

# **COMMUNITY ENERGY RESILIENCY INITIATIVE (CERI)**

## **REQUEST FOR QUALIFICATIONS**

**QUALIFYING SOURCES ARE: RENEWABLE SOLAR ENERGY  
INSTALLATIONS CONTRACTORS**

**NATURE OF THE INSTALLATIONS: CRITICAL FACILITIES (NON-  
PROFIT ORGANIZATIONS AND LOCAL SMALL BUSINESSES)  
ESSENTIAL FOR DISASTER RESILIENCY AND RECOVERY**

**FUNDACIÓN COMUNITARIA DE PUERTO RICO**  
(FCPR By its Spanish Acronym)

The CERI Program is sponsored by Global Energy Alliance for People and Planet (GEAPP)



## TABLE OF CONTENTS

<b>REQUEST FOR QUALIFICATION GENERAL INFORMATION .....</b>	<b>3</b>
<b>PROGRAM OBJECTIVE &amp; BACKGROUND .....</b>	<b>3</b>
<b>INVITATION FOR QUALIFICATIONS .....</b>	<b>4</b>
<b>CONTENTS FOR THE QUALIFICATION .....</b>	<b>5</b>
<b>SUBMITTAL OF QUALIFICATIONS .....</b>	<b>6</b>
<b>CERI PILOT PROJECT INSTALLATIONS .....</b>	<b>7</b>
<b>EXPECTED SCOPE OF WORK .....</b>	<b>9</b>
GENERAL REQUIREMENTS FOR CONTRACTORS .....	10
DESIGN AND INSTALLATION REQUIREMENTS.....	12
ROOFING .....	14
RACKING SYSTEM .....	14
PHOTOVOLTAIC MODULES / ARRAYS .....	15
INVERTERS.....	16
BATTERIES.....	16
CONDUCTORS .....	17
CONDUITS.....	18
SPlicing.....	18
GROUNDING.....	19
RAPID SHUTDOWN.....	19
RESILIENCE .....	19
SYSTEMS CONTROLS (AS DETERMINE BY THE CRITICAL FACILITIES) .....	20
OPERATIONS AND MAINTENANCE REQUIREMENTS (THIS IS DISCRETIONAL TO BE NEGOTIATED BETWEEN THE CONTRACTOR AND THE CRITICAL FACILITIES).....	21
DOCUMENTATION.....	22
NET ENERGY METERING .....	22
EMPLOYEE POLICY .....	23
<b>LETTER OF INTEREST &amp; QUALIFICATION FORM .....</b>	<b>24</b>

## REQUEST FOR QUALIFICATION GENERAL INFORMATION

### FCPR Contact Information and RFQ Process Timeline:

**Contact Email:** [accesoenergia@fcpr.org](mailto:accesoenergia@fcpr.org)

**Phone No.:** (787) 721-1037

### RFQ Timeline:

Event	Date
FCPR RFQ Announcement Made Public	November 10, 2023
Contractors' Deadline to Submit Questions according to the RFQ	November 20, 2023
FCPR Submits Responses to Questions from potential Contractors	November 28, 2023
Contractors Qualifications Submission Deadline	December 6, 2023
FCPR Announce Decision to all potential Contractors	January 15, 2024

## PROGRAM OBJECTIVE & BACKGROUND

The Puerto Rico Community Foundation (FCPR) hereby presents the Community Energy Resiliency Initiative (CERI), a program sponsored by Global Energy Alliance for People and Planet (GEAPP). The program's goal is to achieve environmental and clean renewable energy justice through the installation – in a two-year period – of solar systems in vital/critical facilities that are essentials for disaster resiliency and recovery. During this two-year period, the aspiring goal is installing the systems on seventy-five (75) critical facilities.

To achieve this goal, CERI will generate a pipeline of community critical facilities (e.g., schools, pharmacies, grocery stores, non-profit organizations, etc.), which will receive blended financing – a mix of the debt and grant funding – to purchase and install solar microgrids. CERI aims to provide comprehensive services and support to help address the barriers to access, including excessive costs, limited access to financing and lack of technical assistance.

Our target beneficiaries are critical facilities, defined as private, and non-profit facilities that provide essential life services, emergency services and/or other goods and services; support vulnerable or dependent populations; and/or provide for the

continuation of public health and safety during a disaster. These critical facilities will be able to provide key uninterrupted services or essential products in the aftermath of a natural event with catastrophic results and will allow these facilities an even-greater leadership role in relief and recovery efforts. They will also exemplify how communities can significantly contribute to the 2050 goal of a 100% renewable energy system in Puerto Rico. Local market conditions, particularly after the power blackouts in the aftermath of Hurricane Fiona, are suitable and promising to stimulate CERI's momentum and scalability.

