveal details of their employment duties and that their protection is in the public interest and aligned with Puerto Rico's legal framework on privacy which protects from the disclosure of personal information. *See e.g.*, Const. ELA, Art. II, Sections 8 and 10, which protect the right to control personal information and distinctive traits, which applies *ex proprio vigore* and against private parties. *See also e.g. Vigoreaux v. Quiznos*, 173 DPR 254, 262 (2008); *Bonilla Medina v. P.N.P.*, 140 DPR 294, 310-11 (1996), *Pueblo v. Torres Albertorio*, 115 DPR 128, 133-34 (1984). *See also* Act 122-2019, Article 4(vi) (which provides, as an exception to the rule on public disclosure, information the disclosure of which could invade the privacy of third parties or affect their fundamental rights). It is respectfully submitted that the redaction of the aforementioned information does not affect the public's or the Energy Bureau's review of the DSOWs nor interfere with processes before this Energy Bureau. Therefore, on balance, the public interest in protecting privacy weighs in favor of protecting the relevant portion of the DSOWs.

26. Relatedly, the Energy Bureau has also granted requests by LUMA to protect individual's personal information in connection with LUMA's submissions of ISOWs in the present docket. *See e.g.* Resolution and Order of July 24, 2024, table 1 on page 4 (four (4) ISOWs); Resolution and Order of June 28, 2024, table 2 on page 3 (one (1) ISOW); Resolution and Order of June 28, 2024, table 1 on page 3 (one (1) Amended ISOW); Resolution and Order of May 7, 2024, table 2 on pages 4-5 (one (1) Amended ISOW and eleven (11) ISOWs).

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 hallmarks of 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 2	FEMA Project 750502 – Detailed Scope of Work, 25 MW BESS Installation and Integration - Aguadilla	Page 1	Right to privacy (*see, e.g.*, Const. ELA, Art. II, Sections 8 and 10)	June 27, 2025
		Pages 6, 7, 17, 33, 34, 35, 37, and 41	Critical Energy Infrastructure Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	June 27, 2025
Exhibit 3	FEMA Project 750503 – Detailed Scope of Work, 25 MW BESS Installation and Integration - San Juan	Page 1	Right to privacy (*see, e.g.*, Const. ELA, Art. II, Sections 8 and 10)	June 27, 2025

Document	Name	Pages in which Confidential Information is Found, if applicable	Summary of Legal Basis for Confidentiality Protection, if applicable	Date Filed
Exhibit 3		Pages 5, 6, 7, 17, 33, 34, 36, 38, and 41	Critical Energy Infrastructure Information, 18 C.F.R. § 388.113; 6 U.S.C. §§ 671-674.	June 27, 2025

WHEREFORE, LUMA respectfully requests that the Energy Bureau **take notice** of the aforementioned, **accept** the Monthly Status Report for the 4x25 MW Bess Project as *Exhibit 1*, and the DSOWs for "FEMA Project 750502 (Aguadilla)" and "FEMA Project 750503 (San Juan)," as *Exhibits 2, and 3*, respectively, to this Motion; **grant** the request for confidential treatment of *Exhibits 2 and 3* and **deem** LUMA in compliance with the January 14th Order.

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 counsel for PREPA Alexis Rivera, arivera@gmlex.net, and to Genera PR LLC, through its counsel of record, Jorge Fernández-Reboredo, jfr@sbgblaw.com, Jennise M. Álvarez González, jennalvarez@sgblaw.com, and Francisco Santos, francisco-santos@gener-pr.com.

In San Juan, Puerto Rico, on this 27th day of June 2025.

DLA Piper (Puerto Rico) LLC
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San Juan, PR 00901-1969
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RUA NÚM. 18,061
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Exhibit 1

4x25 MW BESS Interconnections at LUMA 38 kV System Project Monthly Status Report

4x25 MW BESS Interconnections at LUMA 38 kV System Project

Monthly Status Report

June 27, 2025

Contents

Tables & Figures

1.0 Introduction

In accordance with the Resolution and Order dated January 14, 2025, issued by the Puerto Rico Energy Bureau (PREB) in Case No.: NEPR-MI-2021-*0002 In Re: Review of the Puerto Rico Power Authority's 10-Year Infrastructure Plan – December 2020*, LUMA is required to provide a monthly report regarding the 4x25 MW BESS Interconnections at LUMA 38 kV project. This report focuses on the key activities and progress achieved by LUMA in the past 30 days for the Battery Energy Storage Systems (BESS or collectively as the "Project") approved by the Energy Bureau in its Resolution dated August 30, 2023 ("August 30th Resolution").

2.0 Monthly Status Update

2.1 Detailed Scope of Work

The detailed scope of works (DSOWs) for Aguadilla and San Juan were submitted to Federal Emergency Management Agency (FEMA) on June 6, 2025.

On June 9, 2025, FEMA sent LUMA a soft Request for Information (RFI) related to the Manatí, Barceloneta, Aguadilla and San Juan DSOWs.

2.2 Procurement

LUMA has completed drafts for the scopes of procurements for the engineering design and procurement, needed to execute of the Project. LUMA expects to issue the request for proposal (RFP) in the first quarter (Q1) of fiscal year 2026 (FY2026).

2.3 Design Status

The Preliminary Design has been completed. The Detailed Design will be managed by the selected vendor through a competitive procurement process.

2.4 Project Schedule

LUMA has been studying and pursuing the deployment of BESS to multiple locations as part of the Project. LUMA's high-level schedule for this Project includes:

- Procurement - Notice to proceed: January 2026
- Construction Start: January 2027
- Commissioning: December 2027

A more detailed schedule will be provided once the funds have been obligated by FEMA and Central Office for Recovery, Reconstruction and Resilience for Puerto Rico (COR3). These dates depend on LUMA being able to procure resources, including equipment, at the expected times.

3.0 Project Status

3.1 Selected Sites

LUMA has not yet finalized the sites where it intends to deploy the four BESSs but has determined proposed locations across the general areas where the projects would be sited. Specifically, these are (1) Aguadilla, (2) Barceloneta, (3) Manatí, and (4) San Juan. LUMA will supplement its response as final selections are made and real estate details are finalized.

3.2 Reimbursement Status

Table 1. Reimbursement Received

Project Title	Reimbursement Received
FAASt [4 x 25 MW BESS Interconnections on LUMA System] (Substation)	$132,861.59
FAASt [4 x 25 MW BESS Interconnections Manati] (Substation)	$8,027.34
FAASt [4 x 25 MW BESS Interconnections Aguadilla TC] (Substation)	$161,797.74
FAASt [4 x 25 MW BESS Interconnections Monacillos TC] (Substation)	$47,355.27

3.3 Requests for Information

On June 9, 2025, the FEMA sent LUMA a soft RFI related to the Manatí, Barceloneta, Aguadilla and San Juan DSOWs.

3.4 FAASt Number

As indicated in Section 3.1 above, LUMA has identified four areas where it intends to site the projects. The FEMA FAASt numbers for the four BESS projects are:

Table 2. FAASt Number

Project Title	FEMA FAASt #
FAASt [4 x 25 MW BESS Interconnections on LUMA System] (Substation)	738671
FAASt [4 x 25 MW BESS Interconnections Manati] (Substation)	752972
FAASt [4 x 25 MW BESS Interconnections Aguadilla TC] (Substation)	750502
FAASt [4 x 25 MW BESS Interconnections Monacillos TC] (Substation)	750503

3.5 Updated Project Cost

The following table contains an updated cost estimate based on the Barceloneta, Manatí, Aguadilla and San Juan DSOWs submitted to FEMA.

Table 3. Class 3 Cost Estimate

Project Title	Class 3 Cost Estimate ($)
FAASt [4 x 25 MW BESS Interconnections on LUMA System] (Substation) Barceloneta	$55,941,767
FAASt [4 x 25 MW BESS Interconnections Manati] (Substation)	$57,640,005
FAASt [4 x 25 MW BESS Interconnections Aguadilla TC] (Substation)	$52,720,520
FAASt [4 x 25 MW BESS Interconnections Monacillos TC] (Substation)	$55,503,065

Exhibit 2

Redacted Version (Unredacted Version Submitted under Seal of Confidentiality)

FEMA Project 750502 – Detailed Scope of Work

Project Name: 25 MW BESS Installation and Integration - Aguadilla

Revision: 0

1.0 LUMA APPROVALS

The signatures below are LUMA's formal approval of this Detailed Scope of Work prior to submission to FEMA.

Revision No.:		
Project Manager	Signature	Date
[redacted]	[redacted]	06/06/2025
		Date
		06/06/2025

2.0 DOCUMENT REVISION HISTORY

This table contains the history of the revisions made to this FEMA Project Scope of Work.

Rev.	Effective Date	Description of Change
0	Click to enter a date.	Initial release.

3.0 TABLE OF CONTENTS

4.0 PROJECT OVERVIEW

FEMA Project Number:	750502
Project Name:	25 MW BESS Installation and Integration – Aguadilla
Facility Name:	25 MW BESS Installation and Integration – Aguadilla
Project Type:	Standard Project: Restores the facility/facilities to pre-disaster design and function to locally-adopted codes/standards and/or FEMA-approved industry standards.
Region:	Mayagüez
Asset Category:	Grid Modernization

5.0 INTRODUCTION

Pursuant to FEMA's Post-Fixed Cost Estimate Obligation SOP (the "SOP") for FAASt projects, FAASt subrecipients must provide to FEMA recovery project scopes of work ("SOW") for the proposed construction work to be performed. The SOW may include § 406 hazard mitigation proposals ("HMPs"). The SOW defines the activities that will be performed using Public Assistance ("PA") funding.

According to the SOP, FEMA "anticipates that [SOW] submissions might includes preliminary designs, including drawings and cost estimates. FEMA also recognizes that, generally, architects and/or engineers do not include or delineate the information needed to enable FEMA to complete programmatic reviews. Therefore, in those cases, subrecipients must ensure to submit all the information described [in the SOP] and not limit the submission to a drawing set. Refer to Part C - II. Recipient/Subrecipient Checklist for Submissions as a guide to review completeness." SOP at page 4.

This document contains the detailed SOW for FEMA PA Project 750502- 25 MW BESS Installation and Integration – Aguadilla under DR-4339-PR Public Assistance. The document provides a detailed description of the project, the scope of PA construction activities to be completed, common EHP review information, proposed hazard mitigation measures, and project cost estimates. LUMA is seeking approval from COR3 and FEMA for PA funding for the scope described in this document.

LUMA submits this Detailed SOW pursuant to the Transmission and Distribution Operations and Maintenance Agreement between the Puerto Rico Electric Power Authority ("PREPA"), the Puerto Rico Public-Private Partnerships Authority ("P3A"), and LUMA, and in accordance with the Consent to Federal Funding Letter issued by PREPA and P3A (available in Applicant Event Profiles in Grants Portal, upload date of 5/17/2024), which collectively provides the necessary consent for LUMA, as agent of PREPA, to undertake work in connection with any Federal Funding requests related to the Transmission and Distribution ("T&D ") System submitted to FEMA. References to "Subrecipient" herein refer to PREPA pursuant to this agreement and consent for LUMA to act as its agent with respect to federal funds.

6.0 PROJECT DESCRIPTION

Hurricane Maria provided significant reminders that increased grid resiliency is needed to serve Puerto Rico. The Mayagüez region and other areas of Puerto Rico experienced significant power outages due to vulnerabilities in the T&D system. To address these vulnerabilities, LUMA proposes the installation of a 25 MW/100 MWh Battery Energy Storage System ("BESS") as a Section 406 Hazard Mitigation measure to prevent damage to the Mayagüez region similar to what happened during Hurricane Maria in a future similar storm and thus lessen the long-term threat to people and property from extended blackouts.

7.0 FACILITIES

7.1 FACILITIES LIST – BUILDINGS AND SUBSTATIONS

The following list includes the name, year of construction, and GPS coordinates of each building or substation included in this project:

- **None**

7.2 FACILITIES LIST – OTHER FACILITIES

The following list includes the name and GPS coordinates identifying the areas of work for other types of facilities. For any access roads or other line work, coordinates listed below are the beginning and end points.

LUMA evaluated four (4) potential sites to install a 25MW/100MWh BESS. The requirements and evaluation criteria for selecting the site were the following:

a) Site Size (4 cuerdas) (3.9 acres)

b) Availability of purchase

c) Proximity to the 38 kV line

d) Environmental considerations (flooding, land classification, zoning, etc.)

Three of the sites were disqualified from consideration because they did not meet the requirements and therefore were not viable options.

The selected site for the 25 MW BESS site is located in Bo. Ceiba Baja, Aguadilla, PR. This is the site that meets the selection criteria described above. The plot of land has an area where the project will be developed is 4.16 cuerdas (4.04 Acres) ([redacted]). The selected plot of land to be purchased is part of a larger parcel of 91.8 cuerdas (89.1 acres) that is completely owned by one owner. Land acquisition is considered a part of the scope of work, and is included in the cost estimate. The Point of Interconnection ("POI") is in the Transmission Line 2700 in Aguadilla ([redacted]).

A land appraisal was completed and certified by LUMA's internal appraiser. Refer to **Appendix H** for the Aguadilla Appraisal Report.

- **Access Road:** A new and permanent circular access road will be built at Road PR-2 North side in Carr. # 2 Int. Carr. # 110 BO, Ceiba Baja, Aguadilla, Puerto Rico. Because it is a circular road, its beginning and end points are the same. It has one ingress/egress point at coordinates ([redacted]). Refer to **Appendix E** – Aguadilla BESS 30% Engineering Design for the access road drawings, and **Appendix F** - Aguadilla BESS Access Road aerial photo map. Section 11, below, includes the dimensions and ground disturbance information related to the access road.
- **Staging area:** LUMA's General Warehouse will be used for staging. Refer to **Table 1** for details on the location and coordinates. Refer to **Appendix G** – Staging Area - LUMA General Warehouse. An on-site staging area will be located within the perimeter of the fence line. The exact location will be provided in a forthcoming design update.

Table 1 - Staging Area

Descriptions	Address	Coordinates	
		Latitude	Longitude
LUMA's General Warehouse	PR-165 Palo Seco, Toa Baja 00949	[redacted]	

- **Work Area:** The BESS is a new facility to be built on property of approximately 4.16 cuerdas (4.04 Acres). The land is undisturbed terrain (as identified in a site visit by the A&E) (at coordinates [redacted]). Section 11, below, includes associated ground disturbance information.

- **Electric Utility Poles:** Six (6) new 12-sided, 70ft S8-steel poles will be installed with guy wires. Refer to Table 2 for the locations of the new poles. Poles will be built to LUMA's standard for withstanding 160+ mph wind rating.

