

# Puerto Rico Community Energy Resilience Fund (CERF) Request for Proposal (“RFP”)

## Request for Proposal

### Chapter I: Overview

The Puerto Rico Community Energy Resilience Initiative, a partnership between The Rockefeller Foundation, Rocky Mountain Institute (RMI), Resilient Power Puerto Rico (RPPR), and Fundación Comunitaria de Puerto Rico (FCPR) (collectively the “CERF Team”), is focused on leveraging innovative finance solutions, community engagement, and technical analysis to scale the deployment of resilient<sup>1</sup> solar microgrid technology throughout Puerto Rico, particularly for vulnerable communities<sup>2</sup> given the threat of climate change and other disasters. Given challenges after the hurricanes in 2017, earthquakes in 2020, and the ongoing COVID-19 pandemic, communities in Puerto Rico are pursuing ways to strengthen their infrastructure and support and protect an ongoing recovery.

Solar and storage microgrid systems for schools, health clinics, small businesses, and other community critical facilities can provide resilient, continuous power to vulnerable groups even when the larger power grid is unavailable. They can power vital economic activity and response and recovery following shocks and stresses including natural disasters and public health crises. Over time, these distributed resources can participate in necessary grid operations and strengthen the electrical system.

As a blended financing vehicle, the **Community Energy Resilience Fund (CERF)** (the “Fund”) aims to leverage philanthropic and private capital to de-risk the investment opportunity and crowd in further public and private sector investment in the renewable microgrid market, primarily for customers in low-to-moderate income (LMI) communities. The Fund will offer community facilities affordable debt financing to purchase a solar and battery energy system that lowers the total monthly costs of electricity, and after repayment, will achieve system ownership. The systems, while participating with the grid during normal operations, offer significant autonomy during disasters or grid outages. The ensuing social and community impacts include protection of life and property, reduction in the economic interruption from disasters, and cleaner and accessible local energy resources.

The Fund seeks to address two issues that disproportionately impact LMI communities: 1) the relatively high capital cost of microgrids (driven in part by the cost of energy storage) and 2) the fact that many organizations in LMI communities in Puerto Rico have limited credit history, meaning that banks and credit unions may consider them higher risk customers.

Figure 1 highlights challenges to community level resilience throughout Puerto Rico and how the Fund (subject to further design) can address these barriers.

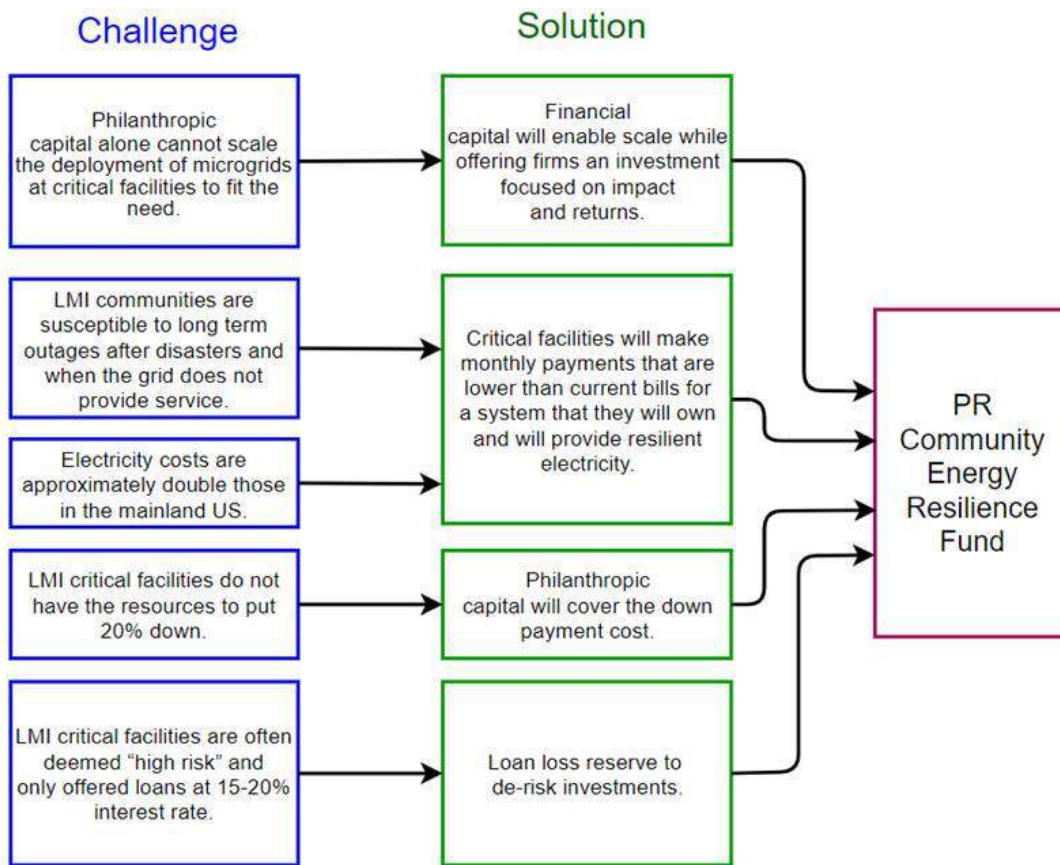
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<sup>1</sup> Per the Federal Energy Regulatory Commission, resilience is the ability to withstand and reduce the magnitude and/or the duration of disruptive events, including the capability to anticipate, absorb, adapt to, and rapidly recover from disruptions.