For the past three years, the FCPR partnered with The Rockefeller Foundation, GEAPP and the Rocky Mountain Institute to launch the pilot phase of CERI. Five (5) renewable energy systems at critical facilities were established during CERI's pilot (2021-2022). Pilot projects details are provided later in this document.

## INVITATION FOR QUALIFICATIONS

Fundación Comunitaria de Puerto Rico (FCPR) invites renewable solar energy installation contractors ("Contractors") that have in its core belief that they can be an uplifting component of Puerto Rico's renewable energy infrastructure; or those who already have a Corporate Social Responsibility strategic approach to join this philanthropic venture by submitting qualifications for installations of CERI solar systems in critical facilities selected by FCPR.

The Contractors must have experience, licenses, certifications, and authorization to perform solar energy installations in Puerto Rico.

The solar energy installations will be comprised of resilient solar photovoltaic (PV), battery energy storage systems (microgrids), racking, appurtenances, operations and maintenance services, and energy efficiency upgrades – as needed – at critical facilities.

It is intended to qualify at least seven (7) contractors, and among them, the 75 installations will be distributed by FCPR. Although we cannot guarantee an exact number of how many critical facilities will be assigned to each contractor, we estimate that the distribution may allow for a minimum of 5 to 7 facilities per contractor.

As of today, the critical facilities are not identified, however, the pilot projects presented in this document serve as examples of expected critical facilities. *SEE SECTION: CERI PILOT PROJECT INSTALLATIONS.*

The cost range of the solar systems installations may vary from \$50,000 to \$250,000.

FCPR reserves the right to disqualify any Contractor that fails to comply with one of the requirements presented in this RFQ. This RFQ does not represent an obligation – from FCPR, GEAPP, the participant financial institution, and any other organizations, including their directors, official or employees – to hire the Contractor neither ascertain any certain number of installations after the Contractor is qualified. An agreement containing FCPR, and the contractors’ obligations will be signed and executed before commencing the installation.

## CONTENTS FOR THE QUALIFICATION

The submittal to answer this RFQ must be provided by the interested qualifying sources shall be in one (1) digital copy (PDF) that can be sent via email to [accesoenergia@fcpr.org](mailto:accesoenergia@fcpr.org) It must comply with and contain the following documents or evidence:

### APPLICABLE TO ALL PROPONENTS

**Strict compliance with this information/documents and order of presentation is required.**

1. Letter of Interest, typed ***as provided in this package***, with the contractors’ letterhead, and signed by the principal of the proponent contractor; enclosed at the end of this document.
2. Complete the Contractor Qualification Form, enclosed at the end of this document.
3. Company and team profile, including copies of business registration and professional electrician and PV installer licenses.
4. An organizational Chart (preference is given to the Contractors that hire Puerto Rican crew members and are currently part of the contractor’s corporate structure, not needing to hire an installer subcontractor).
5. Updated Certificate of Good Standing, from *Departamento de Estado de Puerto Rico*.
6. Copy of the company’s registration with *Departamento de Asuntos del Consumidor de Puerto Rico*.
7. Evidence of the company employees certified under the Public Energy Policy Program from the Department of Economic Development and Commerce (PEPP) Regulations 8080 and 7796 as Renewable Electrical Systems Installer<sup>1</sup>.
8. Updated “*Certificación de Deuda*,” issued by Departamento de Hacienda de Puerto Rico.

---

<sup>1</sup> Regulation 8080 is an amendment to regulation 7796.

9. Last “*Certificación de Radicación de Planillas,*” issued by *Departamento de Hacienda de Puerto Rico.*
10. Evidence of Public Liability Insurance to cover damages for their projects in an amount no less than one million dollars (\$1,000,000) by occurrence and one million dollars (\$1,000,000) by aggregate as required under the Puerto Rico Planning Board's Regulation 9233 Section 9.5.2.4(e)(2).
11. Equipment Availability: specify the equipment you currently use and/or will use and its warranties, who will be your solar energy system provider, as well as the availability of this equipment, whether it is in your warehouse or with a distributor in Puerto Rico or the US.

## SUBMITTAL OF QUALIFICATIONS

The information must be received at Fundación Comunitaria de Puerto Rico offices, ***no later than close of business (5:00 p.m.) of Wednesday, December 6, 2023.***

Any questions should be submitted in writing through email to: [accesoenergia@fcpr.org](mailto:accesoenergia@fcpr.org) no later than ***Monday, November 20, 2023,*** at close of business (5:00 pm). The questions may be submitted in English or Spanish identifying the proposer’s name and email address. Each proposer may submit more than one question in the following format:

Contractor [INSERT NAME] Questions for Community Energy Resiliency Initiative (CERI)		
Question No.	RFQ Section	Question
1.		

Contractors should expect seven calendar days to receive feedback.

Responses to questions will be sent to all proponent Contractors that solicited this RFQ before Monday, November 20, 2023. Contractor name will keep anonymous. Responses shall not be construed as in any way amending, modifying, or altering the meaning and intent of this RFQ, unless the RFQ is amended by the FCPR.