Table 2 – Utility Poles Locations

Descriptions	Line Segment	Coordinates		Voltage
		Latitude	Longitude	
New Pole 1	N/A	[redacted]		38kV
New Pole 2	N/A			38kV
New Pole 3	N/A			38kV
New Pole 4	N/A			38kV
New Pole 5	TL-2700			38kV
New Pole 6	TL-2700			38kV

8.0 PROJECT AREA MAP WITH BOUNDARIES OF CONSTRUCTION

Please see below the area map identified as **Figure 1: Aguadilla BESS Site Location ([redacted]) & Figure 2: Aguadilla BESS Project Site Area**

Figure 1: Aguadilla BESS Site Location ([redacted])

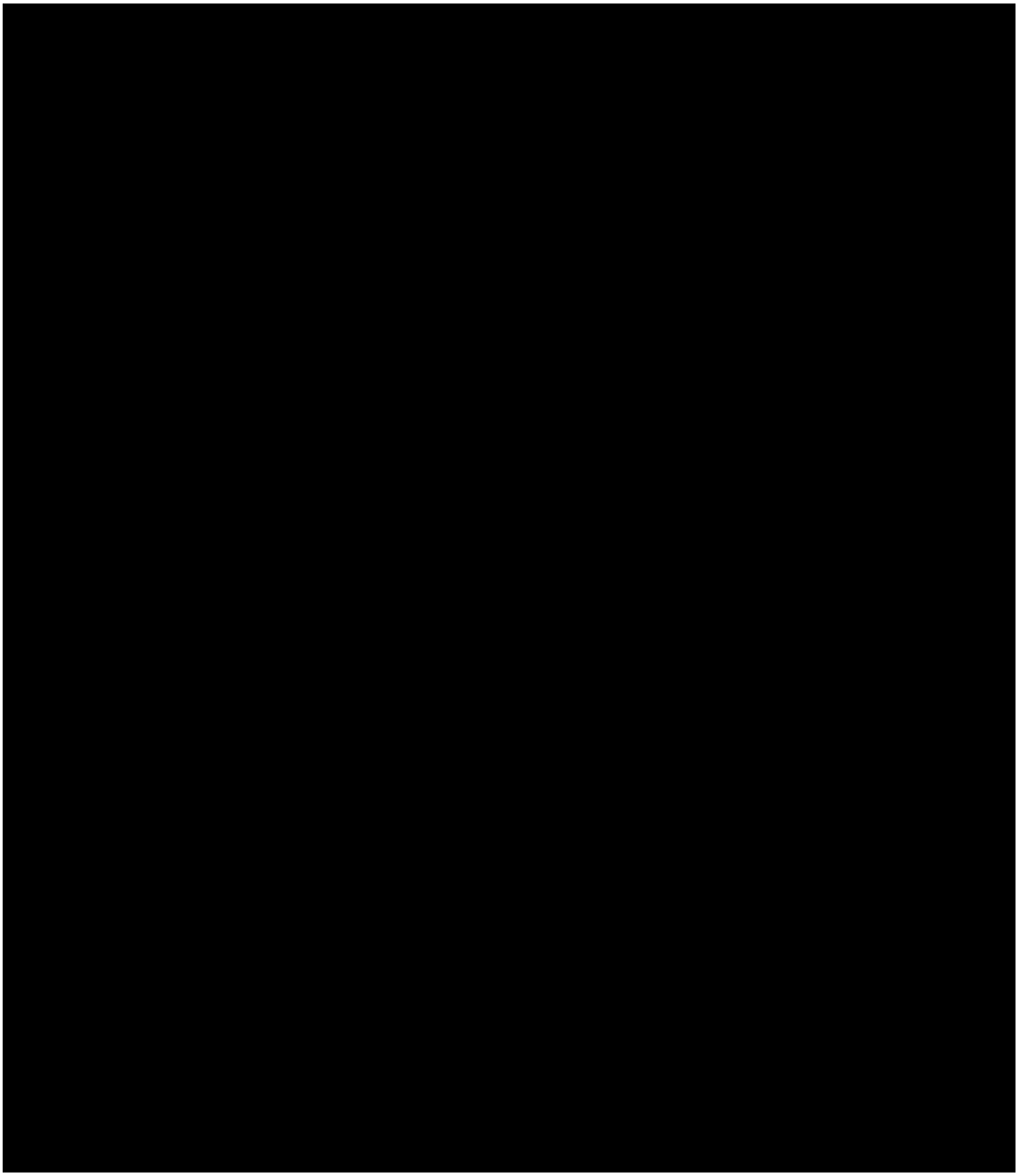

Figure 2: Aguadilla BESS Project Site Area (4.16 cuerdas or 4.04 acres)

9.0 § 428 SCOPE OF WORK

The proposed type of work for this project:

☒ Standard Project: Restores the facility/facilities to pre-disaster design and function to locally-adopted codes/standards and/or FEMA-approved industry standards.

☐ Improved Project: Restores the pre-disaster function of the facilities and incorporates improvements or changes to its pre-disaster design not required by codes or standards.

☐ Subrecipient's request letter included, see Appendix ___.

☐ Recipient's approval letter included, see Appendix ___.

☐ Alternate Project: Does not restore the pre-disaster function of the damage facility. The Subrecipient, through the Recipients, must obtain approval from FEMA.

☐ Subrecipient's request letter included, see Appendix ___.

☐ Recipient's approval letter included, see Appendix ___.

This entire project is proposed as a § 406 Hazard Mitigation solution in relation to the TL2700 rebuilding project (see Table 3 for details) , which will cover the damage caused by Hurricane Maria as a section 428 Public Assistance project. The proposed scope strengthens the resiliency of Transmission Line 2700.

The Transmission Line 2700 is currently undergoing a rebuild as part of Hurricane Maria FAASt Project 749072. The BESS project proposed in this DSOW will serve as a mitigation measure for the TL-2700 rebuild by providing additional grid stability and redundancy, ensuring that the entire network benefits from increased resiliency against future, similar damage. This interconnection is important to enhance the stability and reliability of the power grid and will thus lessen the long term threat to people and property.

Table 3: Related Section 428 Rebuild Project under FAASt Project 749072

428 Project	Department	FAASt #
Transmission Priority Pole Replacement Program Line 2700 Aguadilla Hospital Distrito Sect – Mora TC	Capital Programs – Transmission	749072

9.1 DESCRIPTION OF PROPOSED WORK TO BE PERFORMED

Please refer to section 10.0. 406 Hazard Mitigation Proposal.

9.2 CODES & STANDARDS

Per FEMA's SOP, the locally adopted codes/standards and/or FEMA-approved industry standards used for this project are provided below:

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

- Consensus-based codes, per FEMA'a Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (February 2020).
- Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
- FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
- LUMA's latest Design Criteria Document (DCD) which aggregates the design considerations of most of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).
- LUMA 4751.001 Transmission Design Criteria, Version 4, October 6, 2023 and 4751.046 38 KV 70S8 Single Circuit Dead-end Vertical Assy. Angle 60°-90°, Version 1.0, November 17, 2023.

- LUMA Standard for Distribution LUMA Overhead Electrical Distribution System Manual Version 5.0, April 4, 2024 and 4300.010 Distribution Feeder Rebuild Projects Additional Design Guidelines, Version 4, December 20, 2023.
- LUMA Standard 4350.205 for Backfill Material A-2-4, Version 1, March 3, 2022.

10.0 § 406 HAZARD MITIGATION PROPOSAL

FEMA PAPPG v.3.1 states that: "Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects." The Subrecipient proposes to lessen or eliminate long-term risk to people and property from future natural hazards and their effects by performing the work described in this project, in accordance with the Subrecipient's LUMA Energy Design Criteria, which exceeds required codes and standards. Doing so will directly reduce the potential of future, similar negative consequences of damage to the T&D system as occurred after Hurricane Maria by improving the system's physical or functional resiliency, or both, of the system.

Below is a description of the proposed mitigation opportunity and the proposed scope of work.

10.1 § 406 HAZARD MITIGATION OPPORTUNITY

The proposed section 406 Hazard Mitigation scope of work involves the implementing of a Battery Energy Storage System and all necessary equipment for its operation.

The hazard to be mitigated by the installation of the BESS is the electrical transmission grid's vulnerability to power outages and instability caused by hurricane incidents similar to Hurricane Maria. Specifically, the BESS reduces the likelihood of blackouts or cascading outages by mitigating transmission line failures, frequency fluctuations, and system overloads during peak load conditions, which were highlighted by the damage caused by Hurricane Maria. By improving grid resiliency, the BESS helps ensure a more reliable power supply and reduces the likelihood of similar

disruption in the future. Enhanced resiliency mitigates the risk to public health and safety and improved property in future, similar disasters.

Specifically, the BESS can deliver a range of grid support services to maintain temporary service continuity and facilitate system restoration during and immediately after a disaster incident similar to Maria. The BESS will perform either grid-following or grid-forming support. The grid-forming function will island a specific area of the T&D system, which includes the critical facilities identified below, by keeping substations within that area energized while the utility works to restore power to the broader system. The BESS can also provide immediate grid following support, at the sub-transmission level, that can remedy a range of issues that occur during restoration of power. The grid-following actions include support of black-start operations and re-energizing isolated substations. The BESS can also stabilize voltage during reconnection (restoration) events by providing frequency response and regulation, voltage support, and load management. The interconnection of the BESS to the 38-kV line TL 2700 will provide support to both the transmission and distribution systems, creating a layer of redundancy that supports FEMA's interest in mitigating system-wide failures and reducing the downtime during natural disaster restoration efforts.

Critical Facilities

The BESS will significantly reduce future risk to critical facilities and services by enhancing the stability and redundancy of the electrical grid. By providing voltage support and fast response capabilities, the BESS helps prevent power disruptions. It acts as a buffer ensuring that the following critical facilities can maintain operations during emergencies such as power outages or future hurricanes. Refer to **Appendix A** - First Responders - Critical Facilities Aguadilla, for more details about the facilities. Critical facilities include:

- School Benito Cerezo Vázquez (Shelter)
- School Conchita Igartúa de Suárez (Shelter)

- School Ester Feliciano Mendoza (Shelter)
- School Juan Suárez Pelegrina (Shelter)
- Hospital Buen Samaritano
- Aguadilla Medical Services
- Hospital Metro Pavía
- Aguadilla Puerto Rico Police Station
- Aguadilla Municipal Police Station
- Aguadilla Fire Station

In the event of a transmission line failure or fault, the power supply can be quickly restored, minimizing downtime for essential services. This proactive measure reduces the impact and ensures that the vital infrastructure remains operational when it's needed the most.

The BESS package shall be equipped with the following components:

- A DC Block, which is comprised of the Battery Energy Storage System (BESS) devices. All BESS systems will be modular with self-contained controls and monitoring systems, such as protection systems (DC and AC levels), heating/cooling systems (thermal management), fire detection, fire protection, gas monitoring and protection systems, and communication systems.
- An AC Block compromised of the Power (AC) Block System, PCS,[1] (power conversion system), MV step-up and auxiliary transformers, AC Electrical System, Provisions for aux power for black start, Communication system (protocol Modbus TCP IP), Control system, Auxiliary transformer, distribution panels, switchgear & lv switchboard, Spare parts, ATS, Inverters, AC collector, and Voltage arrester.

[1] Power Conversion System.

The primary use case for the BESS system sizing calculation will be Fast Frequency Regulation ("FFR"). Frequency regulation is based on an accurate Power Quality Meter ("PQM") measurement at a Point of Common Coupling (PCC) location certified for accurate measurements. The high-accuracy grid frequency measurements from the PQM shall be utilized to drive the FFR application.

Hazard mitigation benefits include:

a) Provides redundancy for Transmission Line 2700, mitigating the risk of prolonged outages caused by damaged infrastructure.
b) Ensures critical loads remain powered, preventing complete grid collapse during disasters.
c) Stores energy for rapid deployment during outages, providing immediate support to stabilize the grid.
d) Supports black-start operations, enabling faster restoration of the transmission & distribution system.
e) Smooths voltage fluctuations, reducing stress on equipment and preventing damage.
f) Ensures continuous operation of essential services during disasters, protecting public health, safety, and welfare.
g) Decreases the time and resources needed for post-disaster recovery by providing immediate support for grid stabilization.
h) Prevents prolonged outages, reducing disruptions to businesses, hospitals, shelters, schools, and emergency services.

The Aguadilla BESS project is not merely an infrastructure upgrade but a hazard mitigation measure that directly addresses the vulnerabilities exposed by recent hurricanes and blackouts, such as those experienced during Hurricane María. By providing redundancy, stabilizing grid operations, and enabling faster recovery, the BESS ensures the transmission system can withstand and recover from future disasters. This section 406 hazard mitigation proposal reduces the risks posed by power outages and provides immediate response capabilities during hurricane disasters to minimize the risk to public health and safety. The Aguadilla BESS project's functional

redundancy of TL 2700 aligns with § 406 objectives by ensuring the continuity of essential services and grid stabilization in the face of future hurricane wind events.

Equipment Included in the Battery Energy Storage System

The equipment listed below is part of the Battery Energy Storage System and is necessary for the proper operation of the BESS, therefore, they are included in the request for section 406 funding. The main focus of the BESS is resiliency and redundancy, along with its ability to stabilize the grid and provide critical backup power during a disaster or other emergency event, making it a valuable hazard mitigation initiative in line with FEMA's mission.

- Generator

The generator serves as a critical hazard mitigation measure for the BESS by ensuring continuous operation and control during power outages. In the event of an emergency blackout, the generator provides immediate backup power, allowing the BESS's communication and control systems to function without interruption. The uninterrupted operation is vital for maintaining grid stability and facilitating rapid response during events while helping ensure that critical facilities continue to receive power.

- Fiber Optic & Telecom Tower

The BESS will have a fiber optic cable to the nearest substation, as well as a telecommunications tower, as a redundancy measure in communications so that, in the event that one of the communication routes fails, the other communication route will be open, and the BESS will be able to be controlled. Without this mitigation measure, the BESS could be out of communication in the event of an emergency where, for example, the fiber optic cable line is out of service.

- Metal Clad Switch Gear

The walk-in Metal Clad Switchgear has the function of housing and protecting medium voltage switchgear, as well as grouping the feeders from the batteries. As it is a 'Walk-In' switchgear, it has the possibility to enclose the communication center of the substation and protect them against adverse environmental conditions.

- Main Power Transformer

The Main Power Transformer is necessary to increase or decrease the voltage from medium voltage to high voltage, and vice versa, which is required to ensure optimal function of the BESS during a disaster.

- 38 kV Infrastructure

The 38kV Transmission Line infrastructure is necessary to connect the BESS to the 38KV line, which will be our Point of Interconnection ("POI"). The Throw-Over Structure and equipment are part of the 38 kV interconnection infrastructure and are necessary to interconnect the BESS to the Transmission Line, as well as to control the load flow direction.

- Erosion and Sediment Controls

The erosion and sediment controls are hazard mitigation measures because they prevent infrastructure damage, maintain structural integrity, and reduce future disaster risks, which makes repairs more resilient and cost effective.

- Grading and Gravel

Grading and gravel are needed to improve site drainage, stabilize surfaces and prevent erosion and sediment buildup. This work is a hazard mitigation measure because it protects the BESS facility from future water-related damage.

10.2 § 406 SCOPE OF WORK

The detailed Scope of Work consists of:

- Installation of a Battery Energy Storage System ("BESS") with a target capacity of 25 MW/100 MWh. It will be connected to 38kV Transmission Line 2700.

Below is the System Diagram, which depicts the Interconnection to the 38kV Transmission Line. Refer to Appendix E for the Aguadilla BESS 30% Preliminary Engineering Design (sheet 20 of 53).

Figure 3: System Diagram

The scope of work, including items, quantities, and dimensions, are presented below. It is also presented in **Appendix E** – Aguadilla BESS 30% Preliminary Engineering Design, and **Appendix C** – Aguadilla Project Cost Estimate. Ground disturbance information related to the scope of work is included in Section 11 of this DSOW, below.

The following is the scope of work:

Generator Pad

(Cost Estimate items in rows 23 to 28 and ground disturbance is described in section 11: Common EHP Review Information (below))

1. Construct 52 SFCA[2] of C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.
2. Construct 35 S.Y. of base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 6" deep.
3. Construct 1 C.Y. of structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material.
4. Provide 1 C.Y. structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments. (5' L x 8' W x 0.67' H)
5. Install 0.2 Tons of reinforcing steel, in place, footings, #4 to #7, A615, grade 60, includes labor for accessories, excludes material for accessories.
6. Provide 20 C.L.F.[3] of beam bolsters, for reinforcing steel, lower (BB), plain steel, 2" high, includes material only.