<sup>2</sup> A vulnerable community is defined as one in which the majority of the population is made up of Vulnerable Persons, defined as (i) low or low-middle income (i.e., the working poor) and (ii) either entirely excluded or underserved by quality essential public services (e.g. healthcare, education, transportation, water, electricity, sanitation, protection from natural hazards, access to recreational space, etc.) by virtue of being low-income or due to other factors such as a health condition, caste, religion, ethnicity, gender, living in a remote location, etc.

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**Figure 1: Systemic Challenges and PR CERF Solutions**



The CERF team’s analysis of the pipeline determined a viable fund size between \$50 and \$70 million and a 5 to 7-year operational term. The fund manager will refine and ultimately decide on these and other criteria, as well as the selection process for investments. The CERF team, financially supported by The Rockefeller Foundation, jointly managed by the other three participating non-profits and led by Rocky Mountain Institute for this procurement, is seeking an experienced, trusted, and knowledgeable fund manager with expertise in renewable energy in developing markets, fundraising, due diligence, and fund creation and operation. The fund manager’s work will include:

1. Leading the fundraising of both concessionary and private investment capital
2. Evaluating the financing and funding of a portfolio of projects
3. Arrange for servicing loans to critical facility off-takers

This RFP seeks to gather information to evaluate potential fund managers (“Respondent” and collectively “Respondents”) prioritizing the following elements:

1. Alignment with the Fund’s mission and vision
2. Ability to execute fund manager responsibilities outlined

The CERF team has completed a significant amount of work and generated momentum for this fund and market segment. With that, the CERF team is eager to partner with a fund manager that will be leading fund creation and providing valuable new strategies that may differ from current planning.

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### Chapter II: Process

The CERF team plans to utilize this RFP as a means to assess Respondents.

CERF RFP Timeline	
RFP released	December 11, 2020
Deadline for applicants to submit clarification questions to CERF team	January 20, 2021
RFP response deadline	5:00 PM EDT, February 12, 2021
Interviews with selected applicants	Starting February 18, 2021
Fund manager selection	April/May 2021

The Concept Note outlines the ambitions and current thinking regarding the elements of the Fund. The Concept Note along with the contents of this RFP have been prepared to reflect the CERF team’s analysis of the need and pipeline, to provide background, and a summary of the work conducted. We hope this is beneficial when addressing the questions below.

Please note that your firm’s responses will be evaluated as indicative of your philosophical and practical approach rather than as requirements for management of the Fund. Once selected, the Respondent will be subject to a satisfactory due diligence review and be expected to dedicate a team to actively work in consultation with the CERF team and their advisors to develop and operationalize all aspects of the Fund.

### Chapter III: Tasks

#### *a). Define mechanics and operational plan of the fund*

The CERF team generated a significant amount of analysis, stakeholder engagement, and planning in order to expedite fund creation. The CERF team understands that the fund manager will consider this but might also make valuable and important changes to ensure that the strategy positions the team to achieve stated objectives.