Please, provide letters of reference from two commercial clients for whom you have installed solar systems within the previous twelve months.

## CERI PILOT PROJECT INSTALLATIONS

The following critical facilities were installed during the CERI pilot project and serve as an example of the potential critical facilities that will be included in the next phase of the program.

- **Francisco Valentin dba Valentin Service Station (VSS):** The only gasoline and supermarket stand in its rural community in the municipality of Utuado. Median household income is close to \$15,812 per year and 54.6% of these residents live below the poverty level. During emergencies as were Hurricane Irma and Maria, Valentin Service Station resumed operations at 24 hours after the end of the event providing water, ice, food, necessities, and gasoline for power plants. The respond was the same during earthquakes, pandemic and most recently with Hurricane Fiona. Installation: The installation for this critical facility was agreed as follow: Solar Installations – including panels, inverters, and racking Rooftop Solar installation with mounting structures of 39.95 kWp Installed DC capacity and 34.404 kWac @ 240VAC Inverter peak AC power Rating. Battery energy storage system 15.36 kWac rated AC backup power output (single phase loads only) and 42 kWh battery energy storage capacity.
- **Panadería Repostería Mi Arcoiris:** This Bakery serves a population of approximately 2,240 individuals. The median household income for the municipality of Jayuya is close to \$16,003 per year and 54.3% of their residents live below the poverty level. Mi Arcoiris became a safe place after the onslaught of Hurricane Maria. Residents were able to get water and food to survive the storm. Also, they were able to charge their cell phones to communicate with their relatives. As a precautionary measure, some of the elderly and sick members of that community were able to refrigerate their high-needed medications like insulin, among others. Mi Arcoiris is a family-owned bakery-convenience store that serves the community for all their basic needs like food, water, pampers, milk, etc. Installation was as follows: 32.94 KW DC, 10.50 KW AC system with Hoymiles micro-inverters, 16 KW AC with 2 Sunbeat 8kW Inverter for a total of 26.5 KW AC, and a lithium energy storage capacity of 38.4 kWh with a 30.72 kwh usable.

- **Farmacia Jomari:** Serves a population of approximately 16,591 inhabitants. The median household income is close to \$17,138 per year and 50.8% of these residents live below the poverty level. This pharmacy and drug store is in the urban area of Patillas. They have a delivery program for their clients free of charge. They actively collaborated in community relief and aid activities after Hurricane Maria. They provided the same support to communities south of the island affected by the recent 2020 earthquakes. They have a free wellness and exercise program for the community. This is a family-owned bakery-convenience store that serves the community for all their basic needs like medications, food, water, pampers, milk, etc. Installation: was as follows: a Solar Plus Battery Storage Project, with installed DC capacity of 25.92 kWp, inverter AC power rating of 22.8 kWac, rated AC backup power output of 16 kW and energy storage capacity of 36 kWh (BESS) including one-year of maintenance.
- **Red por los Derechos de la Niñez y la Juventud – Centro Alternativas Casa Ramón (Casa Ramón):** Centro Alternativas Casa Ramón serves a population of approximately 38,471 individuals. The median household income in Juncos, Puerto Rico is close to \$20,350 per year and 43.5% of these residents live below the poverty level. **Centro de Alternativas Casa Ramón**, a program established to reduce and/or eliminate the cycle of generational poverty. With the CERI, Casa Ramón was provided with secured energy access to the facilities, the first and only independent housing project for young people in Puerto Rico with priority services for LGBTTIQ+, and for young people below poverty levels, people who have graduated or escaped from the protection system of the Puerto Rico Department of Children and Family Services and/or young people without a fixed home who have children at an early age. It has also become a community center for the surrounding vicinity of Juncos. . Installation was as follows: 32.4 KW DC, 19.5 KW AC system with Hoymiles micro-inverters, 8 KW AC with 1 Sunbeat 8kW Inverter, and a lithium energy storage capacity of 19.2 kWh with a 15.36 kWh usable. Hoymiles micro-inverters has a 25-year warranty, Sunbeat Inverter has 10-year warranty, and 10-year warranty for the storage system. Proposal solution will provide 54,065 kWh of annual production with 98.7% of Annual Solar Access.