Generator

(Cost Estimate item row 29)

7. Install one (1) Generator set, diesel, 3 phase 4 wire, 277/480 V, 100 kW, incl battery, charger, muffler, & day tank, excl conduit, wiring, & concrete

[2] Square Feet Contact Area.

[3] Cable Linear Feet.

Erosion and Sedimentation Control

(Cost Estimate item row 30 and ground disturbance is described in section 11: Common EHP Review Information (below))

8. Install 1,730 L.F. of synthetic erosion control, silt fence, 3' high.

Driveway (Road)

(Cost Estimate items row 31 to 33 and ground disturbance is described in section 11: Common EHP Review Information (below)))

9. Provide and Install 761.81 C.Y. of structural concrete, ready mix, heavyweight, 4,000 psi, includes local aggregate, sand, portland cement (Type I) and water, delivered, excludes all additives and treatments. (1535' L x 20' W x 0.67' H)
10. Construct 761.81 C.Y. of structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material.
11. Construct 3,463 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.

Borrow Compaction

(Cost Estimate item row 34)

12. Compaction 3,521 B.C.Y., around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate.

Grading and Gravel-FILL

(Cost Estimate item row 35 and ground disturbance is described in section 11: Common EHP Review Information (below))

13. Install 21,126 S.Y. of base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 6" deep.

Undercut Disposition

(Cost Estimate item row 36 to 37)

14. Perform approximately 3,830.42 Tons, dump charges, typical urban city, rubbish only, includes tipping fees only.

15. Provide 3,683.10 L.C.Y. “loose cubic yards” cycle hauling (wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 25 min load/wait/unload, 12 C.Y. truck, cycle 40 miles, 35 MPH, excludes loading equipment.

Grading and Gravel-CUT

(Cost Estimate item row 38 and ground disturbance is described in section 11: Common EHP Review Information (below)).

16. Strip and stockpile 2,946.48 C.Y. of topsoil, sandy loam, ideal conditions, 200 HP dozer.

Transformer SPCC Dike and Base

(Cost Estimate item row 39 to 41 and ground disturbance is described in section 11: Common EHP Review Information (below))

17. Provide 62.39 C.Y. of structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments (104' x 6' x 0.67’), wall (130.66' x 3.5' x 0.67’) and Base (24' x 16' x 2.5')
18. Install 912 S.F. of composition flooring, epoxy, heavy duty epoxy topping, 1/4" thick, 500 to 1,000 S.F.
19. Construct 528 SFCA of C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.

Chain Link Fence Ground wires

(Cost Estimate item row 42 to 44 and ground disturbance is described in section 11: Common EHP Review Information (below))

20. Install 86 C.L.F. of ground wire, copper wire, bare stranded, 4/0.
21. Install 9 (Ea.) exothermic weld, exothermic welding reusable mold, cable to cable, termination, Tee.
22. Excavation of 238 B.C.Y., trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering.

Chain Link Fence Concrete Foundation

(Cost Estimate item row 45 to 47 and ground disturbance is described in section 11: Common EHP Review Information (below))

23. Construct 3,460 SFCA of C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.
24. Provide 256.15 C.Y. Structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments (1729' L x 4' W x 1' H).
25. Construct 256.15 C.Y. of structural concrete, placing, continuous footing, deep, pumped, includes leveling (strike off) & consolidation, excludes material.

Chain Link Fence

(Cost Estimate item row 48 to 52 and ground disturbance is described in section 11: Common EHP Review Information (below))

26. Install 1,730 L.F. of fence, chain link industrial, galvanized steel, 6 ga. wire, 2-1/2" posts @ 8' OC, 8' high, includes excavation, in concrete, excludes barbed wire.
27. Install one (1) double swing gate, fence, chain link industrial, 10' high, 20' opening, includes excavation, posts & hardware in concrete.
28. Install one (1) fence, chain link industrial, galvanized steel, add for corner post, 6 ga. wire, 2-1/2" posts @ 8' OC, 8' high, 3" diameter, includes excavation, in concrete.
29. Construct 3,460 S.F. of concrete finishing, walls, includes breaking ties and patching voids.
30. Install 5.19 M.L.F. of wire fencing & gates, wire fencing general, barbed wire, galvanized, domestic steel, hi-tensile, 15-1/2 ga.

Control Room Batteries

(Cost Estimate items row 53 & 54)

31. Install one (1) conversion equipment, battery chargers.
32. Install five (5) K.A.H.[4] control batteries.

[4] K.A.H. (kiloampere-hour).

Control Room battery bank floor

(Cost Estimate item row 55)

33. Install 240 S.F. of composition flooring, mastic, hot laid, acid-proof, 2 coat, 1-1/2" thick, maximum.

Capacitor Bank and Concrete Base

(Cost Estimate item row 56 to 59 and ground disturbance is described in section 11: Common EHP Review Information (below))

34. Install 5 MVAR[5] station capacitors, synchronous.
35. Construct 10.19 C.Y. Structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments. (22.9' L x 12' W x 1' H).
36. Install 10.19 C.Y. Structural concrete, placing, continuous footing, deep, pumped, includes leveling (strike off) & consolidation, excludes material
37. Construct 70 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning

38 kV Interconnection Line

(Cost Estimate item row 60 to 66 and ground disturbance is described in section 11: Common EHP Review Information (below))

38. Install six (6) electrical utility poles, steel galvanized, 12 sided, tapered shaft, 70'.
39. Install 0.1 miles of overhead line conductors & devices, conductors, primary circuits, per wire, 1,000 to 1,600 kcmil.
40. Install 0.1 miles of overhead line conductors & devices, conductors, primary circuits, material handling & spotting.
41. Install 39 (Ea.) overhead line conductors & devices, conductors, primary circuits, joint and dead ends.

[5] Megavolt-ampere.

42. Install 21 (Ea.) overhead line conductors & devices, conductors, primary circuits, jumpers, per structural, 46 kV.
43. Construct 105 C.Y. Electrical utility pole, foundations for line poles, excavation, in rock.
44. Construct 105 C.Y. Electrical utility pole, concrete foundations for line poles.

Security External Lights

(Cost Estimate item row 67 to 75)

45. Install eight (8) light poles, galvanized steel, bracket arms, 1 arm, excludes concrete bases.
46. Install eight (8) roadway area luminaire, LED fixture, 252 LEDS, 120 V AC or 12 V DC, equal to 210 watt, includes lamp.
47. Provide eight (8) anchor base for light poles, galvanized steel, 30' high, excludes concrete bases.
48. Construct eight (8) concrete bases for light poles, max 6' buried, 2' exposed, 18" diameter, average cost.
49. Excavation of 100 B.C.Y., trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering.
50. Install 14 C.L.F. of wire, copper, stranded, 600 volt, #10, type THWN-THHN, normal installation conditions in wireway, conduit, cable tray.
51. Install 1,207 L.F. electrical underground ducts and manholes, PVC[6], conduit with coupling, 1" diameter, schedule 40, installed by direct burial in slab or duct bank, excludes excavation, backfill and cast in place concrete.
52. Construct 134 C.Y. structural concrete, placing, duct bank, direct chute, excludes material.
53. Install 160 L.F. rigid galvanized steel conduit, 1-1/4" diameter, to 10' high, includes 11 couplings per 100'.

Throw Over Equipment and Base

(Cost Estimate item row 76 to 85 and ground disturbance is described in section 11: Common EHP Review Information (below))

[6] Polyvinyl chloride.

54. Install one (1) Throw Over Structure.
55. Construct 53.69 C.Y. Structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments (27.33' L x 21.33' W x 2' H)
56. Construct 53.69 C.Y. Structural concrete, placing, continuous footing, deep, pumped, includes leveling (strike off) & consolidation, excludes material
57. Construct 311 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning
58. Install three (3) station capacitors, potential transformers.
59. Install three (3) station capacitors, current transformers.
60. Install three (3) lightning arresters.
61. Install four (4) disconnecting switches, gang manual operation.
62. Install two (2) disconnecting switches, gang motor operation.
63. Install one (1) substation equipment, gas circuit breakers. *(Throw Over and Breaker)*

Main Power Transformer and Concrete Base

(Cost Estimate item row 86 to 89 and ground disturbance is described in section 11: Common EHP Review Information (below))

64. Construct 10.51 B.C.Y. Excavating, trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering.
65. Construct 10.51 C.Y. Structural concrete, placing, duct bank, direct chute, excludes material.
66. Construct 10.51 C.Y. Structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments.
67. Install one (1) main conversion equipment, power transformer. (40 MVA)

Leveling Site

(Cost Estimate item row 90 to 93 and ground disturbance is described in section 11: Common EHP Review Information (below))

68. Provide Rough grading sites, open, 75,100-100,000 S.F., grader. (1 Ea.)

69. Provide Rough grading sites, open, 25,100-30,000 S.F., grader. (1 Ea.)
70. Perform a topographical survey, conventional, maximum. (1 Ea.)
71. Provide 1294.89 L.C.Y. of fill by borrow and utility bedding, for pipe and conduit, crushed stone, 3/4" to 1/2", excludes compaction

Land Acquisition

(Cost Estimate item row 94 and Refer to Appendix H for the San Juan Appraisal Report)

72. Purchase of Land 4.16 Cuerdas (4.04 Acres).

Drainage System / Storm Sewer System

(Cost Estimate item row 95 to 99 and ground disturbance is described in section 11: Common EHP Review Information (below))

73. Install two (2) ea Storm drainage manholes, frames and covers, concrete, precast, 4' ID, 6' deep, excludes footing, excavation, backfill, frame and cover
74. Install two (2) ea Storm drainage manholes, frames and covers, precast concrete, 4' diameter manhole, 8" thick top
75. Install eight (8) Storm drainage catch basins, frames and covers, concrete, cast in place, 4' x 4', 8" thick, 6' deep, excludes footing, excavation, backfill, frame and cover
76. Install eight (8) Utility area drain, catch basins or manholes, frames and covers, cast iron, heavy traffic, 36" diameter, 1,150 lb., excluding footing & excavation
77. Install 182 L.F. of public storm utility drainage piping, reinforced concrete pipe (“RCP”), 18" diameter, 6' lengths, class 3, excludes excavation or backfill, gaskets.

Grounding System

(Cost Estimate item row 100 to 106 and ground disturbance is described in section 11: Common EHP Review Information (below))

78. Install 161 L.F. of public storm utility drainage piping, reinforced concrete pipe (“RCP”), 24" diameter, 8' lengths, class 3, excludes excavation or backfill, gaskets.
79. Install 160 L.F. of public storm utility drainage piping, reinforced concrete pipe (“RCP”), 30" diameter, 8' lengths, class 3, excludes excavation or backfill, gaskets.

80. Provide three (3) ea. Exothermic weld, exothermic welding reusable mold, cable to cable, termination, Tee
81. Provide 21 ea. Exothermic weld, 4/0 wire to 1" ground rod.
82. Provide 146 ea. Exothermic weld, 4/0 wire to 4/0 wire.Install 103 C.L.F. Ground wire, copper wire, bare stranded, 4/0.
83. Install 25 ea. Grounding rod, copper clad, 10' long, 3/4" diameter. (Metal Clad Control Room Concrete Base)

Metal Clad Building

(Cost Estimate item row 107 to 110 and ground disturbance is described in section 11: Common EHP Review Information (below))

84. Install one (1) Walk In Metal clad building.
85. Construct 61.46 C.Y. Structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material
86. Construct 61.46 C.Y. Structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments. (65.08' L x 25.5' W x 1' H)
87. Construct 61.46 C.Y. Structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material

Battery Energy Storage System Package and Concrete Base

(Cost Estimate item row 111 to 114 and ground disturbance is described in section 11: Common EHP Review Information (below))

88. Install a Battery Energy Storage System Package
89. Construct 1932 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.
90. Construct 2101.66 C.Y. Structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments. (22119 sf x 2')

91. Construct 2101.66 C.Y. Structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material

Telecom Tower Pole

(Cost Estimate item row 115 to 117 and ground disturbance is described in section 11: Common EHP Review Information (below))

92. Install 22 C.Y. Electrical utility pole, steel galvanized, 12 sided, tapered shaft, 100ft..
93. Construct 22 C.Y. Electrical utility pole, foundations for line poles, excavation, in earth.
94. Install one (1) ea. Electrical utility pole, steel galvanized, 12 sided, tapered shaft, 100', for distribution.

Telecom Private Carrier Facilities

(Cost Estimate item row 118 to 121 and ground disturbance is described in section 11: Common EHP Review Information (below))

95. Install 395 L.F. Electrical underground ducts and manholes, PVC, conduit with coupling, 2" diameter, schedule 40, installed by direct burial in slab or duct bank, excludes excavation, backfill and cast in place concrete.
96. Excavate 110 C.Y., trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering (30 B.C.Y).
97. Construct 110 C.Y. Structural concrete, placing, duct bank, direct chute, excludes material.
98. Construct 110 C.Y. Structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments.

Telecom Equipment and Infrastructure

(Cost Estimate item row 122 to 151 and ground disturbance is described in section 11: Common EHP Review Information (below))

99. Provide 695 L.F. Electrical underground ducts and manholes, PVC, conduit with coupling, 2" diameter, schedule 40, installed by direct burial in slab or duct bank, excludes excavation, backfill and cast in place concrete.

100. Provide 695 L.F. Electrical underground ducts and manholes, PVC, conduit with coupling, 4" diameter, schedule 40, installed by direct burial in slab or duct bank, excludes excavation, backfill and cast in place concrete.
101. Provide 61 L.F. Cable tray, ladder type, galvanized steel, 4" deep, 12" rung spacing, 24" wide, to 15' elevation, incl fittings & supports.
102. Provide one (1) Cable tray, ladder type, galvanized steel elbow horizontal, 90 Deg., 9" rung spacing, 12" radius, 24" wide.
103. Provide one (1) Cabinets & enclosures, Telecommunications Cabinet , 85" H x 33" W x 36" D, NEMA 4X, wall mount
104. Provide 1 Bus duct, ground bus added to bus duct, 600 amp.
105. Install one (1) ea. Switching and routing equipment. *(Cisco Catalyst IR8340 similar or equal.)*
106. Install one (1) ea. Switching and routing equipment. *(Router-cisco cat. no. N540-24Z8Q2C similar or equal.)*
107. Install two (2) Fiber optics, transceiver. *(Cisco cat. no. GLC-TE TRANSCEIVER MODULE similar or equal.)*
108. Install two (2) Fiber optics, transceiver, SFP (Small Form-Favor Pluggable), Short range.
109. Install two (2) Fiber optics, transceiver. SFP (Small Form-Favor Pluggable), Extended range.
110. Install 27 ea Electrical underground ducts and manholes, hand holes, precast concrete, with concrete cover, 2' x 2' x 3' deep, excludes excavation, backfill and cast in place concrete.
111. Provide 12 B.C.Y. Structural excavation for minor structures, bank measure, for spread and mat footings, elevator pits, and small building foundations, common earth, 1/2 C.Y. bucket, machine excavation, hydraulic backhoe (12 B.C.Y.)
112. Install 13.19 M.L.F. Fiber optic cable, fiber optic cable 96 strand Single mode Armored Gel Filled Dry Block Burial.