#### *b). Expand and refine the pipeline of projects to be financed*

The fund manager is expected to set the profile of the facilities eligible for financing as well as to review, adapt, grow and advance the pipeline of projects and build on the work of the CERF team. The profile of the facilities and investment selection process should be defined in line with the Fund’s philosophy as outlined in the Concept Note.

This will likely require partnerships and communication with on-the-ground entities to perform due diligence on borrowers and identifying critical facilities. The fund manager will determine the staff to best fit their approach, but should consider that an “on-the-ground team” can be valuable to oversee three tasks including but not limited to:

#### Pipeline Development:

- Supporting the pipeline development strategy: This includes performing critical facility outreach, engagement and screening including handling inbound and outbound project leads, contributing to developing, and implementing a marketing, promotion and communication strategy, and other activities that help maintain a steady pipeline of bankable projects.

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### Technical Assistance:

- Performing site visits, implementing analysis strategies for critical facility qualification and other types of due diligence to inform project acceptance into the Fund.
- Assuring that the projects installed by the Engineering, Procurement and Construction (EPC) contractor meet all relevant requirements.

### Project Management:

- Working closely with the investment team to define the project qualification criteria and handle on-the-ground project operations.
- Coordination with EPC contractors: This includes preparing RFPs for project installations, analyzing fitness of proposals with client needs and fund objectives, performing or contracting installation quality inspections.
- Contributing to the monitoring and evaluation (M&E) operations to inform the operation and maintenance (O&M) strategy, which includes monitoring the operation of deployed projects, keeping track of O&M activities and efficiently coordinating with O&M providers to respond to system malfunctions and interruptions.

### *c). Fundraising and relationship with investors*

The fund manager is expected to bring a network of potential investors, build relationships with new potential investors, and lead pitch meetings with potential investors. The fund manager will lead the development of a strategy and marketing materials for fundraising. Based on investor profile and investor feedback, the fund manager will define the appropriate investment horizon, ticket size, and exit strategy in line with the impact mission of the fund.

### *d). Partner and communicate with vendors providing equipment and EPC contractors in Puerto Rico*

Based on the scheduling of the project pipeline, this may not be limited to one contractor, but rather, a portfolio of contractors. The fund manager – or its on-the-ground team – will be responsible for assessing the suitability and capability of the local companies, in their ability to design, procure suitable equipment, and install solar and storage systems in line with the vision of the fund. The fund manager will ensure fair and equitable procurement of the contractors. Once the contractor(s) is/are selected, the fund manager will decide on the payment schedule for the contractor(s) and project schedule.

### *e). Liaise with local banks and credit unions in Puerto Rico through which payment to vendors and collection from borrowers will be made*

The fund manager will identify, select, and liaise with banks and/or credit unions to administer loans to the critical facilities while trying to minimize costs. These banks and/or credit unions will also act as servicing agents for the loans.

### *f). Fund risk profile analysis, assessment of insurance options to de-risk the fund*

The fund manager will set an appropriate risk profile for the fund to accommodate investors per their risk appetite. Assessing insurance options, concessionary capital, and other de-risking strategies will be part of this process.

The fund manager may set the ratio of debt to concessionary capital and establish a loss reserve level that suits investors returns expectations.

The fund manager will also analyze the financial status of the whole portfolio of critical facilities, to measure the overall risk and to review the repayment capabilities of the Fund and assess risk mitigation strategies.

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### *g). Fund legal structure and registering*

The fund manager will define the fund’s legal structure, place of incorporation, and registration, including all applicable legal filings to operate within Puerto Rico as an unincorporated organized territory of the United States and any future organization of the Commonwealth.

### *h). Monitoring and evaluation*

The fund manager will define an optimal M&E strategy to support the impact thesis of the fund. However, the CERF team has developed an indicative M&E plan in accordance with the program’s goals and objectives that could be considered as a starting point.

### *i). Interface with public entities*

Liaise with the Puerto Rico Electric Power Authority (PREPA), the future concessionaire (LUMA Energy), and other relevant public entities in Puerto Rico to ensure continued effective investment pipeline in critical facilities. Coordinate with other actors in the finance and renewable energy community as necessary.