- **Instituto Pre Vocacional e Industrial de Puerto Rico (IPVI):** The Pre-Vocational and Industrial Institute of Puerto Rico, Inc. (known by its acronym as IPVI de PR) is a non-profit organization, duly incorporated in 1985, under the statutes of law. Founded in 1984 in the municipality of Arecibo with the primary purpose of offering free services to intellectually and/or physically disabled children and youth with limited economic resources, who have no other means for their rehabilitation. Since its establishment, it has evolved by expanding its services to the public, developing more than 24 service programs. It serves the Regions of Arecibo, San Juan, Bayamón, Utuado, Mayagüez, Aguadilla and Ponce. Some of these programs serve the entire Island, impacting approximately 6,000 people annually. The installation consisted of the replacement of the existing racking system for a Unirac Racking System (180mph) and the equipment and materials needed for the interconnection to the grid system with the net metering program. Such system included: (i) Unirac racking system for 83 photovoltaic panels, (ii) Removal of 83 existing photovoltaic panels, (iii) Installation of Unirac racking system, (iv) Removal and disposal of existing racking system, (v) Re-Installation of 83 existing Q Cell Q, Peak XL-G, 480w panels, (vi) Three-phase panel, (vii) Enphase Envoy, and (viii) Net Metering Permits and Process.

## **EXPECTED SCOPE OF WORK**

This section provides guidelines for the expected services, including the design and installation of a PV solar system. The scope of work, specifications and characteristics of the service and equipment must adhere to the information contained in this section at the time of the service and installation agreement.

The Contractors shall procure and safely install all solar equipment for the project sites, including but not limited to PV panels, inverters, conduit, wires, breakers, racking, junction boxes, batteries, microgrid controls, and monitoring equipment.

The system should comply with NEC 2017 and the installer should perform the work complying with applicable law and following industry standards, including the workspace clearance requirements.

Worker safety—and the safety of the facility’s staff—is of top priority. All safety rules shall be enforced by the Contractors, who will be responsible for all work

safety. Any actions that are deemed unsafe should result in stopping the work immediately and not commencing again until the unsafe actions are addressed.

The Contractors shall perform the needed mobilization for the installation and commissioning of the solar microgrid system and shall be held accountable for any liability caused by the Contractor crew members or anyone authorized or working on behalf of the Contractor on client's facility.

Contractors shall be responsible for at least a 1-year Workmanship Warranty (other warranties terms may be negotiable).

### ***General Requirements for Contractors***

1. The contractor will provide a microgrid to the critical facility. A microgrid is defined for the purposes of this project as an electrical system combining local power generation with the ability to connect or disconnect from the grid to enable it to operate in either grid-tied or off-grid mode. The Facility will support the purchase, installation, and maintenance of solar microgrids, which contain PV panels, an inverter, and batteries to store excess power generation and discharge during times of low solar irradiance during an outage.
2. The equipment must include a photovoltaic (PV) system capable of providing the facilities' annual energy requirements (kWh/year) unless there are roof space restrictions. Suggestions about implementing alternatives such as adapting parking lot space to make room for solar modules will be accepted, on a case-by-case basis.
3. The equipment must include a PV system, Battery Energy Storage System (BESS) and microgrid (MG) controller capable of supplying power to a set of critical loads during extended power grid failures. The Contractors shall design a BESS system capable of powering a critical loads circuit for the duration of a prolonged power outage. The Contractor is encouraged to review the critical load design methodology and adjust as desired. Electrical Installation arrangements must be made such that the BESS only powers the critical loads of the facility. Powering critical loads only could be accomplished with a critical loads panel or with a load management/curtailment system. All critical load power switches and sockets shall be clearly labeled and colored red or in a distinct color than the standard switches and sockets.

4. Integrate the new system with existing energy generation systems such as existing emergency generators and the utility grid.
5. During normal operation, the microgrid system should be capable of exporting excess electricity to the grid to receive net metering credits.
6. The O&M contract should include, at a minimum, annual preventive and corrective maintenance including equipment inspection, screw tightening, panel cleaning<sup>2</sup>, inverter and battery inspection, and necessary adjustments to the support pieces. O&M is optional and must be negotiated with the critical facilities at an additional cost.
7. The Contractors should serve as the primary point of contact for all maintenance related matters.
8. Provide recommendations on energy efficiency measures related to-but not limited to- lighting, appliances, and/or air conditioning that the facilities can adopt to reduce energy consumption and to potentially reduce the system size. Energy efficiency recommendations must be provided – to the potential critical facility and FCPR – by the Contractor before the installation.
9. A communication about critical loads and energy efficiency considerations must be discussed with the potential critical facilities as not construed as a limiting factor in the decision.
10. The microgrid system must bear the capability for remote monitoring and logging of operational parameters.
11. Electrical work installation must follow applicable electrical codes and standards. Design, Conduit and Wiring connected to the microgrid should be up to NEC 2017, UL, IEC, IEEE, or newer codes. Where needed, existing electrical infrastructure must be updated for the microgrid system to meet applicable electrical codes and standards.
12. Adhere to applicable storm resistance and harsh environmental conditions as described by building codes and local best practices. All equipment and racking shall be designed and verified by a Structural Engineer to withstand sustained

---

<sup>2</sup> Panel cleaning would need to be done more frequently than annually. Discuss with critical facility.

winds as required by PR Building Code 2018 (or as required by the most recent standards of the industry). Each site's wind conditions should be reviewed/validated on the ATC Hazards website.