113. Mobilization or demobilization 1 ea., delivery charge for equipment, hauled on 3-ton capacity towed trailer.
114. Install 131.91 C.L.F. Fiber optics cable enclosure, 2", black, non-metallic, flexible, tube liquid tight
115. Install one (1) (Ea.) Fiber optics, rack housing, 4 rack spaces, 12 panels (144 fibers). *(Infinity S (NE-S) -48V System – ABB Cat. No. NES4824-23-AC5-PS4-DC1E-LVBD similar or equal.)*
116. Install 4 (Ea.) Fiber optics, transceiver (low cost bi-directional). *(Power System Rack – ALPHA Technologies Cat. No. ATL0300163-501 similar or equal.)*
117. Install 1 (Ea.) Switching and routing equipment, network switch, 0x2x16,CAT5, analog KVM
118. Install 1 (Ea.) Switching and routing equipment, network switch
119. Install 1 (Ea.) Switching and routing equipment, network switch, Power Supply for IE Switches, 10.8-60V DC Input to 54VDC/3.15A Output.
120. Install 1 (Ea.) Switching and routing equipment, network switch, Industrial Ethernet switch Fast Ethernet ports and 2 Gigabit Ethernet ports for connecting a variety of devices
121. Install 1 (Ea.) Switching and routing equipment. *(Cisco Cat. No. IE–3400–8T2S–A similar or equal.)*
122. Install 1 (Ea.) IPP Switch – Industrial Switch with Expansion Module
123. Install 1 (Ea.) ES771A to Probe Wireset. *(ABB Cat. No. 848719829 similar or equal.)*
124. Install 1 (Ea.) Auxiliary Input Alarm Cable 15FT. *(ABB Cat. No. CC848865980 similar or equal.)*
125. Install 1 (Ea.) Alarm Cable for Pulsar Plus Controller 15FT. *(ABB Cat. No. CC109157442 similar or equal.)*
126. Install 1 (Ea.) Bullet Breakers. *(ABB Cat. No. 407998 similar or equal.)*
127. Install 4 (Ea.) 12VDC / 250Ah Sealed Cell Batteries. *(Master Battery Cat. No. UP-FTCG250-12 similar or equal.)*

128. Install 1 (Ea.) Battery Breaker Kit 250A, for 23 Battery Tray Kit (Gray) with 2/0 Cable. *(ALPHA Technologies Cat. No. 740-00026-21-001 similar or equal.)*

Main Power Transformer Breaker

(Cost Estimate item row 152 and ground disturbance is described in section 11: Common EHP Review Information (below))

129. Substation equipment, gas circuit breakers, 46 kV (MAIN POWER TRANSFORMER BREAKERS)

MV Trench & Duck Bank

(Cost Estimate items row 153 to 155 and ground disturbance is described in section 11: Common EHP Review Information (below))

130. Provide 28.10 B.C.Y. excavation trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering
131. Construct 28.10 C.Y. Structural concrete, placing, duct bank, direct chute, excludes material
132. Construct 28.10 C.Y. Structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments.

LV Cable Trench

(Cost Estimate item row 156 and ground disturbance is described in section 11: Common EHP Review Information (below))

133. Provide 184 B.C.Y. Excavation, trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering.

Chain link Fence Ground wires (continuation)

(Cost Estimate items row 157 to 159 and ground disturbance is described in section 11: Common EHP Review Information (below))

134. Install four (4) (Ea.) Exothermic weld, 4/0 wire to 1" ground rod.
135. Install 860 (Ea.) Pipe ground clamps, heavy duty, bronze, 2-1/2" to 3" diameter.

136. Install 1290 (Ea.) Split bolt connectors, tapped, 4/0.

Topsoil Removal

(Cost Estimate item row 160 and ground disturbance is described in section 11: Common EHP Review Information (below))

137. Stripping and stockpiling 3854.60 topsoil, sandy loam, ideal conditions, 200 HP dozer.

Chain Link Fence Concrete Foundation (continuation)

(Cost Estimate item row 161 and ground disturbance is described in section 11: Common EHP Review Information (below))

138. Excavate 256.15 B.C.Y., trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering.

Chain Link Fence Concrete Foundation (continuation)

(Cost Estimate item row 162 and ground disturbance is described in section 11: Common EHP Review Information (below))

139. Provide 134 C.Y. of Structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments.

11.0 COMMON EHP REVIEW INFORMATION

The checked items are applicable to the proposed scope of work in this Project followed by a description of the scope extent and location of the selected activity.

1) ☒ **Ground disturbance outside of existing footprint**.

   a) Ground disturbance will occur on the site for the following: fencing, ground grid, access road/driveway, footings for large equipment, medium and low-voltage lines placed

underground, retention and holding ponds, storm sewer, and utility poles. Refer to Tables 4 through 12 for ground disturbance details.

I. Equipment Footings

Table 4 below describes the coordinates and dimensions of the following items: footings for the Throw Over and for breakers (F-1, **Appendix E** - sheet 8), footings for the Metal Clad control room (F-2, **Appendix E** - sheet 8) and capacitor bank (F-2, **Appendix E** - sheet 8), footings for battery containers (F-3, **Appendix E** - sheet 8), concrete base for the generator transformer (F-4, **Appendix E** - sheet 9), and concrete pad for a generator. The table below describes the coordinates and dimensions of Footings, further details see **Appendix E**- Preliminary Aguadilla BESS 30% Engineering Design, sheet 4 and 5.

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Table 4: BESS Excavation Dimensions

Footings	Dimensions in Feet	Dimensions in Meters	Coordinates
Throw Over & Breaker: F-1	27.33 ft x 21.33 ft x 2 ft	8.33 m x 6.50 m x 0.60 m	[redacted]
Control Room and Metal Clad: F-2	65.08 ft x 25.5 ft- x 1ft	19.83 m x 7.77 m x 0.30 m	
Capacitor Bank: F-2	22.9 ft x 12 ft x 1ft	6.97 m x 3.65 m x 0.30 m	
Battery Containers: F-3	(22,119 ft^2 x 2 ft)	2054.92 m^2 x 0.61 m	
Transformer Base: F-4	24 ft x 16 ft-4 in x 2.5 ft	7.3 m x 4.87 m x 0.76 m	
Generator Pad:	5ft x 8ft x .67ft	1.52m x 2.43m x 0.20m	

II. Access Roads/Driveway

The table 5 below describes dimensions of a permanent road to be built that will be used as an access road during construction. For further details on alignment of the road see Appendix E - Preliminary Aguadilla BESS 30% Engineering Design, sheet 8.

Table 5: Excavation Dimensions for the permanent Driveway

Road	Dimensions in Feet	Dimensions in Meters	Coordinate for Start of Access Road
Road	1,535 ft x 20 ft x .67 ft	467.868 m x 6.09 m x 0.20 m	[redacted]

III. Fence, Fence Ground Wire and Grounding Mesh

The table 6 below describes the dimensions of the footing under the fence, the poles to be installed for the fence, the ground wire for the fence, and the grounding mesh. For further information regarding coordinates for the fences see Appendix E, sheets 12 and 13.

The ground wire is a 4/0, bare copper wire that will be installed in a trench dug by hand with pick and shovel, that is 18 inch deep. The ground wire will be connected from every other fence pole to the grounding mesh which is 18 inches deep.

Table 6: Chain Link Fence Foundation Excavation Dimensions

Fence	Dimensions in Feet	Dimensions in Meters
Fence:	1,729 ft x 4 ft x 1 ft	256.99m x 1.21m x .30m
Fence Posts:	5ft x 1.5ft x 1ft x 246 post (installed every 8 ft)	1.52m x 0.46m x 0.30m x 246 post (installed every 2.44m)
Grounding Mesh:	10,300ft x 1.5ft x 1ft	3,139.44m x 0.46m x 0.30m

IV. Catch Basins, Manholes and Storm Sewer System

Table 7 provides ground disturbance information about the catch basins and manhole to be installed – dimension of excavation and the center point coordinates. **Table 8** provides ground disturbance information about the Storm Sewer System. For further details see Appendix E – Aguadilla BESS 30% Preliminary Engineering Design, sheet 6 and 7.

Table 7: Catch Basins Dimensions and Coordinates

Catch Basins	Dimensions in Feet	Dimensions in Meters	Coordinates
CB#1	5ft x 5ft x 5ft	1.52m x 1.52m x 1.62m	[redacted]
CB#2	5ft x 5ft x 5ft	1.52m x 1.52m x 1.55m	
CB#3	5ft x 5ft x 5ft	1.52m x 1.52m x 1.54m	
CB#4	5ft x 5ft x 5ft	1.52m x 1.52m x 1.61m	
CB#5	5ft x 5ft x 5ft	1.52m x 1.52m x 1.63m	
CB#6	5ft x 5ft x 5ft	1.52m x 1.52m x 1.52m	
CB#7	5ft x 5ft x 5ft	1.52m x 1.52m x 1.54m	
CB#8	5ft x 5ft x 5ft	1.52m x 1.52m x 1.54m	
MH#1	6 ft (diameter) x 4ft (depth)	0.6m (diameter) x 1.21m (depth)	
MH#2	6 ft (diameter) x 4ft (depth)	0.6m (diameter) x 1.21m (depth)	

NOTE #1 : The project is not 100% complete and details on the exact location of the manhole will be provided in a forthcoming design update.

Table 8: Storm Sewer System

Sewer Size	Storm Sewer interconnects these Catch Basins	Length (Ft)	Length (meter)	Depth	Width
18"	CB#1-CB#2, CB#2-CB#3, CB#6-CB#7, CB#5-CB#6	182 L.F.	55.47 m	6'	6'
24"	CB#3-CB#4, CB#4-CB#8	161 L.F.	49.07 m	6'	8'
30"	CB#7 to Manhole #2, Manhole #1 to Manhole #2	160 L.F.	48.76 m	6'	8'

IV. Telecom Equipment: Trenches for Medium and Low Voltage Cables and Handholes

Trenches will be dug for conduit that will hold medium voltage & low voltage cables. The table below describes the dimensions of the trench for each type of cable. Table 9 below shows dimensions of the trenches and Table 10 shows the start and end coordinates for the low and medium voltage trenches. For further details on the coordinates of the trenches see Refer to the Appendix I – Aguadilla BESS Medium Voltage & Low Voltage Trenches Aerial Top View and for further details see Appendix E – Aguadilla BESS 30% Preliminary Engineering Design, sheet 52. Refer

to Appendix I – Aguadilla BESS Medium Voltage & Low Voltage Trenches Aerial Top View.

Twenty-seven (27) hand holes will be installed in locations to be determined in a forthcoming design update. The dimensions of the handholes are 2' x 2' x 3' deep.

Table 9: Underground Lines Excavation Dimensions

Line	Dimensions in Feet	Dimensions in Meters
Low Voltage	662.46 ft x 2.50 ft x 3 ft	201.92 m x 0.76 m x 0.91 m
Medium Voltage	59.09 ft x 3.21 ft x 4 ft	18.01 m x 0.98 m x 1.22 m
Private Carrier	395 ft x 2.5 ft x 3 ft	120.40 m x 0.76 m x 0.91 m

Table 10: Underground lines Start and End coordinates

Descriptions	Start Coordinates		End Coordinates	
	Latitude	Longitude	Latitude	Longitude
Medium Voltage	18.457175	-67.066416	[redacted]	
Low Voltage	18.457144	-67.065989		

V. Electric Utility Poles

Excavation for six (6) utility pole replacements and for new installations: as part of construction, excavation will be necessary for the replacement of existing utility poles and installation of new utility poles. Refer to **Table 11** for the poles dimensions and refer to **Table 2**, section 7.2, for the coordinates of the pole excavations. For further details on the poles excavations see **Appendix E** – Aguadilla BESS 30% Preliminary Engineering Design, sheets 44 and 48. Locations of utility poles to be installed are included in Section 7 of this DSOW, above.

Table 11: Electrical Utility Poles Dimensions

Pole	Dimensions in Feet	Dimensions in Meters
Electrical Utility Poles	4 ft x 4 ft x 10 ft x 6 poles	1.21 m x 1.21 m x 3.04 m x 6 poles
Telecom Tower (Pole)	6 ft x 6 ft x 14 ft x 1 pole	1.82 m x 1.82 m x 4.26 m x 1 pole

VI. Topsoil Removal

Removing topsoil for the entire site area is necessary for the project development. Refer to **Table 12** for the topsoil removal dimensions and **Appendix E** – Aguadilla BESS 30% Preliminary Engineering Design, sheet 4.

Table 12: Topsoil Removal Dimensions

Item	Dimensions in feet	Dimensions in meters
Topsoil	426 ft x 414 ft x 0.6 ft	129.9m x 126.2m x 0.18m

b. Machines Used to Perform Ground Disturbance Work

The equipment to be used in ground disturbing work includes skid steer, excavator, hydrovacs, dump trucks, man lifts, 120-ton motor crane, boom trucks 45-ton crane, Zoom Boom, air compressor, truck digger, water truck, pump truck, concrete vibrator, oil tanker, filtering machine, flatbed platform, and a Dozer D8.

2) ☒ **Soil testing or boring to be performed as part of pre-construction activities**.

The proposed project requires soil borings for the project design and for coordination with Departamento de Recursos Naturales y Ambientales (DRNA) per the Plan y Reglamento del Area de Planificacion Especial del Carso (PRAPEC) for building a facility in the karst region. The soil borings to be performed include:

- Seven (7) SPT borings will be performed to a maximum depth of forty (40) feet.
- The test holes will be drilled by the Power Auger Method.
- Soil samples shall be taken at every change of the soil profile or at vertical intervals not exceeding five (5) vertical feet utilizing a 1.375" I.D.
- Split Spoon Sampler according to ASTM D1586-99 and D1452-80.

3) ☐ **Relocation of utilities**. If checked, include a description of the relocation including the type of utility, relocation coordinates, and the extent and depth of associated ground disturbance.

4) ☐ **Vegetative Removal**.

5) ☐ **Demolition**. If checked, include a description of what will be removed and the extent and depth of any ground disturbing activities. Additionally, include a description of (1) demolition debris type (construction debris, white goods, hazardous materials, etc.); (2) GPS location of temporary debris storage sites; (3) final debris disposal location; and (4) final debris disposal method.

6) ☒ **Staging areas, landing area for air transport, and access roads**.

a) **Staging Area:** LUMA's General Warehouse will be used for staging. - Refer to Table 1 for details on the location and coordinates. Refer to Appendix G – Staging Area - LUMA General Warehouse. An on-site staging area will be located within the perimeter of the fence line. The exact location will be provided in a forthcoming design update.

b) **Access Road:** A new and permanent road will be constructed. The road will be 85 meters (278.4 ft) long and 6 meters (20 ft) wide. Topsoil soil is to be removed to depth of 1 foot. Refer to Appendix E: Aguadilla BESS 30% Engineering Design, for the access road drawings (Sheet 5), and Appendix F: Aguadilla BESS Access Road aerial photo map.

7) ☒ **Fill material**. Fill, gravel, and sand materials will be obtained from a preferred vendor as referenced in the Approved Supplier List Directory PR (see Appendix B).

a) For leveling the land there would be a "cut" of 2946.48 cubic yards and a "fill" of 21,126.00 square yards and 6 inches deep.

b) Topsoil and spoil material will be temporarily located at the site for grading. Any backfill material needed will be A-2-4.

c) The spoil material that is not used as fill will be disposed at an authorized facility.

d) The debris will be separated and finally disposed of at the Moca Municipal landfill - refer to **Table 13** for details.

Table 13: Landfill Information

Landfill Information			
Descriptions	Address	Coordinates	
		Latitude	Longitude
Moca Municipal Landfill	Rte 110, Moca, PR 00676	[redacted]	

8) ☐ **Work in water including coffer dams, dredging, placement of equipment in water, or other work in wetlands**. If checked, provide a description of the activities to be performed in water or wetlands.

The following items are generally intended for buildings:

9) ☐ **Facility is over 45 years old**. If checked, provide a thorough description of materials to be used and method of repair, including cleaning methods. If substitute materials will be used in the restoration, specify whether they match the original color, texture, and design of the damaged facility.