## **Chapter IV: Manager Characteristics and Experience**

- **Strong experience in the renewable energy sector.** Experience working in the renewable energy sector is essential. Experience working in Puerto Rico or similar markets is desired.
- **Demonstrated track record and ability to execute.** The fund manager must demonstrate an ability to source, develop and execute on the Fund’s investment mandate based on its team, geographic presence, market experience, project development capability, etc.
- **Proven relationships with institutional investors and ability to raise capital.** The fund manager will be expected to raise capital for CERF and must be able to attract both concessionary and for-profit funds.
- **Ability to conduct business relationships in Spanish and English.** Experience working in Puerto Rico and/or Latin America is desirable considering the cultural and governmental environment.
- **Highly respected and credible.** The complexity of the Fund requires an established manager that can provide credibility for both investors and other stakeholders in Puerto Rico.

## **Chapter V: Selection Criteria**

The following table highlights the criteria under which Respondents will be assessed for the fund manager role.

<b>Criteria</b>
Alignment with the CERF’s mission and vision
Team credentials, leadership, previous experience, and level of effort from the team
Ability to execute with experience in the renewable energy sector
Proposed approach to the structuring of the Fund to achieve the established goals
Proposed fee structure

## **Chapter VI: Questionnaire**

Please limit total responses (i.e., answers to questions in Sections VI.1-VI.7) to 20 single spaced, single sided pages. Required attachments (also listed in Chapter VII) will not count towards the page limit.

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**Section VI.1: Firm Background and Experience**

Firm Name	
Global Headquarters	
Parent Firm ( <i>if applicable</i> )	
Central Point(s) of Contact for CERF and Brief Biographies (3-4 bullet points on experience; add additional rows as needed)	<i>Name:</i> <i>Title:</i> <i>E-mail:</i> <i>Phone:</i> <i>Experience:</i> <i>Proposed Role as it relates to CERF:</i>
	<i>Name:</i> <i>Title:</i> <i>E-mail:</i> <i>Phone:</i> <i>Experience:</i> <i>Proposed Role as it relates to CERF:</i>
Office Locations and Number of Staff (per location)	

Why is your firm interested in and uniquely positioned to manage CERF? How does this fit into your firm’s long-term strategy?

What is your firm’s experience working in implementing energy resilience projects? Please complete the table below highlighting recent resilient energy projects that your firm has executed (limit of 10 projects, prioritizing projects executed most recently).

Project Name	Jurisdiction	Brief project description, role of Respondent and status ( <i>include any project development work undertaken</i> )	Financial close & Year completed ( <i>anticipated</i> )	Investment structure (including anticipated and realized IRR)
<i>e.g. CT Solar (solar plant)</i>	<i>Cape Town, South Africa</i>	<i>[Firm] sourced, developed and constructed a solar project on the outskirts of Cape Town. Development activities included plant design, interconnection studies with grid and grid stability work. Plant is operational.</i>	<i>Completed in 2014</i>	<i>Equity investment from Global Infra. Fund III, 15% IRR anticipated / 10% IRR realized to date</i>

Please list all related/active funds using the chart below (add additional rows as needed, limit of 10 funds, prioritizing funds executed most recently):

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Fund Name	First Close	Fund Tenor/ Term	Size (\$M)	Target IRR (Net)	Realized IRR to Date (Net)	Capital Structure (include leverage if applicable)	Geography	Investment Thesis
<i>e.g. Global Infra Fund I</i>	<i>2009</i>	<i>10 years</i>	<i>\$500</i>	<i>8%</i>	<i>6%</i>	<i>Private Equity</i>	<i>Global (OECD)</i>	<i>Brownfield infrastructure assets</i>
		Total:	\$					

**Section VI.2: Alignment with CERF’s Mission and Vision**

Please explain how your firm’s values and experience aligns with the mission and vision of the CERF?

Please explain how your proposal reflects and incorporates the mission and vision of the CERF?

**Section VI.3: Ability to Execute on CERF**

Please describe how your firm would structure and execute on CERF?

Please describe how your firm controls portfolio investment risk?

How does your firm propose to measure/track risk for the type of projects described for the Fund?

Do you stress test your portfolios? If so, please describe how you propose to stress test the portfolio for CERF?