13. Equipment shall be located such that serviceability is maximized and conduit and wire run lengths are minimized. Equipment location should also prioritize worker and facility staff safety and the equipment's security. Equipment location should also comply with clearances as specified by NEC 2017.
14. A Project Timeline shall be provided by the Contractor upon request before the execution of the agreement with the critical facility.
15. A Staging Plan shall be developed after signing the agreement with the critical facility. The Staging Plan must indicate how you plan to store materials at the site during construction and how you plan to have construction vehicles enter and exit the site. Please also indicate if there is anything you need the client to provide while onsite, such as access to electricity, water, restrooms, etc. or if you will be providing these necessities. Access to the site will be limited to working personnel.
16. Quality Control and Risk Mitigation Plan before the execution of the agreement with the critical facility.
17. The single line diagram shall include all conductor and conduit sizes.
18. Production estimates shall account for shade effects at each array location.
19. The design must include system layouts, a single line diagram of the entire system, and system details such as estimated annual energy production in kWh/year.

### ***Design and Installation Requirements***

1. Systems shall be interconnected to the grid. Contractors shall provide the necessary documents to facilitate the interconnection process.
2. System (including supports and wiring) shall not interfere with any existing roof drains, water drainage, expansion joints, air intakes, electrical and mechanical equipment, or antennas.

3. All PV hardware and structural components shall be corrosion resistant.
4. All equipment and racking shall be designed and verified by a Structural Engineer to withstand sustained winds as required by the PR Building Code 2018 (or as required by the most recent standards of the industry). Each site's wind conditions should be reviewed/validated on the ATC Hazards website.
5. Project must be compliant with all applicable building, mechanical, fire, seismic, structural, and electrical codes, and standards; these include but are not limited to relevant NEC 2017, UL, IEC, IEEE, and ASCE technical codes and the PR Building Code 2018.
6. Solar layout shall meet all local fire department code, and ordinance requirements for roof access.
7. The critical facility may require including necessary anti-theft mechanisms to reduce the possibility of theft (including anti-theft screws). Contractor to discuss with critical facility.
8. Systems shall be designed to comply with applicable PREPA/LUMA interconnection requirements. Contractors shall provide confirmation of having filed the request to participate in the net metering program. Contractor shall follow up with net metering application until approval. Contractor shall provide all information as requested by the utility and the supplemental study, if needed.
9. Systems with remote monitoring capabilities are required.
10. Microgrid system controls should prioritize the energy sources in the following order: PV, Grid, Batteries. Excess PV energy should recharge the battery first, once battery is fully charged then exported to the grid.
11. The 1-year workmanship warranty shall be included in the Labor Cost, along with clear instructions on how to use the warranty.

### ***Roofing***

Based on Contractor's experience and assessment of the roof conditions, should provide:

The most cost-effective solution that assures a 10-year waterproofing warranty.

1. Perform a structural assessment of the roof. Repair any problems with the roof that could compromise the projects that are identified by the structural assessment.
2. For all roofs included in the project, apply necessary coatings to ensure roof's waterproofing for 10+ years.
3. For locations installing PV panels on multiple rooftops, all rooftops are subject to the above-mentioned specifications.
4. Contractors may potentially install PV panels on a roof adjacent to the intended use area with the critical facility staff's approval, so long as the "Conductors" are sized appropriately to keep losses at an acceptable level. Contractors must not use rooftops that are deemed too damaged to support the array.
5. The existing roof should be left in good and clean condition, with no cracks, damage, broken shingles, or excessive visible wear.
6. All roof penetrations should be properly flashed where required: Must comply with IBC standards and product manufacturer installation instructions.

### ***Racking System***

1. All racking shall be built using anodized aluminum (preferred), stainless steel, or galvanized steel. The racking system shall be securely bolted to the roof and all roof penetrations shall be properly flashed to ensure roof waterproofing remains intact.
2. The PV mounting structure and the PV array shall constitute an assembly that can sustain winds as specified by the PR Building Code 2018 (or as required by the most recent standards of the industry). Each site's wind conditions should be reviewed/validated on the ATC Hazards website.
3. Contractors shall evaluate roof capability of supporting the weight of the array.

---

### *Photovoltaic Modules / Arrays*

1. All photovoltaic modules shall be guaranteed by the manufacturer to retain an output power of at least 80% of their nominal value over a period of at least 25 years. Positive tolerance on modules output preferable.
2. All PV modules shall be equipped with bypass diodes. PV modules design static pressure (wind) to be greater than or equal to expected uplift per PR Building Code 2018 wind specifications.
3. On DC coupled designs, consideration shall be given to leapfrog connections to reduce PV string wire lengths. For leapfrog connections, PV modules wire leads need to be long enough for ease of connection.
4. All exposed wire under the solar array shall be specified as photovoltaic (PV) wire as per UL 4703 or USE-2.
5. UL listed electrical conductors rated at 90°C and specified for wet location shall be used in conduits for PV connections when leaving the array. Conductor rating should match bar rating.
6. Each string shall be protected by an overcurrent protection device rated as per NEC 2017 specifications.
7. Each string shall be connected to a device allowing for manual disconnect.
8. The use of a fused DC disconnect is the preferred method for over current protection and manual disconnect of each string.