10) ☐ **Known renovations to the facility**. If checked, provide dates of any previous major renovations to the interior or exterior of the facility.

11) ☒ **Photos of all sides of the facility are provided**. See Appendix D: Aguadilla Facility Pictures.

12.0 PROJECT COST ESTIMATE (PCE)

The estimated costs (compliant with Class 3 Accuracy +/-30%) to complete the project are summarized in the table below. The cost estimate was developed utilizing preliminary Architectural and Engineering ("A&E") design information. Refer to Table 14 for the Aguadilla BESS LUMA Project Cost Estimate Summary. For a more detailed cost estimate refer to Appendix C – 25 MW BESS Installation and Integration – Aguadilla Luma Project Cost Estimate.

Table 14: Aguadilla BESS Luma Project Cost Estimate Summary

COST ESTIMATE			
Cost Element	**428**	**406**	**PROJECT TOTAL**
PLANNING	**$ -**	**$ 1,167,288.13**	**$ 1,167,288.13**
Permitting and Assessments	$ -	$ 15,547.63	$ 15,547.63
Environmental Documentation & Management	$ -	$ 554,160.00	$ 554,160.00
Engineering Services & Design	$ -	$ 597,580.50	$ 597,580.50
MANAGEMENT	**$ -**	**$ 2,173,342.34**	**$ 2,173,342.34**
Project Management	$ -	$ 663,953.87	$ 663,953.87
Construction Management	$ -	$ 699,364.75	$ 699,364.75
Contracting, Procurement & Contract Administration	$ -	$ 367,387.81	$ 367,387.81
Projects Controls (Scheduling, Estimating, Support, Cost Control, Risk, Document Control & Reporting)	$ -	$ 442,635.91	$ 442,635.91
AGUADILLA-25 MW BESS INSTALLATION AND INT	**$ -**	**$ 46,416,929.39**	**$ 46,416,929.39**
AGUADILLA-25 MW BESS INSTALLATION AND INTEGRATION 38 KV 750502, material, labor and equipment	$ -	$ 38,869,094.18	$ 38,869,094.18
Start Up/Commissioning	$ -	$ 583,036.41	$ 583,036.41
Construction Trespass	$ -	$ 388,690.94	$ 388,690.94
Transportation Expenses	$ -	$ 69,964.36	$ 69,964.36
Security (Field 24 hr)	$ -	$ 34,982.18	$ 34,982.18
Insurance	$ -	$ 785,155.70	$ 785,155.70
Contingency	$ -	$ 4,358,097.87	$ 4,358,097.87
Escalation	$ -	$ 1,327,907.75	$ 1,327,907.75
GENERAL CONDITIONS	**$ -**	**$ 2,962,960.49**	**$ 2,962,960.49**
Sales Tax	$ -	$ 1,019,505.79	$ 1,019,505.79
Municipal Construction Tax	$ -	$ 1,943,454.70	$ 1,943,454.70
COST TOTALS	**$ -**	**$ 52,720,520.35**	**$ 52,720,520.35**
DEDUCTIONS	**SURANCE PROCEEDS RECEIVED**		**$ -**
	TION TO FAASt IF APPLICABLE?		**$ -**
FAASt ALLOCATIONS	FAAST PROJECT #750502 - 428		$ -
	FAAST PROJECT #750502 - 406 HM		$ 52,720,520.35
	AAST PROJECT #750502 TOTAL:		**$ 52,720,520.35**
	FAASt A&E # 335168 - 428		$ -
	FAASt A&E # 335168 - 406 HM		$ 3,340,630.47
	FAASt A&E # 335168 TOTAL		**$ 3,340,630.47**
	FAASt E&M #673691 - 428		$ -
	FAASt E&M #673691 - 406 HM		$ 28,261,718.24
	FAASt E&M #673691 TOTAL		**$ 28,261,718.24**

Project Cost Estimate Notes:

1. 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.

2. Equipment and material costs included in this project will be reduced from this project and obligated under FAASt Project #673691, Equipment and Materials, as shown in the table above. Only the base cost of equipment and/or material will be reduced from this project (not labor). All costs associated with Planning, Management, General Conditions, and Contingencies will remain in this project.

13.0 ATTACHMENTS/APPENDICES

The following attachments and appendices are provided with this DSOW:

Item	Document Description or Filename
A	750502 –DR–4339PR– Appendix A – First Responders - Critical Facilities Aguadilla
B	750502 –DR–4339PR– Appendix B – Recommended Supplier List Directory PR
C	750502 –DR–4339PR– Appendix C – 25 MW BESS Installation and Integration – Aguadilla Luma Project Cost Estimate
D	750502 –DR–4339PR– Appendix D – Aguadilla Facility Pictures
E	750502 –DR–4339PR– Appendix E– Aguadilla BESS 30% Engineering Design
F	750502 –DR–4339PR– Appendix F – Aguadilla BESS Access Road aerial photo map
G	750502 –DR–4339PR– Appendix G – Staging Area - LUMA General Warehouse
H	750502 –DR–4339PR– Appendix H – Appraisal Report Aguadilla

I	750502 –DR–4339PR– Appendix J – Aguadilla BESS Medium Voltage & Low Voltage Trenches Aerial Top View

--END OF DOCUMENT--

Exhibit 3

Redacted Version (Unredacted Version Submitted under Seal of Confidentiality)

FEMA Project 750503 – Detailed Scope of Work

Project Name: 25 MW BESS Installation and Integration - San Juan

Revision: 0

1.0 LUMA APPROVALS

The signatures below are LUMA's formal approval of this Detailed Scope of Work prior to submission to FEMA.

Revision No.:		
Project Manager	Signature	Date
[redacted]		06/06/2025
		Date
		06/06/2025

2.0 DOCUMENT REVISION HISTORY

This table contains the history of the revisions made to this FEMA Project Scope of Work.

Rev.	Effective Date	Description of Change
0	Click to enter a date.	Initial release.

3.0 TABLE OF CONTENTS

4.0 PROJECT OVERVIEW

FEMA Project Number:	750503
Project Name:	25 MW BESS Installation and Integration – San Juan
Facility Name:	25 MW BESS Installation and Integration – San Juan
Project Type:	Standard Project: Restores the facility/facilities to pre-disaster design and function to locally-adopted codes/standards and/or FEMA-approved industry standards.
Region:	San Juan
Asset Category:	Grid Modernization

5.0 INTRODUCTION

Pursuant to FEMA's Post-Fixed Cost Estimate Obligation SOP (the "SOP") for FAASt projects, FAASt subrecipients must provide to FEMA recovery project scopes of work ("SOW") for the proposed construction work to be performed. The SOW may include § 406 hazard mitigation proposals ("HMPs"). The SOW defines the activities that will be performed using Public Assistance ("PA") funding.

According to the SOP, FEMA "anticipates that [SOW] submissions might include preliminary designs, including drawings and cost estimates. FEMA also recognizes that, generally, architects and/or engineers do not include or delineate the information needed to enable FEMA to complete programmatic reviews. Therefore, in those cases, subrecipients must ensure to submit all the information described [in the SOP] and not limit the submission to a drawing set. Refer to Part C - II. Recipient/Subrecipient Checklist for Submissions as a guide to review completeness." SOP at 4.

This document contains the Detailed SOW for FEMA PA Project 750503 - 25 MW BESS Installation and Integration – San Juan under DR-4339-PR Public Assistance. The document provides a detailed description of the project, the scope of PA construction activities to be completed, common EHP review information, proposed hazard mitigation measures, and project cost estimates. LUMA is seeking approval from COR3 and FEMA for PA funding for the scope described in this document.

LUMA submits this Detailed SOW pursuant to the Transmission and Distribution Operations and Maintenance Agreement between the Puerto Rico Electric Power Authority ("PREPA"), the Puerto Rico Public-Private Partnerships Authority ("P3A"), and LUMA, and in accordance with the Consent to Federal Funding Letter issued by PREPA and P3A (available in Applicant Event Profiles in Grants Portal, uploaded on 5/17/2024), which collectively provides the necessary consent for LUMA, as agent of PREPA, to undertake work in connection with any Federal Funding requests related to the Transmission & Distribution ("T&D") System submitted to FEMA. References to "Subrecipient" herein refer to PREPA pursuant to this agreement and consent for LUMA to act as its agent with respect to federal funds.

6.0 PROJECT DESCRIPTION

Hurricanes Maria were significant reminders that increased grid resiliency is needed to serve Puerto Rico. The San Juan region and other areas of Puerto Rico experienced significant power outages due to vulnerabilities in the T&D system. To address these vulnerabilities, LUMA proposes the installation of a 25 MW/100 MWh Battery Energy Storage System ("BESS") as a Section 406 Hazard Mitigation measure to prevent damage to San Juan similar to what happened during Hurricane Maria in a future similar storm.

7.0 FACILITIES

7.1 FACILITIES LIST – BUILDINGS AND SUBSTATIONS

The following list includes the name, year of construction, and GPS coordinates of each building or substation included in this project:

- None

7.2 FACILITIES LIST – OTHER FACILITIES

The following list includes the name and GPS coordinates identifying the areas of work for other types of facilities. For any access roads or other line work, the coordinates listed below are used as the beginning and end points.

LUMA evaluated five (5) potential sites to install a 25 MW/100 MWh BESS. The requirements and evaluation criteria for selecting the site were the following:

a) Site Size (4 cuerdas)(3.9 acres)
b) Availability for purchase
c) Proximity to the 38 kV line
d) Environmental considerations (flooding, land classification, zoning, etc.)

Four sites were disqualified because they did not meet all the requirements and are not viable options.

The selected site for the 25 MW BESS is located at Bo. Sabana Llana, Ave. 65 Inf, San Juan, Puerto Rico. This is the site that meets the selection criteria described above. The area where the project will be developed is 3.66 cuerdas (3.55 acres) ([redacted]). Land acquisition is also considered a part of the scope of work and is included in the cost estimate. The Point of Interconnection ("POI") is Transmission Line 1000 in San Juan ([redacted]).

A land appraisal was completed and certified by LUMA's internal appraiser. Refer to **Appendix H** for the San Juan Appraisal Report.

- **Access Road:** A new and permanent circular road will be built at Calle 49, Bo. Sabana Llana, San Juan, 00924. It has two ingress/egress points at coordinates [redacted], and [redacted]. Refer to **Appendix E –** San Juan BESS 30% Engineering Design for the access road drawings (sheets 4 and 11), and **Appendix F** – San Juan Access Road aerial photo map. Section 11, below, includes the dimensions and ground disturbance information related to the access road.
- **Staging Area:** LUMA's General Warehouse will be used for staging. Refer to **Table 1** for details on the locations and coordinates. For further information refer to **Appendix G** - Staging Area - LUMA General Warehouse. An on-site staging area will be located within the perimeter of the fence line. The exact location will be provided in a forthcoming design update.

Table 1 -Staging Area			
Descriptions	**Address**	**Coordinates**	
		Latitude	**Longitude**
LUMA's General Warehouse	PR-165 Palo Seco, Toa Baja 00949	[redacted]	

- **Work Area:** The BESS is a new facility to be built on a property of 3.66 cuerdas (3.55 acres). The land is previously disturbed terrain (as identified in a site visit by the A&E) (at coordinates [redacted]). Section 11, below, includes associated ground disturbance information.

Electrical Utility Poles: Six (6) new 70 ft S8-steel poles will be installed. Refer to **Table 2** for the locations of the new poles. Poles will be built to LUMA's standard to withstand 160+ mph of wind rating. Section 11, below, includes associated ground disturbance information.

Table 2 - Utility Pole Locations				
Descriptions	**Line Segment**	**Coordinates**		**Voltage**
		Latitude	**Longitude**	
New Pole 1	1000	[redacted]		38 kV
New Pole 2	1000			38 kV
New Pole 3	N/A			38 kV
New Pole 4	N/A			38 kV
New Pole 5	N/A			38 kV
New Pole 6	N/A			38 kV

8.0 PROJECT AREA MAP WITH BOUNDARIES OF CONSTRUCTION

Please see the area map identified as **Figure 1: San Juan BESS Site Location ([redacted])** & **Figure 2: San Juan BESS Project Site Area.**

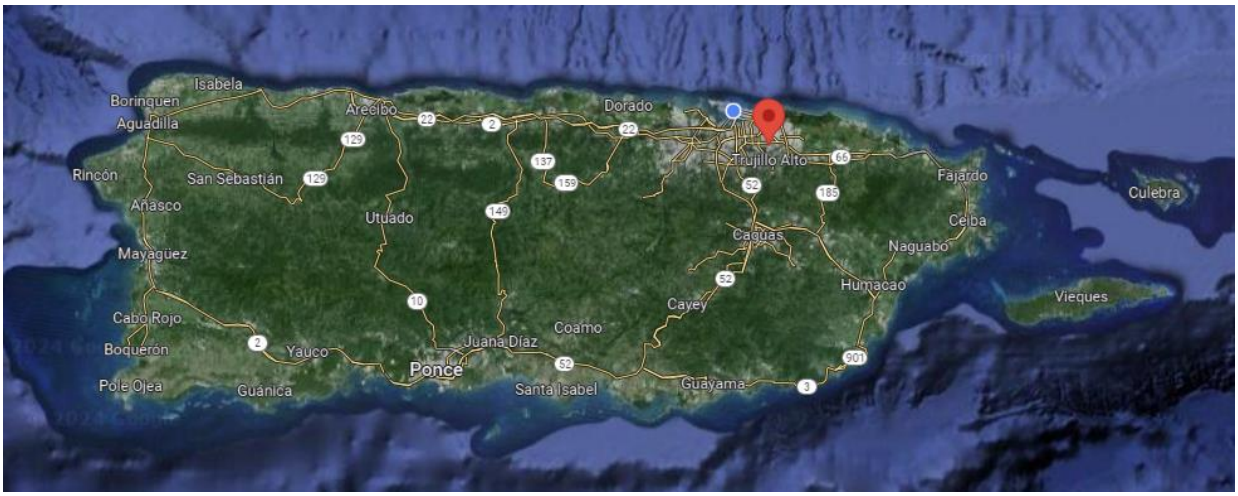

Figure 1: San Juan BESS Site Location ([redacted])

Figure 2: San Juan BESS Project Site Area

9.0 § 428 SCOPE OF WORK

The proposed type of work for this project:

☒ Standard Project: Restores the facility/facilities to pre-disaster design and function to locally-adopted codes/standards and/or FEMA-approved industry standards.

☐ Improved Project: Restores the pre-disaster function of the facilities and incorporates improvements or changes to its pre-disaster design not required by codes or standards.

☐ Subrecipient's request letter included, see **Appendix** ___.

☐ Recipient's approval letter included, see **Appendix** ___.

☐ Alternate Project: Does not restore the pre-disaster function of the damage facility. The Subrecipient, through the Recipients, must obtain approval from FEMA.

☐ Subrecipient's request letter included, see **Appendix** ___.

☐ Recipient's approval letter included, see **Appendix** ___.

The entire project is proposed as a § 406 hazard mitigation solution in relation to the Berwind TC rebuilding project (see **Table 3** for details), which is the project that will cover the damage caused by Hurricanes Maria and Irma under Section 428 Public Assistance. The proposed scope of work strengthens the resilience of the Berwind Transmission Center.

Berwind TC is currently being rebuilt using section Section 428 Public Assistance funds under FAASt Project 550162. The work proposed in this DSOW will serve as a mitigation measure for the Berwind TC reconstruction by providing additional grid stability and redundancy, ensuring that the entire network benefits from increased resiliency against future similar disasters. This interconnection is important to enhance the stability and reliability of the power grid.