Beyond generating returns, what other outcomes should the CERF seek to achieve? How is your firm best placed to achieve this?

How would you categorize CERF during fundraising? What would be your top three selling points for the CERF?

How much time do you anticipate it would take to raise the required funding for CERF? What would your fundraising strategy look like?

**Section VI.4: Staffing**

How would you propose staffing CERF? Currently, is your staff assigned to specific funds or do they cover multiple mandates?

Please describe the core team that would support the execution of CERF and their expected level of effort for this fund (i.e., indicative biographies, including level of experience, geographic location, sector focus, etc.). Please attach resumes of the proposed team.

What types of senior staff would be engaged throughout the Fund’s life and to what extent?

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## **Section VI.5: Investment Strategy and Structure**

Based on the information provided in the Concept Note, the dual goals of demonstrating the viability of energy resilient microgrids and mobilizing institutional investor capital, and your firm’s capabilities, how would your firm structure the following key terms for CERF?

Fund tenor/term, investment period and rationale.

Fund return target and rationale.

Expected exit strategy (as applicable).

Nature of collaboration with the CERF organizations.

What other institutions would you work with to achieve success, and how would you work with them?

Why is your firm uniquely positioned to fundraise for CERF? What sources of capital do you anticipate targeting for CERF? Do you foresee current investors in other mandates for your firm to be fundraising targets?

What are your views on having a mix of debt and concessionary capital to support resilient energy microgrid projects?

What concerns/risks do you see in the proposed structure and how would you mitigate them?

What changes or improvement would you propose to the suggested structure for CERF? How do you see such an alternative structure being able to overcome key impediments?

Based on the concept note and information in this RFP, what are the changes that you would propose to the CERF team’s current on-the-ground activities?

The CERF supports the advancement of diversity, equity, and inclusion (DE&I) in the communities we support and in the composition of the CERF. What approaches will your firm use to incorporate DE&I, and what existing policies does your firm have on DE&I?

The CERF team, in completing more than 90 resilient microgrid projects thus far, has designed procedures to limit operational risks resulting from COVID-19 and protect systems from natural disasters and social disruption. These procedures can serve as a starting point for an operational risk mitigation strategy. What sorts of approaches would your firm employ to ensure continuity of operations and insure against business interruption risks due to disruptive events?

## **Section VI.6: Fee Schedule**

Please list your proposed fee schedule for the Fund. Please include the basis for those fees.

## **Section VII: Additional Items & References**

The CERF team would like to move forward with developing the Fund in the short-term with a desired first close in 2021 or early 2022. Should your firm be selected, are there any factors that would delay immediate engagement from your end?



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Are there any additional factors that would prevent your firm from executing on CERF mandate? Please include any pending legal, strategic, or other related items.

Please include any additional items (text only) that you believe should be taken into account in considering your firm for management of the Fund.

Please list no more than four references that you believe can speak to your firm’s capabilities in managing the Fund. References can be investors or other parties outside of your firm. Please note that the CERF team will contact references in the review process.

<b>Reference #1</b>	
Name	
Company	
Title	
Phone	
E-mail	
Relation to proposing firm	

<b>Reference #2</b>	
Name	
Organization/Agency	
Title	
Phone	
E-mail	
Relation to proposing firm	

<b>Reference #3</b>	
Name	
Company	
Title	
Phone	
E-mail	
Relation to proposing firm	

<b>Reference #4</b>	
Name	
Company	
Title	
Phone	
E-mail	
Relation to proposing firm	

Please describe your firm’s current anti-corruption and money laundering policy and how it is currently implemented at due-diligence, investment decision, and investment monitoring stages.

Please submit any relevant documentation as an attachment (e.g., copies of your firm's policies).

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## **Chapter VIII: Required Attachments**

The documentation requests made in Chapter VI Questionnaire are listed below:

- Copies of your firm's policies (requested in Section VI.1 on Alignment with CERF’s mission and vision.)
- Resumes of the proposed team (requested in Section VI.4 on Staffing.)
- Fee schedule (requested in Section VI.6 on Fee Schedule.)