### ***Inverters***

1. All solar and battery inverters shall be guaranteed by the manufacturer for at least 10 years.
2. All solar inverters used shall be UL approved with a minimum efficiency of 94% at all power levels.
3. Solar inverter outputs shall be protected by a properly sized circuit breaker.
4. Battery inverter AC input and output shall be protected by a properly sized circuit breaker.
5. For solar inverters, the PV source open circuit voltage shall be kept below the inverter maximum input voltage. Low temperature Voc adjustment should apply as per PV manufacturer's specification and NEC 2017.

### ***Batteries***

1. Required battery chemistry: Lithium Ion.
2. Battery bank shall be designed to supply the facility's critical loads.
3. The battery bank shall be guaranteed by the manufacturer for at least 10 years.
4. Battery bank shall be designed to sustain a maximum ambient temperature of 45°C without major losses or battery life expectancy changes.
5. DC Voltage drop shall not exceed 0.2 volts per cell above 45°C.
6. The maximum recommended design for depth of discharge (DOD) and total number of cycles shall be specified by the Contractors to maximize warranty compliance.
7. Batteries shall be installed in a container that is appropriate for its environment (indoor/outdoor) and the enclosure should be electrically isolated to ensure safety. Batteries installed outdoors shall be enclosed in weatherproof enclosure, well-ventilated with a properly installed temperature sensor.



8. The battery bank container should be installed in a location that will withstand seismic forces as outlined in ASCE 7.
9. The battery bank shall be protected as specified on the electrical code.

### ***Conductors***

1. A maximum of 3% voltage drop shall be allowed on all AC circuits. A maximum of 2% voltage drop shall be allowed on all DC circuits.
2. All underground conductors shall be rated for use in wet locations.
3. All conductors shall be copper-stranded, unless otherwise specified.
4. All conductors shall be UL-approved and rated at 90°C for wet locations. Conductor rating should match bar rating.
5. All conductors shall be derated for ambient temperatures and number of conductors per conduit as per NEC 2017.
6. All conductors should be securely managed underneath the array: conductors may not be loose and may not contact roof surface.
7. All wire management devices should be UL listed and intended for solar array installations.
8. All conductors leaving the array should be in conduits, and bend radius shall be no smaller than 5 times the diameter of the conductor.
9. All array conductors shall be properly supported within 12 inches maximum of entering a box and every 4.5 feet maximum along the way.

### ***Conduits***

1. Conductor fill factor shall be as per NEC 2017 Chapter 9. For runways greater than 100 feet, the next bigger conduit size shall be used for ease of installation.
2. The 4 ninety-degree bend rule applies. Properly sized junction boxes (above ground) and hand holes or manholes (underground) shall be used where needed.
3. Raceway depth for underground installations shall be as per NEC 2017.
4. Conduits shall be fastened as per NEC 2017.
5. Conduits on the roof to account for proper thermal expansion.

### **Junction / Combiner Boxes**

1. Combiner boxes shall be rated for the maximum system voltage. Fused combiner boxes are preferred.
2. Junction/combiner boxes shall be easily accessible for inspection.
3. Junction box fill shall be as per NEC 2017.
4. All outdoor boxes shall be rated at least per NEMA 3R.
5. Proper rain tight connectors shall be used when installed outdoors.
6. Additional approved sealing method shall be used when entering the top of an outdoor box. Myers hub is required.
7. UL listed surge protectors are mandatory on each combiner box.

### ***Splicing***

1. All splicing shall be accessible for visual inspections and shall be of the waterproof type if located underground.

### ***Grounding***

1. The PV array equipment and all metallic components must be properly bonded and grounded, unless otherwise specified.
2. All grounding of equipment shall be in accordance with NEC 2017.
3. Grounding conductors are not allowed to be spliced unless using irreversible compression-type connectors.
4. Grounding bushings shall be used to terminate all metallic conduits where required.

### ***Rapid Shutdown***

1. Rapid shutdown requirements shall comply with NEC 2017.

### ***Resilience***

To ensure that the proposed system may withstand hurricane-force winds, the Contractors must:

1. Specify high-load (up to 4,000 Pa uplift for roof mount and 5,400 Pa uplift for ground mount) PV modules, based on structural calculations; these are currently available from several Tier-1 module manufacturers.
2. Perform structural engineering in accordance with ASCE 7 and site conditions, with calculations for wind forces, reactions, and attachment design.
3. Check with racking manufacturer that actual site conditions comply with their base condition assumptions from wind-tunnel testing.
4. Specify bolt QA/QC process to avoid inadequate torquing of bolts.
5. Specify bolt hardware locking solution.
6. Installation should provide maximum module static pressure capabilities. Review

module manufacturer's installation instruction for maximum static pressure. Specify through-bolting of modules as opposed to top-down or T clamps, or if top clamping is required, use clamps that hold modules individually and do not share clamps across multiple modules.