Table 3: Section 428 Related Rebuild Project

428 Project	Department	FAASt #
Berwind TC rebuilding project	Capital Programs – Substation	550162

9.1 DESCRIPTION OF PROPOSED WORK TO BE PERFORMED

Please refer to section 10.0 - §406 Hazard Mitigation Proposal.

9.2 CODES & STANDARDS

Per FEMA's SOP, the locally adopted codes/standards and/or FEMA-approved industry standards used for this project are provided below.

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

- Consensus-based codes, per FEMA's Public Assistance Alternative Procedures (Section 428) Guide for Permanent Work FEMA-4339-DR-PR (February 2020).
- Industry standards per FEMA Recovery Policy FP-104-009-5, Version 2, Implementing Section 20601 of the 2018 Bipartisan Budget Act through the Public Assistance Program.
- FEMA Recovery Interim Policy FP-104-009-11 Version 2.1, Consensus-Based Codes, Specifications, and Standards for Public Assistance.
- LUMA's latest Design Criteria Document ("DCD") which aggregates the design considerations of most of the consensus-based codes, specifications, and standards listed in FEMA Recovery Interim Policy 104-009-11 Version 2.1 (December 20, 2019).
- LUMA 4751.001 Transmission Design Criteria, Version 4, October 6, 2023 and 4751.046 38 KV 70S8 Single Circuit Dead-end Vertical Assy. Angle 60°-90°, Version 1.0, November 17, 2023.

- LUMA Standard for Distribution LUMA Overhead Electrical Distribution System Manual Version 5.0, April 4, 2024 and 4300.010 Distribution Feeder Rebuild Projects Additional Design Guidelines, Version 4, December 20, 2023.
- LUMA Standard 4350.205 for Backfill Material A-2-4, Version 1, March 3, 2022.

10.0 § 406 HAZARD MITIGATION PROPOSAL

FEMA PAPPG v.3.1 states that: "Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects." The Subrecipient proposes to lessen or eliminate the long-term risk to people and property from future natural hazards and their effects by performing the work described in this project in accordance with Subrecipient's LUMA Energy Design Criteria, which exceeds required codes and standards. Doing so will directly reduce the potential of future, similar negative consequences of damage to the T&D system as occurred after Hurricane Maria by improving the physical or functional resiliency, or both, of the system.

Below is a description of the proposed mitigation opportunity and scope of work.

10.1 § 406 HAZARD MITIGATION OPPORTUNITY

The proposed 406 Hazard Mitigation scope of work involves the implementation of a Battery Energy Storage System and all necessary equipment for its operation.

The hazard to be mitigated by the installation of the BESS is the electrical transmission grid's vulnerability to power outages and instability caused by hurricane events. Specifically, this mitigation effort addresses risks of transmission line failures, frequency fluctuations, and system overloads during peak load conditions, which were highlighted by the damage caused by Hurricane Maria. By improving grid resiliency, the BESS helps ensure a more reliable power supply and reduces the likelihood of similar disruption in the future.

Specifically, the BESS can deliver a range of grid support services to maintain temporary service continuity and facilitate system restoration during and immediately after a disaster incident similar to Maria. The BESS will perform either grid-following or grid-forming support. The grid-forming function will island a specific area of the T&D system, which includes the critical facilities identified below, by keeping substations within that area energized while the utility works to restore power to the broader system. The BESS can also provide immediate grid following support, at the sub-transmission level, that can remedy a range of issues that occur during restoration of power. The grid-following actions include support of black-start operations and re-energizing isolated substations. The BESS can also stabilize voltage during reconnection (restoration) events by providing frequency response and regulation, voltage support, and load management. The interconnection of the BESS to the 38-kV line TL 1000 will provide support to both the transmission and distribution systems, creating a layer of redundancy that supports FEMA's interest in mitigating system-wide failures and reducing the downtime during natural disaster restoration efforts.

Critical Facilities

The BESS will significantly reduce future risk to critical facilities and services by enhancing the stability and redundancy of the electrical grid. By providing voltage support and fast response capabilities, the BESS helps prevent power disruptions. It acts as a buffer, ensuring that critical facilities can maintain operations after emergencies, such as power outages or future hurricanes. Refer to **Appendix A** - First Responders - Critical Facilities San Juan.

Critical facilities include:

- Centro Médico de Rio Piedras (Hospital)
- Auxilio Mutuo (Hospital)
- San Juan Medical Services (Hospital)
- Alejandro Tapia y Rivera School (Shelter)

- Abraham Lincoln School (Shelter)
- Ernesto Ramos Antonini School (Shelter)
- San Juan Police Station
- San Juan Fire Station

In the event of a transmission line failure or fault, the power supply can be quickly restored, minimizing downtime for essential services. This proactive measure reduces the impact and ensures that vital infrastructure remains operational when it's needed the most.

The BESS package shall be equipped with the following components:

- A DC Block, that is comprised of the Battery Energy Storage System ("BESS") devices. All BESS systems will be modular with self-contained controls and monitoring systems, such as protection systems (DC and AC levels), heating/cooling systems (thermal management), fire detection, fire protection, gas monitoring and protection systems, and communication systems.
- An AC Block that is comprised of the Power (AC) Block System, PCS ("Power Conversion System"), MV step-up and auxiliary transformers, AC Electrical System, Provisions for aux power for black start, Communication system (protocol Modbus TCP IP), Control system, Auxiliary transformer, distribution panels, switchgear & lv switchboard, Spare parts, ATS, Inverters, AC collector, and a voltage arrester.

The primary use case for the BESS system sizing calculation will be Fast Frequency Regulation ("FFR"). Frequency regulation is based on an accurate Power Quality Meter ("PQM") measurement at a Point of Common Coupling ("PCC") location certified for accurate measurements. The high-accuracy grid frequency measurements from the PQM shall be utilized to drive the FFR application.

Hazard mitigation benefits include:

a) Provides redundancy for Berwind TC substation, which is fed by the Transmission Line 1000, mitigating the risk of prolonged outages caused by damaged infrastructure.
b) Ensures critical loads remain powered, preventing complete grid collapse during disasters.
c) Stores energy for rapid deployment during outages, providing immediate support to stabilize the grid.
d) Supports black-start operations, enabling faster restoration of the transmission & distribution system.
e) Smooths voltage fluctuations, reducing stress on equipment and preventing damage.
f) Ensures continuous operation of essential services during disasters, protecting public health, safety, and welfare.
g) Decreases the time and resources needed for post-disaster recovery by providing immediate support for grid stabilization.
h) Prevents prolonged outages, reducing disruptions to businesses, hospitals, schools, shelters and emergency services.

The San Juan BESS project is not merely an infrastructure upgrade but a hazard mitigation measure that directly addresses the vulnerabilities exposed by recent hurricanes and blackouts, such as those experienced during Hurricane María. By providing redundancy, stabilizing grid operations, and enabling faster recovery, the BESS ensures the transmission system can withstand and recover from future disasters. This section 406 hazard mitigation proposal reduces the risks posed by power outages and provides immediate response capabilities during hurricane disasters to minimize the risk to public health and safety. The San Juan BESS project's functional redundancy of Berwind TC aligns with FEMA 406 objectives by ensuring the continuity of essential services and grid stabilization in the face of future hurricane wind events.

Equipment included in the Battery Energy Storage System

The equipment listed below are part of the Battery Energy Storage System and are necessary for the proper operation of the BESS. Therefore, it is included in the request for section 406 funding. The main focus of the system is resiliency and redundancy, along with its ability to stabilize the grid and provide critical backup power, making it a valuable hazard mitigation initiative aligned with FEMA's mission.

- Generator

The generator serves as a critical hazard mitigation measure for the BESS by ensuring continuous operation and control during power outages. In the event of an emergency blackout, the generator provides immediate backup power, allowing the BESS's communication and control systems to function without interruption. This uninterrupted operation is vital for maintaining grid stability and facilitating rapid response during events and helping ensure that critical facilities continue to receive power.

- Fiber Optic & Telecom Tower

The BESS will have a fiber optic cable to the nearest substation, as well as a telecommunications tower, as a communications redundancy measure so that, in the event that one of the communication routes fail, the other communication route will be open, and the BESS will be able to be controlled. Without this mitigation measure, the BESS could be out of communication in the event of an emergency where, for example, the fiber optic cable line is out of service.

- Metal Clad Switch Gear

The Walk-In Metal Clad Switchgear has the function of housing and protecting medium voltage switchgear, as well as grouping the feeders from the batteries. Since it is a 'Walk-In' switchgear, it has the possibility to enclose the communication center of the substation and protect it against adverse environmental conditions.

- Main Power Transformer

The Main Power Transformer is necessary to increase or decrease the voltage from medium voltage to high voltage, and vice versa, which is required to ensure optimal function of the BESS during a disaster.

- 38 kV Infrastructure

The 38kV Transmission Line infrastructure is necessary to connect the BESS to the 38KV line, which will be our Point of Interconnection ("POI").

- Erosion and Sediment Controls

The erosion and sediment controls are hazard mitigation measures because they prevent infrastructure damage, maintain structural integrity, and reduce future disaster risks, which makes repairs more resilient and cost effective.

- Grading and Gravel

The grading and gravel are needed to improve site drainage, stabilize surfaces and prevent erosion and sediment buildup. This work is a hazard mitigation measure because it protects the BESS facility from future water-related damage.

10.2 § 406 SCOPE OF WORK

The detailed Scope of Work consists of:

- Installation of a Battery Energy Storage System ("BESS") with a target capacity of 25 MW/100 MWh. It will be connected to the 38kV Transmission Line 1000.

  Below is the System Diagram, which depicts the Interconnection to the 38kV Transmission Line. See **Appendix E** for the San Juan BESS 30% Preliminary Engineering Design.

Figure 3: System Diagram

The scope of work, including items, quantities, and dimensions, is considered in the cost estimate. See **Appendix E** – San Juan BESS 30% Preliminary Engineering Design, and **Appendix C** – Project Cost Estimate. Please note that ground disturbance and other EHP related information is included in Section 11, below. The following is the scope of work :

Generator Pad

(Cost Estimate item rows 23 to 28 and ground disturbance is described in section 11: Common EHP Review Information (below))

1. Install 52 SFCA[1] C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.

[1] Square Feet Contact Area

2. Provide 5 S.Y. Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 6" deep.
3. Construct 1 C.Y. of structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material.
4. Provide 1 C.Y. of structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments. (5' x 8' x 8")
5. Install 0.20 Tons of Reinforcing steel, in place, footings, #4 to #7, A615, grade 60, incl labor for accessories, excl material for accessories.
6. Provide 20 C.L.F. Beam bolsters, for reinforcing steel, lower (BB), plain steel, 2" high, includes material only.

Generator

(Cost Estimate item row 29)

7. Provide and install one (1) Generator set, diesel, 3 phase 4 wire, 277/480 V, 100 kW, incl battery, charger, muffler, & day tank, excl conduit, wiring, & concrete.

Erosion and Sedimentation Control

(Cost Estimate item row 30 and ground disturbance is described in section 11: Common EHP Review Information (below))

8. Install and remove 2171 L.F. of synthetic erosion control, silt fence, install and remove, 3' high.

Driveway (Road)

(Cost Estimate item rows 31 to 33 and ground disturbance is described in section 11: Common EHP Review Information (below))

9. Provide 1054.63C.Y. of structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments. (2125' x 20' x 8")
10. Construct 1054.63 C.Y. structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material.
11. Construct 4722 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.

Grading and Gravel

(Cost Estimate item rows 34 to 39 and ground disturbance is described in section 11: Common EHP Review Information (below))

12. Compaction of 873.58 B.C.Y., around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate.
13. Provide 874 S.Y. of base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 6" deep.
14. Selective demolition, dump charges, typical urban city, rubbish only, includes tipping fees only. (4719.93 Tons of undercut)
15. Provide Cycle hauling (wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 25 min load/wait/unload, 12 C.Y. truck, cycle 40 miles, 35 MPH, excludes loading equipment. (4719.93 L.C.Y. of undercut)
16. Provide rough grading sites, open, 75,100-100,000 S.F., grader.
17. Stripping and stockpiling 4719.93 C.Y. of topsoil, sandy loam, ideal conditions, 200 HP dozer. (undercut)

Transformer Spill Prevention, Control, and Countermeasure (SPCC) Dike and Base

(Cost Estimate item rows 40 to 42 and ground disturbance is described in section 11: Common EHP Review Information (below))

18. Provide 62.26 C.Y. of structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments (104.6' x 3.5' x 8"), wall (134' x 3.5' x 8") and Base (24' x 16' x 2.5').
19. Install 384 S.F. composition flooring, epoxy, heavy duty epoxy topping, 1/4" thick, 500 to 1,000 S.F..
20. Construct 457 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.

Main Power Transformer

(Cost Estimate item row 43)

21. Install one (1) Main conversion equipment, power transformers, 46 kV.

Chain Link Fence Ground Wires

(Cost Estimate item rows 44 to 46 and ground disturbance is described in section 11: Common EHP Review Information (below))

22. Install 53.22 C.L.F. Ground wire, copper wire, bare stranded, 4/0.
23. Provide 2 (Ea.) Exothermic weld, exothermic welding reusable mold, cable to cable, termination, Tee.
24. Excavate 75 B.C.Y., trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering.

Chain Link Fence

(Cost Estimate item rows 47 to 54 and ground disturbance is described in section 11: Common EHP Review Information (below))

25. Construct 12,579 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.
26. Provide 310.6 C.Y. structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments. (2096' x 4' x 1')

27. Construct 310.6 C.Y. structural concrete, placing, continuous footing, deep, pumped, includes leveling (strike off) & consolidation, exclude material.
28. Install 2096.6 L.F. of fence, chain link industrial, galvanized steel, 6 ga. wire, 2-1/2" posts @ 10' OC, 8' high, includes excavation, in concrete, excludes barbed wire.
29. Install two (2) fence double swing gates, chain link industrial, 10' high, 20' opening, includes excavation, posts & hardware in concrete.
30. Install 266 (Ea.) Fence, chain link industrial, galvanized steel, add for corner post, 6 ga. wire, 2-1/2" posts @ 10' OC, 8' high, 3" diameter, includes excavation, in concrete.
31. Construct 4,192 S.F. concrete finishing, walls, include breaking ties and patching voids.
32. Install 6.29 M.L.F. wire fencing & gates, wire fencing general, barbed wire, galvanized, domestic steel, hi-tensile, 15-1/2 ga.

Battery Charger and Batteries

(Cost Estimate item rows 55 to 58)

33. Install one (1) Conversion equipment, battery chargers 480 Vac / 130 vdc
34. Install 5 K.A.H.[2] Control batteries.
35. Provide 240 S.F. composition flooring, mastic, hot laid, acid-proof, 2 coat, 1-1/2" thick, maximum.

Capacitor Bank and base

(Cost Estimate item row 59 to 61 and ground disturbance is described in section 11: Common EHP Review Information (below))

36. Install a 5 MVAR[3] Station capacitors, synchronous.
37. Provide 10.19 C.Y. of structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments. (22.92' x 12' x 1')

[2] K.A.H. (kiloampere-hour)

[3] Megavolt-ampere

38. Construct 10.19 C.Y. of structural concrete, placing, continuous footing, deep, pumped, includes leveling (strike off) & consolidation, excludes material.
39. Construct 70 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.