## **Chapter VIII: Logistics**

All clarification questions and final bid proposals should be sent to: [CERF@RMI.org](mailto:CERF@RMI.org)

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*Provided as indicative of the approach taken by the CERF team in the last three years.*

**Chapter I: Introduction**

In times of ongoing crisis, Puerto Rico remains highly vulnerable. The island, struggling through more than a decade of recession and debt-driven austerity, has recently faced hurricanes, earthquakes, strained finances, and now is handling a resurging pandemic with a weak healthcare system and limited financial resources. The fragile state of public utilities, particularly the power sector, makes communities vulnerable to frequent and periodically long-duration power outages.

With limited and delayed federal support, and major resource challenges at the local level, many Puerto Ricans have lost much of their trust in the public sector to help support communities. The philanthropic and private sector can advance this objective to spur activity on community resilience, while eventually integrating with public policy objectives (as stated in Puerto Rico's Act 17 of 2018). To pursue resilience, drawing upon the initiative and capabilities of communities first and foremost is not only attuned to the particularities of Puerto Rico, but increasingly a leading strategy for securing a clean, equitable, and resilient energy transition. As energy systems to provide resilient power become increasingly cost competitive, the potential for finance to unlock this market and move past grant-based modalities is clear.

**Chapter II: Overview**

Presently, microgrid solutions are not affordable to the individuals, organizations, and businesses who need them most, especially LMI groups. Residents and businesses in these communities cannot afford the high up-front costs of solar (often tens of thousands of dollars or more) and have low-to-no credit history, posing a barrier to qualifying for financing. Due to their capital intensity, solar microgrids are penalized in high financing cost environments. High-risk markets such as Puerto Rico often exhibit high financing costs for renewable energy due to investment risks that can exist in early-stage markets. With 44.9% of the population in Puerto Rico living below the poverty line, affordable microgrid financing is hugely important to achieve a resilient society and economy. Following the 2017 hurricane season, the average customer lacked power for seven months, and not until after 11 months had passed did the government owned PREPA reconnect all customers. These outages were deadly and highly disruptive to community activity. Electricity access in Puerto Rico is not only unreliable, but also expensive. According to the Energy Information Administration (EIA), Puerto Ricans pay approximately twice as much for power as those on the mainland US. The high costs combined with the high poverty rate in Puerto Rico means that many LMI communities are particularly energy burdened, with energy burden defined as the percentage of household income spent on energy.

Local banks that do offer loans to those with low or no credit score, only offer loans with APRs of approximately 19% combined with substantial collateral requirements. This challenge presents a great opportunity for policymakers, financiers, philanthropies, and solar technical experts to systematically address risk, lowering financing costs and leading to competitive investment.

To date, the CERF members have developed and implemented over 90 microgrids across Puerto Rico using grants to cover project costs. These solar islands serve as proof-points, keeping the lights on at public schools, community centers, primary health care centers (also known as 330 health clinics), community aqueducts, and LMI housing after recent earthquakes and during everyday grid outages.

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**Chapter III: Critical Facilities and Pipeline**

The Fund is aimed at providing financial solutions to a particular set of critical facilities in Puerto Rico. The CERF team created the following definition of critical facility, which expands on the Federal Emergency Management Agency (FEMA) definition:

*“Critical facilities are those that provide essential life services, emergency services, or economic services; support vulnerable or dependent populations; or protect public safety; especially during and after a disaster”*

As part of the planning process for this fund, the CERF team analyzed the demand-side market for solar + storage microgrids at critical facilities in Puerto Rico and found that Puerto Rico has approximately 23,000 critical facilities in need of a solar + storage microgrid. By estimating the types of critical loads and modeling daily representative load profiles in Homer Energy Software, the study concluded that Puerto Rico requires 676 MW of solar photovoltaics (PV) and 952 MWh of lithium-ion battery storage to power critical loads in critical facilities across mainland Puerto Rico and the islands of Vieques and Culebra. This requires approximately \$2.6 billion in capital expenditure. It is important to note that this fund seeks to focus specifically on the private and non-profit facilities as public facilities do not pay for power. For public facilities, the CERF members are focusing on partnering with municipalities to co-apply for federal funding for microgrids. The fund manager is not expected to lead the public facility engagement.

The facilities have been categorized into 36 types including hospitals, clinics, airports, elderly care facilities, shelters, water treatment plants, and more. Table 1 summarizes the breakdown of the 36 critical facility types.