7. Require structural engineer review of lateral loads due to racking and electrical hardware—often lateral loads are missed, and recent failures have proven them to be a critical source of weakness (e.g., combiner boxes attached to end solar array posts caused increased loading and led to failure).
8. Specify all hardware be sized based on 25 years (or project life) of corrosion.
9. Not use self-tapping screws.

### ***Systems Controls (as determine by the Critical Facilities)***

1. As determined by the critical facilities, the microgrid controller shall allow the microgrid system to manage itself, operate autonomously or while grid-connected, and seamlessly connect to and disconnect from the main distribution grid for the exchange of power and the supply of ancillary services. The controller shall present each microgrid to the larger grid as a single controllable entity. The controller shall feature the following Transition and Dispatch functions as a minimum. The critical facilities shall determine the priority in which the system will be used.

The Transition functions shall include:

- Unplanned islanding,
  - Planned islanding,
  - Reconnection, and
  - Black start.
2. The Transition functions also access services from the Dispatch function to achieve real and reactive power balancing necessary for successful planned islanding and reconnection.
  3. The Dispatch functions include the dispatching of microgrid assets and providing them with appropriate setpoints and dispatching while connected and while

islanded. The Dispatch functions generate and execute dispatch orders to microgrid assets in accordance with dispatch rules, which shall be according to the following priority:

- PV
- Grid
- Batteries

4. The controller shall also receive microgrid system state information and maintain the current state of the system database for its own calculations.

### ***Operations and Maintenance Requirements***

If applicable, the proposal must include a quote for a number of years of the O&M Services Contract – as agreed between the Contractor and the critical facility – and must specify if the O&M Services Contract will be through the bidder or through a third party.

At a minimum, the O&M contract should include:

Annual preventive and corrective maintenance including but not limited to:

- Detailed inspection of all equipment including racking system inspection and screw tightening (particularly before hurricane season).
- Cleaning of all panels and remove any debris in installation area (frequency of panel cleaning to be discussed. Determination of monthly or bimonthly).
- Ensure proper functioning of inverter and batteries and perform annual preventive maintenance on battery banks and inverter, per manufacturer's operating guidelines.
- Submitting warranty request to manufacturers in the case of equipment malfunctioning.
- Inspect all foundations for cracks and premature failure.

- Make adjustment to the structure and replacement of required support pieces.
- Highlight recommended corrective maintenance to facility staff. Written approval for the corrective maintenance from the facility staff is required before starting corrective work.

Remote monitoring:

- When an issue to a system is detected, Company will notify the critical facility and schedule a service visit.
- Provide customers with access to the online monitoring portal for the system.
- Serve as the primary point of contact for all maintenance related matters.

***Documentation***

At the end of the installation project, the Contractors must provide the following documentation to the FCPR the critical facility staff:

- All technical documentation, including data sheets and an accurate list of the installed components.
- All applicable warranties.
- Installations and operational manuals.
- As-built version of system drawings, cable lists and routing, wirings, grounding system, protection system, as well as single line adjustments in electronic media file and hard copy.

***Net Energy Metering***

Contractors shall coordinate with PREPA/LUMA to ensure that the project satisfies all criteria for interconnection of the project to the PREPA electric distribution system. This includes coordinating all negotiations, meetings, design reviews, and conducting interactions with PREPA/LUMA necessary to complete system interconnection.

Contractors are responsible for preparing required submissions for obtaining the Net Energy Metering (NEM) and interconnection agreement from the utility.

Contractors shall manage interconnection and startup of project in coordination with PREPA/LUMA. Contractors shall pay any interconnection, processing, and other fees and expenses as may be required by PREPA for interconnection and operation of the project.

#### Additional Contractors Responsibilities

- Contractors shall be responsible for all required permits from local agencies.

#### *Employee Policy*

The Contractor must commit to equal opportunity treatment for local employees. Provide all necessary safety equipment to installers onsite, including but not limited to hard hats, fall protection for all work to be performed 6 ft. above ground level, bright color working vest, and insulating gloves.