38 kV Interconnection Line

(Cost Estimate item rows 62 to 68 and ground disturbance is described in section 11: Common EHP Review Information (below))

40. Install 0.04 W. Mile overhead line conductors & devices, conductors, primary circuits, per wire, 1,000 to 1,600 kcmil.
41. Install 0.04 W. Mile overhead line conductors & devices, conductors, primary circuits, material handling & spotting.
42. Install 30 (Ea.) overhead line conductors & devices, conductors, primary circuits, joint and dead ends.
43. Install 18 (Ea.) overhead line conductors & devices, conductors, primary circuits, make and install jumpers, per structural.
44. Excavate 108 C.Y. for foundations for line poles, excavation, in rock. (Electrical utility pole)
45. Construct 108 C.Y. concrete foundations for line poles. (Electrical utility pole)
46. Install six (6) Electrical utility poles, steel galvanized, 12 sided, tapered shaft, 70', for distribution.

Throw over Breaker

(Cost Estimate item row 69 and ground disturbance is described in section 11: Common EHP Review Information (below))

47. Install one (1) substation equipment, gas circuit breakers.

Throw over equipment and base

(Cost Estimate item rows 70 to 78 and ground disturbance is described in section 11: Common EHP Review Information (below))

48. Provide 53.68 C.Y. of structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments (27.33' x 21.33, 2'), (22.67' x 6.25' x 2').
49. Construct 53.68 C.Y. of structural concrete, placing, continuous footing, deep, pumped, includes leveling (strike off) & consolidation, excludes material.
50. Construct 311 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.
51. Install three (3) station capacitors, potential transformers.
52. Install three (3) station capacitors, current transformers.
53. Install three (3) lightning arresters.
54. Install four (4) disconnecting switches, gang manual operation.
55. Install two (2) disconnecting switches, gang motor operation.
56. Install two (2) disconnecting switches, circuit switches.

Main Power Transformer Breaker and Concrete Base

(Cost Estimate item rows 79 to 82 and ground disturbance is described in section 11: Common EHP Review Information (below))

57. Install one (1) substation equipment, gas circuit breakers.
58. Provide 10.49 C.Y. structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments.
59. Provide 10.49 C.Y. structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material.
60. Construct 116 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.

Throw Over Structure

(Cost Estimate item row 83 and 84 and ground disturbance is described in section 11: Common EHP Review Information (below))

61. Install 5.27 Tons of reinforcing steel, in place, footings, #4 to #7, A615, grade 60, incl labor for accessories, excl material for accessories.
62. Install one (1) Throw Over Structure.

Walk In metal clad, Control Room and base

(Cost Estimate item rows 85 to 88 and ground disturbance is described in section 11: Common EHP Review Information (below))

63. Provide 71.78 C.Y. of structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments. (28.5' x 68' x 1")
64. Construct 71.78 C.Y. structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material.
65. Construct 193.16 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.
66. Install one (1) Walk In Metal-clad building.

Driveway (Road)

(Cost Estimate item row 89 and ground disturbance is described in section 11: Common EHP Review Information (below))

67. Install 104.97 Tons of reinforcing steel, in place, footings, #4 to #7, A615, grade 60, incl labor for accessories, excl material for accessories.

Walk In metal clad and base

(Cost Estimate item row 90 and ground disturbance is described in section 11: Common EHP Review Information (below))

68. Install 7.18 Tons of reinforcing steel, in place, footings, #4 to #7, A615, grade 60, incl labor for accessories, excl material for accessories.

Battery Energy Storage System Package

(Cost Estimate item rows 91 to 95 and ground disturbance is described in section 11: Common EHP Review Information (below))

69. Provide 1638 C.Y. structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments. (22119 SF x 2')
70. Construct 1638 C.Y. Structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material.
71. Install 163.84 Tons of reinforcing steel, in place, footings, #4 to #7, A615, grade 60, incl labor for accessories, excl material for accessories.
72. Construct 642 SFCA C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning.
73. Install one (1) Battery Energy Storage System (BESS) Package.

Land Acquisition

(Cost Estimate item row 96)

Refer to Appendix H for the San Juan Appraisal Report.

74. Land Acquisition 3.66 Cuerdas (3.55 Acres).

Telecom Tower (pole)

(Cost Estimate item rows 97 to 99 and ground disturbance is described in section 11: Common EHP Review Information (below))

75. Install one (1) utility pole, steel galvanized, 12 sided, tapered shaft, 100', for distribution. (Electrical utility pole for telecom)
76. Excavate 22 C.Y. for foundations for line poles, excavation, in rock. (Electrical utility pole for telecom)
77. Construct 22 C.Y. concrete foundations for line poles. (Electrical utility pole for telecom)

Grounding System

(Cost Estimate item rows 100 to 103 and ground disturbance is described in section 11: Common EHP Review Information (below))

78. Install 76.85 C.L.F. ground wire, copper wire, bare stranded, 4/0.

79. Provide 4 (Ea.) Exothermic weld, exothermic welding reusable mold, cable to cable, termination, Tee.
80. Provide 28 (Ea.) Exothermic weld, 4/0 wire to 1" ground rod.
81. Install 32 (Ea.) Grounding rod, copper clad, 10' long, 3/4" diameter.

MV Trench

(Cost Estimate item row 104 and ground disturbance is described in section 11: Common EHP Review Information (below))

82. Excavate 121.04 B.C.Y., trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering.

MV Duct Bank

(Cost Estimate item rows 105 and 106 and ground disturbance is described in section 11: Common EHP Review Information (below))

83. Construct 121.04 C.Y. structural concrete, placing, duct bank, direct chute, excludes material.
84. Provide 121.04 C.Y. structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments

LV Cable Trench

(Cost Estimate item row 107 and ground disturbance is described in section 11: Common EHP Review Information (below))

85. Excavate 186.40 B.C.Y., trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering.

Storm Sewer System

(Cost Estimate item rows 108 to 114 and ground disturbance is described in section 11: Common EHP Review Information (below))

86. Install ten (10) Storm drainage catch basin, frames and covers, concrete, cast in place, 4' x 4', 8" thick, 4' deep, excludes footing, excavation, backfill, frame and cover.

87. Install one (1) Storm drainage manholes, frames and covers, concrete, precast, 4' ID, 6' deep, excludes footing, excavation, backfill, frame and cover.
88. Install 527.26 L.F. public storm utility drainage piping, reinforced concrete pipe (RCP), 18" diameter, 6' lengths, class 3, excludes excavation or backfill, gaskets.
89. Install 668.08 L.F. public storm utility drainage piping, reinforced concrete pipe (RCP), 24" diameter, 8' lengths, class 3, excludes excavation or backfill, gaskets.
90. Install 647.74 L.F. public storm utility drainage piping, reinforced concrete pipe (RCP), 30" diameter, 8' lengths, class 3, excludes excavation or backfill, gaskets.
91. Install ten (10) utility area drain, catch basins or manholes, frames and covers, cast iron, heavy traffic, 36" diameter, 1,150 lb., excluding footing & excavation.
92. Install one (1) storm drainage manholes, frames and covers, precast concrete, 4' diameter manhole, 8" thick top.

Telecom Private Carrier Facilities

(Cost Estimate item rows 115 to 119 and ground disturbance is described in section 11: Common EHP Review Information (below))

93. Excavate 60 B.C.Y., trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering.
94. Construct 60 C.Y. structural concrete, placing, duct bank, direct chute, excludes material.
95. Provide 60 C.Y. structural concrete, ready mix, heavyweight, 4000 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments.
96. Install 695 L.F. electrical underground ducts and manholes, PVC, conduit with coupling, 2" diameter, schedule 40, installed by direct burial in slab or duct bank, excludes excavation, backfill and cast in place concrete.
97. Install 695 L.F. electrical underground ducts and manholes, PVC, conduit with coupling, 4" diameter, schedule 40, installed by direct burial in slab or duct bank, excludes excavation, backfill and cast in place concrete.

Security Lighting

(Cost Estimate item rows 120 to 127)

98. Install 11 (Ea.) light poles, galvanized steel, bracket arms, 1 arm, excl concrete bases.
99. Install 11 (Ea.) roadway area luminaire, LED fixture, 252 LEDS, 120 V AC or 12 V DC, equal to 210 watt, incl lamp.
100. Install 11 (Ea.) light poles, anchor base, galvanized steel, 30' high, excl concrete bases.
101. Install 11 (Ea.) light poles, concrete base, max 6' buried, 2' exposed, 18" dia, average cost.
102. Excavate 1011 B.C.Y., trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering.
103. Install 15.70 C.L.F. of wire, copper, stranded, 600 volt, #10, type THWN-THHN, normal installation conditions in wireway, conduit, cable tray.
104. Install 9100 L.F. of electrical underground ducts and manholes, PVC, conduit with coupling, 1" diameter, schedule 40, installed by direct burial in slab or duct bank, excludes excavation, backfill and cast in place concrete.
105. Install 330 L.F. rigid galvanized steel conduit, 1-1/4" diameter, to 10' high, includes 11 couplings per 100'.

Telecom Equipment and Infrastructure

(Cost Estimate item rows 128 to 155 and ground disturbance is described in section 11: Common EHP Review Information (below)

106. Install 61 L.F. cable tray, ladder type, galvanized steel, 4" deep, 12" rung spacing, 24" wide, to 15' elevation, incl fittings & supports
107. Install one (1) cable tray, ladder type, galvanized steel elbow horizontal, 90 Deg., 9" rung spacing, 12" radius, 24" wide
108. Install one (1) cabinets & enclosures, Telecommunications Cabinet , 85" H x 33" W x 36" D, NEMA 4X, wall mount
109. Install one (1) L.F. Bus duct, ground bus added to bus duct, 600 amp
110. Install one (1) switching and routing equipment. *(Cisco Catalyst IR8340 similar or equal)*

111. Install one (1) switching and routing equipment, Router. *(Router-cisco cat. no. N540-24Z8Q2C similar or equal)*
112. Install two (2) fiber optics, transceiver Module. *(Cisco cat. n1o. GLC-TE TRANSCEIVER MODULE similar or equal.)*
113. Install two (2) Fiber optics, transceiver, SFP (Small Form-Favor Pluggable), Short range. *(Cisco cat. no. GLC-SX-MMD similar or equal.)*
114. Install two (2) Fiber optics, transceiver. SFP (Small Form-Favor Pluggable), Extended range. *(Cisco cat. no. GLC-EX-SMD similar or equal.)*
115. Install nine (9) electrical underground ducts and manholes, hand holes, precast concrete, with concrete cover, 2' x 2' x 3' deep, excludes excavation, backfill and cast in place concrete.
116. Excavate 504.53 B.C.Y. for minor structures, bank measure, for spread and mat footings, elevator pits, and small building foundations, common earth, 1/2 C.Y. bucket, machine excavation, hydraulic backhoe.
117. Install 4.54 M.L.F. of fiber optic cable, fiber optic cable 96 strand Single mode Armored Gel Filled Dry Block Burial.
118. Mobilization or demobilization, delivery charge for equipment, hauled on 3-ton capacity towed trailer.
119. Install 45.41 C.L.F. of fiber optics cable enclosure, 2", black, non-metallic, flexible, tube liquid tight.
120. Install one (1) fiber optics rack housing, 4 rack spaces, 12 panels (144 fibers). *(Infinity S (NE-S) -48V System – ABB Cat. No. NES4824-23-AC5-PS4-DC1E-LVBD similar or equal.)*
121. Install four (4) fiber optics transceiver (low cost bi-directional). *(Power System Rack – ALPHA Technologies Cat. No. ATL0300163-501 similar or equal.)*
122. Install one (1) switching and routing equipment, network switch, 0x2x16,CAT5, analog KVM.

123. Install one (1) switching and routing equipment, network switch .
124. Install one (1) switching and routing equipment, network switch, Power Supply for IE Switches, 10.8-60V DC Input to 54VDC/3.15A Output.
125. Install one (1) "Switching and routing equipment, network switch, Industrial Ethernet switch Fast Ethernet ports and 2 Gigabit Ethernet ports for connecting a variety of devices".
126. Install one (1) Switching and routing equipment. *(Cisco Cat. No. IE–3400–8T2S–A similar or equal.)*
127. Install one (1) IPP Switch – Industrial Switch with Expansion Module
128. Install one (1) ES771A to Probe Wireset. *(ABB Cat. No. 848719829 similar or equal.)*
129. Install one (1) Auxiliary Input Alarm Cable 15FT *(ABB Cat. No. CC848865980 similar or equal.)*
130. Install one (1) alarm Cable for Pulsar Plus Controller 15FT *(ABB Cat. No. CC109157442 similar or equal.)*
131. Install one (1) Bullet Breakers *(ABB Cat. No. 407998 similar or equal.)*
132. Install four (4) 12VDC / 250Ah Sealed Cell Batteries *(Master Battery Cat. No. UP-FTCG250-12 similar or equal.)*
133. Install one (1) Battery Breaker Kit 250A, for 23 Battery Tray Kit (Gray) with 2/0 Cable. *(ALPHA Technologies Cat. No. 740-00026-21-001 similar or equal.)*

Chain link Fence Ground wires

(Cost Estimate item rows 156 to 158)

134. Provide 4 ea Exothermic weld, 4/0 wire to 1" ground rod
135. Provide 192 ea Pipe ground clamps, heavy duty, bronze, 2-1/2" to 3" diameter
136. Install 288 Split bolt connectors, tapped, 4/0

Topsoil Removal

(Cost Estimate item rows 159)

137. Stripping and stockpiling 3,289 C.Y. of topsoil, sandy loam, ideal conditions, 200 HP dozer.

Chain Link Fence

(Cost Estimate item rows 160)

138. Provide 310.60 B.C.Y. Excavating, trench or continuous footing, common earth, by hand with pick and shovel, 2' to 6' deep, heavy soil, excludes sheeting or dewatering.

Ground System

(Cost Estimate item rows 161 and 162)

139. Provide 52 ea Exothermic weld, 4/0 wire to 4/0 wire.

140. Provide 6 ea Exothermic weld, mold reusable for above.

11.0 COMMON EHP REVIEW INFORMATION

Please check any items applicable to the proposed scope of work in this Project. If an item is checked, provide a description of the scope extent and location of the selected activity.

1) ☒ **Ground disturbance outside of existing footprint**.

a) Ground disturbance will occur for the following: fencing, ground grid, access road/driveway, footings for large equipment, medium and low-voltage lines placed underground, retention and holding ponds, and direct bury poles. Refer to **Table 5** to **12** for the most critical excavations details.

I. **Equipment Footings**

Table 4 below describes the coordinates and dimensions of footing for the following equipment: concrete pad for Throw Over Structure and Breaker (F-1, **Appendix E** - sheet 8), concrete pad for capacitor bank (F-2, **Appendix E** - sheet 8) concrete pad for Metal Clad and Control Room (F-2, **Appendix E** - sheet 8), concrete pad for battery containers (F-3, **Appendix E** - sheet 8), concrete pad for

the transformer (F-4, **Appendix E** - sheet 9), and concrete pad for a generator. For further details see **Appendix E** – San Juan BESS 30% Preliminary Engineering Design, sheets 4, 8, 9.

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Table 4: Equipment Footings Excavation Dimensions

Footings	Dimensions in Feet	Dimensions in Meters	CenterPoint Coordinates
Throw Over: F-1	27.33ft x 21.33ft x 2ft	8.33m x 6.50m x 0.60m	[redacted]
Breakers: F-1	22.67ft x 6.25ft x 2ft	6.90m x 1.90m x 0.60m	
Metal Clad: Control Room F-2	28.5ft x 68ft x 1ft	8.68m x 20.72m 0.30m	
Capacitor Bank: F-2	22.92ft x 12ft x 1ft	6.98m x 3.66m x 0.30m	
Battery Containers: F-3	(22119 ft^2 x 2ft)	(2054.92m^2 x 0.61m)	
Transformer Base: F-4	24ft x 16ft x 2.5ft	7.31m x 4.87m x 0.76m	
Generator pad	5ft x 8ft x 8”	1.52m x 2.44m x 0.20m	

II. **Access Road/Driveway**

Table 5 below describes the dimensions of a permanent driveway to be built that will be used as an access road during construction. The driveway has two access gates (see coordinate in table below) and encircles the battery energy storage system. For further details see **Appendix E** – San Juan BESS 30% Preliminary Engineering Design, sheets 4 and 8. Section

Table 5: Excavation Dimensions for the Permanent Driveway

Road	Dimensions in Feet	Dimensions in Meters	Coordinate for Entrance/Exit Access Gates
Road	2,125 ft x 20 ft x 8 in	647.7 m x 6.10 m x 0.20 m	[redacted]

III. **Fences, Fence Ground Wire and Grounding Mesh**

Table 6 below describes the dimensions of the footing under the fence, the poles to be installed for the fence, the ground wire for the fence, and the grounding mesh. For further information regarding coordinates and dimensions for the fence see Appendix E, sheets 4 and 7.

The ground wire is a 4/0, bare copper wire that will be installed in a trench dug by hand with pick and shovel, that is 18 inch deep. The ground wire will be connected from every other fence pole to the grounding mesh.

Table 6: Chain Link Fence Foundation Excavation Dimensions

Fence	Dimensions in Feet (L x W x D)	Dimensions in Meters (L x W x D)
Fence	2096 ft x 1 ft x 4 ft	638.86 m x 0.30 m x 1.21 m
Fence Posts	5ft x 1.5ft x 1ft x 270 post (installed every 8ft)	1.52m x 0.46m x 0.30m x 270 post (installed every 2.44m)
Fence Ground Wire	5ft x 1ft x 1.5ft	1.5m x 0.30m x 0.45m
Grounding Mesh	76.85ft x 1.5ft x 1ft	23.43m x 0.46m x 0.30m

IV. Catch Basins and Storm Sewer System

Table 7 provides ground disturbance information about the catch basins and manhole to be installed – dimension of excavation and the centerpoint coordinates. **Table 8** provides ground disturbance information about the Storm Sewer System. For further details see **Appendix E** – San Juan BESS 30% Preliminary Engineering Design, sheet 4, 6.

Table 7: Catch Basins and Manhole Dimensions and Coordinates

Catch Basins or Manhole	Dimensions in Feet	Dimensions in Meters	Coordinates
CB#1	5ft x 5ft x 5ft	1.52m x 1.52m x 1.76m	[redacted]
CB#2	5ft x 5ft x 6ft	1.52m x 1.52m x 1.87m	
CB#3	5ft x 5ft x 6ft	1.52m x 1.52m x 1.92m	
CB#4	5ft x 5ft x 6ft	1.52m x 1.52m x 4.25m	
CB#5	5ft x 5ft x 6ft	1.52m x 1.52m x 3.52m	
CB#6	5ft x 5ft x 5 ft	1.52m x 1.52m x 1.57m	
CB#7	5ft x 5ft x 6 ft	1.52m x 1.52m x 1.64m	
CB#8	5ft x 5ft x 6ft	1.52m x 1.52m x 1.6m	
CB#9	5ft x 5ft x 6ft	1.52m x 1.52m x 1.85m	
CB#10	5ft x 5ft x 6ft	1.52m x 1.52m x 1.58m	
MH#1	6ft (diameter) x 6ft (depth)	1.58m (diameter) x 1.82m (depth)	

Table 8: Storm Sewer System

Sewer Size	Storm Sewer interconnects these Catch Basins	Length (Ft)	Length (meter)	Depth (Ft)	Width (Ft)
18"	CB#6-CB#7, CB#1-CB#2	527.26	160.70	6	6
24"	CB#2- CB#3, CB#7- CB#8,	668.08	203.63	6	7
30"	CB#3- CB#4, CB#4-CB#5, CB#5 to Manhole #1, CB#8- CB#9, CB#9-CB#10, CB#10 to Manhole #1, Manhole #1 to existing storm sewer	647.74	197.43	6	8

Coordinates for the catch basins and manhole are provided in table 7.

V. **Telecom Equipment : Trenches for Medium and Low Voltage Cables and Handholes**

Trenches will be dug for conduit that will hold medium voltage and low voltage cables. The table below describes the dimensions of the trench for each type of cable. The table 9 below shows dimensions of the trenches and Table 10 shows the start and end coordinates for the low and medium voltage trenches. For further details on the trenches' coordinates see **Appendix I** – San Juan BESS Medium Voltage & Low Voltage Trenches Aerial Top View, and **Appendix E** – San Juan BESS 30% Preliminary Engineering Design, sheets 4 and 51.

Nine (9) hand holes will be installed in locations to be determined. The dimensions of the handholes are 2' x 2' x 3' deep.

Table 9: Underground Lines Excavation Dimensions

Line	Dimensions in Feet	Dimensions in Meters
Medium Voltage	254.52 ft x 3.21 ft x 4 ft (depth)	77.58 m x 0.98 m x 1.22 m
Low Voltage	671.09 ft x 2.50 ft x 3 ft (depth)	204.55 m x 0.76 m x 0.91 m
Private Carrier	215 ft x 2.50 ft x 3 ft (depth)	65.53 m x 0.76 m x 0.91 m

Table 10: Underground lines Start and End coordinates

Descriptions	Start Coordinates		End Coordinates	
	Latitude	Longitude	Latitude	Longitude
Medium Voltage Cable Trench	18.397465	-66.013413	[redacted]	
Medium Voltage Duck Bank	18.397374	-66.013372		
Low Voltage Cable Trench	18.397381	-66.013418		
	18.397472,	-66.013382		

VI. **Electric Utility Poles**

Excavation for six (6) utility pole replacements and for new installations: as part of construction, excavation will be necessary for the replacement of existing utility poles and installation of new utility poles. Refer to Table 11 for the poles dimensions and refer to Table 2, section 7.2, for the coordinates of the pole excavations. For further details on the poles excavations see **Appendix E** – San Juan BESS 30% Preliminary Engineering Design, sheets 4 and 51.

Table 11: Electrical Utility Poles Dimensions

Pole	Dimensions in Feet	Dimensions in Meters
Electrical Utility Poles	4 ft x 4 ft x 10 ft x 6 poles	1.21 m x 1.21 m x 3.04 m x 6 poles
Telecom Tower (Pole)	6 ft x 6 ft x 14 ft x 1 pole	1.82 m x 1.82 m x 4.26 m x 1 pole

VII. Topsoil Removal

Remove topsoil for the entire site area is necessary for the project development. Refer to **Table 12** for the topsoil removal dimensions and **Appendix E** – San Juan BESS 30% Preliminary Engineering Design, sheet 4.

Table 12: Topsoil Removal Dimensions

	Dimensions (L x W x D)	Dimensions (L x W x D)
Topsoil	968 ft x 165 ft x 0.56 ft	295 m x 50.3 m x 0.17m

b) Machines Used to Perform Ground Disturbance Work

The equipment that will be used for ground disturbance includes: skid steer, excavator, hydrovacs, dump trucks, man lifts, 120-ton motor crane, boom trucks 45-

ton crane, Zoom Boom, air compressor, truck digger, water truck, pump truck, concrete vibrator, oil tanker, filtering machine, D8 dozer and flatbed platform.

2) ☒ **Soil testing or boring to be performed as part of pre-construction activities**.

The proposed project requires soil borings for the project design and for coordination with Departamento de Recursos Naturales y Ambientales (DRNA) per the Plan y Reglamento del Area de Planificacion Especial del Carso (PRAPEC) for building a facility in the karst region. The soil borings to be performed include:

a) Ten (10) SPT borings will be performed to a maximum depth of forty (40) feet.
b) The test holes will be drilled by the Power Auger Method.
c) Soil samples shall be taken at every change of the soil profile or at vertical intervals not exceeding five (5) vertical feet utilizing a 1.375" I.D.
d) Split Spoon Sampler according to ASTM D1586-99 and D1452-80.

3) ☐ **Relocation of utilities**. If checked, include a description of the relocation including the type of utility, relocation coordinates, and the extent and depth of associated ground disturbance.

4) ☐ **Vegetative Removal**.

5) ☒ **Demolition**. If checked, include a description of what will be removed and the extent and depth of any ground disturbing activities. Additionally, include a description of (1) demolition debris type (construction debris, white goods, hazardous materials, etc.); (2) GPS location of temporary debris storage sites; (3) final debris disposal location; and (4) final debris disposal method.

a) **Construction Debris:**

a. The types of debris that will be disposed of are the following: concrete, construction waste, asphalt, topsoil, vegetative materials, metal scrap and wood.

b. The debris will be temporarily stored at the site with coordinates 18.397424, -66.012428, and then transferred to a landfill.

c. The debris will be separated and finally disposed of at the Carolina landfill - refer to **Table 13** for details.

Table 13: Landfill Information

Landfill Information			
Descriptions	Address	Coordinates	
		Latitude	Longitude
Carolina Landfill	Bo. Monserrate, Via del Relleno Sanitario, Carolina, PR 00985	[redacted]	

6) ☒ **Staging areas, landing area for air transport, and access roads**.

a) **Staging Area:** LUMA's General Warehouse will be used for staging. Refer to Table 1 for details on the locations and coordinates. For further information refer to Appendix G - Staging Area - LUMA General Warehouse. An on-site staging area will be located within the perimeter of the fence line. The exact location will be provided in a forthcoming design update.

Access Road: A new and permanent road will be constructed. The road will be 600 meters (1,967 ft) long and 6 meters (20 ft) wide. Topsoil will be removed to a depth of 1 ft. Refer to **Appendix E**: San Juan BESS 30% Engineering Design for the access road drawings (Sheets 4 and 11), and **Appendix F**: San Juan BESS Access Road aerial photo map and KMZ.

7) ☒ **Fill material**. Fill, gravel, and sand materials will be obtained from a preferred vendor as referenced in the Approved Supplier List Directory PR (see **Appendix B**). Additionally,

a) For leveling the land there would be a "cut" of 4719.93 cubic yards and a "fill" of 874 square yards and 6 inches deep.

b) Topsoil and spoil will be temporarily located at the site for grading. Any backfill material needed will be A-2-4.

c) The spoil material that is not used as fill will be disposed of at an authorized facility. The recommended landfill is Carolina landfill - refer to Table 13 for details.

8) ☐ **Work in water including coffer dams, dredging, placement of equipment in water, or other work in wetlands**. If checked, provide a description of the activities to be performed in water or wetlands.

The following items are generally intended for buildings:

9) ☐ **Facility is over 45 years old**. If checked, provide a thorough description of materials to be used and method of repair, including cleaning methods. If substitute materials will be used in the restoration, specify whether they match the original color, texture, and design of the damaged facility.

10) ☐ **Known renovations to the facility**. If checked, provide dates of any previous major renovations to the interior or exterior of the facility.

11) ☒ **Photos of all sides of the facility are provided**. See **Appendix D** - San Juan Facility Pictures.

12.0 PROJECT COST ESTIMATE (PCE)

The estimated costs (compliant with Class 3 Accuracy +/-30%) to complete the project are summarized in the table below. The cost estimate was developed utilizing preliminary Architectural and Engineering ("A&E") design information. Refer to Table 14: San Juan BESS Luma Project Cost Estimate Summary. For the complete cost estimate refer to **Appendix C** – 25 MW Bess Installation and Integration – San Juan Luma Project Cost Estimate.

Table 14: San Juan BESS LUMA Project Cost Estimate Summary

COST ESTIMATE			
Cost Element	**428**	**406**	**PROJECT TOTAL**
PLANNING	**$ -**	**$ 1,140,851.10**	**$ 1,140,851.10**
Permitting and Assessments	$ -	$ 16,510.60	$ 16,510.60
Environmental Documentation & Management	$ -	$ 526,760.00	$ 526,760.00
Engineering Services & Design	$ -	$ 597,580.50	$ 597,580.50
MANAGEMENT	**$ -**	**$ 2,046,960.19**	**$ 2,046,960.19**
Project Management	$ -	$ 595,552.96	$ 595,552.96
Construction Management	$ -	$ 596,020.38	$ 596,020.38
Contracting, Procurement & Contract Administration	$ -	$ 387,962.34	$ 387,962.34
Projects Controls (Scheduling, Estimating, Support, Cost Control, Risk, Document Control & Reporting)	$ -	$ 467,424.51	$ 467,424.51
SAN JUAN-25 MW BESS INSTALLATION AND INTE	**$ -**	**$ 49,163,348.57**	**$ 49,163,348.57**
SAN JUAN-25 MW BESS INSTALLATION AND INTEGRATION 38 KV 750503, material, labor and equipment	$ -	$ 41,276,512.52	$ 41,276,512.52
Start Up/Commissioning	$ -	$ 619,147.68	$ 619,147.68
Construction Trespass	$ -	$ 206,382.56	$ 206,382.56
Transportation Expenses	$ -	$ 74,297.72	$ 74,297.72
Security (Field 24 hr)	$ -	$ 37,148.86	$ 37,148.86
Insurance	$ -	$ 833,785.55	$ 833,785.55
Contingency	$ -	$ 4,713,800.15	$ 4,713,800.15
Escalation	$ -	$ 1,402,273.53	$ 1,402,273.53
GENERAL CONDITIONS	**$ -**	**$ 3,151,905.70**	**$ 3,151,905.70**
Sales Tax	$ -	$ 1,088,080.08	$ 1,088,080.08
Municipal Construction Tax	$ -	$ 2,063,825.62	$ 2,063,825.62
COST TOTALS	**$ -**	**$ 55,503,065.56**	**$ 55,503,065.56**
DEDUCTIONS	**SURANCE PROCEEDS RECEIVED**		**$ -**
	TION TO FAASt IF APPLICABLE?		**$ -**
FAASt ALLOCATIONS	FAAST PROJECT #750503 - 428		$ -
	FAAST PROJECT #750503 - 406 HM		$ 55,503,065.56
	AAST PROJECT #750503 TOTAL:		**$ 55,503,065.56**
	FAASt A&E # 335168 - 428		$ -
	FAASt A&E # 335168 - 406 HM		$ 3,187,811.29
	FAASt A&E # 335168 TOTAL		**$ 3,187,811.29**
	FAASt E&M #673691 - 428		$ -
	FAASt E&M #673691 - 406 HM		$ 28,261,718.24
	FAASt E&M #673691 TOTAL		**$ 28,261,718.24**

1. 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.

2. Equipment and material costs included in this project will be reduced from this project and obligated under FAASt Project #673691, Equipment and Materials, as shown in the table above. Only the base cost of equipment and/or material will be reduced from this project (not labor). All costs associated with Planning, Management, General Conditions, and Contingencies will remain in this project.

13.0 ATTACHMENTS/APPENDICES

The following attachments and appendices are provided with this DSOW:

Item	Document Description or Filename
A	750503– DR-4339PR- Appendix A – First Responders - Critical Facilities San Juan
B	750503– DR– 4339PR– Appendix B– Recommended Supplier List Directory PR
C	750503– DR– 4339PR– Appendix C– 25 MW BESS Installation and Integration – San Juan Luma Project Cost Estimate
D	750503– DR– 4339PR– Appendix D– San Juan Facility Pictures
E	750503– DR– 4339PR– Appendix E – San Juan BESS 30% Engineering Design
F	750503– DR– 4339PR– Appendix F – San Juan BESS Access Road aerial photo map and KMZ
G	750503– DR-4339PR– Appendix G – Staging Area - LUMA General Warehouse

H	750503– DR-4339PR– Appendix H – Appraisal Report San Juan
I	750503– DR-4339PR– Appendix I – San Juan BESS Medium Voltage & Low Voltage Trenches Aerial Top View

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