## LETTER OF INTEREST



**LETTER OF INTEREST**  
(RETYPE OR REPRODUCE IN FIRM LETTERHEAD  
WITHOUT CHANGES)  
(SIGN AND SUBMIT IN ORIGINAL AND DIGITAL COPY)

Date

Fundación Comunitaria de Puerto Rico (FCPR)  
1719 Ave. Ponce de León  
San Juan, PR 00909-1905  
PO Box 70362  
San Juan, PR 00936-8362

Subject: Community Energy Resiliency Initiative (CERI), RFQ

Dear Sirs:

In response to your Request for Qualification for the Community Energy Resiliency Initiative (CERI), we are pleased to submit the attached qualification proposal with the required information, document, and credentials. We believe we can become an uplifting component of Puerto Rico's renewable energy infrastructure through this philanthropic initiative that CERI provides. All information requested for qualification is herewith included with sufficient information to meet your requirements.

We understand and acknowledge the following:

- As of today, the critical facilities are not identified, however, the pilot projects presented in this document serve as examples of expected critical facilities.
- The FCPR reserves the right to disqualify us for failing to comply with one of the requirements presented in the CERI RFQ.
- That the CERI RFQ does not represent an obligation – from FCPR, GEAPP, and any other organizations, including their directors, official or employees – to hire the Contractor neither ascertain any certain number of installations after the Contractor is qualified. An agreement containing the obligations of FCPR, and the contractors will be signed and executed before commencing the Program.

Certification of Non-Conflict of Interest. We certify that any and no member of the Board of Directors and/or Executives of Fundación Comunitaria de Puerto Rico (FCPR) is a party or has any interest in the revenues, profits, or benefits resulting from the proposal.

Confidentiality and Rules of Contact. The proposer acknowledges and consents to maintain confidentiality regarding CERI project details throughout the RFQ process. Adherence to specific

# Letter of Interest & Qualification Form



communication protocols aimed at ensuring an impartial procurement process is mandatory. Official information pertaining to the RFQ should be regarded as coming solely via email from the FCPR. The RFQ procedure was initiated by the public notice advertisement. Proposers, or their members, are prohibited from discussing the qualification process among themselves. All inquiries and communications must be directed solely through the email provided [accesoenergia@fcpr.org](mailto:accesoenergia@fcpr.org), with the understanding that verbal information is non-binding. Formal communication will be conducted through email, authorized by the Contact or an appointed delegate. Any improper interactions, as determined by the FCPR, may lead to disqualification. Proposers found to be engaging in such unauthorized communications risk disqualification at the FCPR's discretion.

Cordially,

Print Name of Firm:

Signature: \_\_\_\_\_

(Type in name of person signing proposal)

Title/Position: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Telephone (s): \_\_\_\_\_

Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

Date of Signature: \_\_\_\_\_

## **CONTRACTOR QUALIFICATION FORM**

# Letter of Interest & Qualification Form



## Company Profile

Please provide the following company information so that we may contact you.

EPC Contractor Profile:	
Main Contact Full Name:	
Contact Phone:	Contact Email:
Company Address:	
Company Website:	Years Operating in Puerto Rico:

## Project History (If additional space is required, kindly extend your content onto a supplementary page)

Summarize your company's (or personnel's) project installation history showing 3+ years of experience.

Year Commissioned	Project Technology (solar, wind, solar + battery, etc.)	Project Size (kW of generation and/or kWh of storage)	Energy Efficiency Measures Implemented

## Expertise (If additional space is needed, kindly extend your content onto a supplementary page)

Please specify the years of experience your company (or personnel) and the quantity of projects participated in the following areas.

Areas of Experience	Year of Experience	Quantity of Projects
Solar PV Battery		
Storage		
Microgrid Controls		
General Contracting		
Structural Engineering		
Operations and Maintenance		

## Accreditations

Which of the following certifications does the EPC Company possess and in which year it was accredited?

Name of Accreditation	Yes / No / In Progress	Year Obtained
Renewable Energy Installer (Puerto Rico)		
Engineering License		

# Letter of Interest & Qualification Form



NABCEP Certification		
ISO 9001 Certification		
Other Technical Certification		

## Upper-Level Management Supervising Experience

Please specify the number of years of projects the Upper-Level management has supervised.

Solar PV	
Battery Storage	
Microgrid Controls	
General Contracting	
Structural Engineering	
Operations and Maintenance	

## Quantity of Crew Members

Please specify the number of crew members employed in your company in the following areas.

Solar PV	
Battery Storage	
Microgrid Controls	
General Contracting	
Structural Engineering	
Operations and Maintenance	

## Claims

Please specify the type of claims you have in *Departamento de Asuntos al Consumidor* (DACO). If you wish to detail your resolution of these claims, please use an additional page.

Type of Claim	Quantity of Claims
Unfair and deceptive practices	
Issues with installations	
Customer service	

# Letter of Interest & Qualification Form



## ADDITIONAL QUESTIONS

### Training

Have your employees participated in technical training with a solar energy training entity? If yes, which institution, which topic, and how many employees were trained?

### Local Hiring Policy

Does the Contractor hire Puerto Rico employees?

### Sub Vendors

With which Puerto Rican vendors, contractors, or distribution companies does the Contractor partner?