**Table 1. Breakdown of 36 types of critical facilities.**

911 Call Center	Dam	Rehab Center	Science Facility
Communications Tower	Elderly Care Facility	Admin Building	Shelter
Control Tower	Fire and Rescue Station	Bus Transit Center	Small Business
Correctional Facility	Food or Water Supplier	Community Center	University
Disaster Relief Center	Government/Federal Facility	Daycare	Waste Disposal Facility
Emergency Operations Center	Grocery Store	Financial Institution	Wastewater Treatment Plant
Hospital	Pharmacy	Gas Station	Water Pump Facility
Medical Clinic	Police Station	Homeless Shelter	Water Treatment Plant
Airport	Port Facility	School	Water Well or Tower

Each critical facility has been analyzed according to the following parameters:

- Level of priority, divided in three tiers.
- Expected range size of PV system.
- Expected level of interest in the program (this considers their ability to pay and their dependence in electric power, among other).
- Expected level of repaying the systems (in cases where it is low, a higher grant % is needed for the project to be viable).

Further details on the survey results for critical facilities can be found in Appendix A.

The pipeline estimation (and pilot projects) presented in this section are the product of the partnership and collaboration of RMI, Fundación Comunitaria de Puerto Rico (FCPR) and Resilient Power Puerto Rico (RPPR) with support from The Rockefeller Foundation, and in collaboration with many other stakeholders in Puerto Rico. This coalition formed in 2019, as the byproduct of previous shared work on clean energy microgrids. In November of 2019, the coalition held a summit (“Cumbre para Ampliar Recursos de Energía Resiliente en Instalaciones Críticas”) in San Juan, with diverse participants

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from community groups, key businesses, government, lenders, and civil society. This summit cemented the activities and purpose of the coalition as define a strategy and implementation mechanisms to provide renewable back-up energy for critical facilities.

**Section III.1: Proposed Approach to Financial Analysis**

We expect that a thorough analysis of certain financial indicators will be made as part of the selection process to identify critical facilities suitable for financing. Given that many of these critical facilities have no financial statements to show and no credit score, such assessment could be based, among others, on matters like their track record of payment of their electricity bills in the past. This could be used to establish the level of risk for a facility and help decide the level of concessionary capital to be allocated to the facility.

**Section III.2: Proposed Considerations for the Selection of Critical Facilities**

- Criticality: this index takes into consideration several social and economic parameters, such as: risk of natural disasters, socioeconomic status of the community, population that depends on the facility, education level, estimated people served, access to roads. Also, some additional specific aspects are considered, such as whether the facilities were among the last 30% to be re-connected to the grid after the outage caused by hurricane María, and whether they are health facilities (which are treated with a higher priority).
- Technical aspects: for each facility, a definition will be needed regarding the size of solar PV system and the size of battery energy storage system (BESS), which will depend on technical factors including but not limited to: available surface (both rooftop and ground-mounted), solar irradiation, load profile, portion of loads considered “essential”, monthly variation in both power demand and expected power generation, and electricity tariffs paid in the present situation.
- Financial aspects: The need for concessionary capital will vary between critical facilities. Some types of facilities, such as health centers or communication towers, are highly dependent on electricity and will more likely need more support, and consequently, additional concessionary capital will be needed. In contrasts, facilities such as small businesses with a regular income to back repayment may require a lesser share of concessionary capital as compared to NGOs.

Facilities with a higher criticality could have a higher priority to access concessionary capital. As systems without batteries would not provide resilience, the CERF team would prefer that facilities with higher criticalness have a minimum BESS to cover all the essential loads. Likewise, those facilities that are very restricted in their available surface will have a lower priority if the available area does not cover the needs for the essential loads. The size of the systems needed could also be taken into consideration to exclude facilities that are too small.

**Section III.3: Current Pilot Projects**

The team is currently working on several pilots with the goal to help inform the process and have them serve as demonstration projects for the fund. The main objectives of the pilot phase are to test diverse debt/concessionary blends, different O&M models, potential use of federal funds for private use, validate techno/financial processes and models, and validate the proof of concept with real facilities.

In this section we describe how the pilot facilities were identified. The starting point was a list of 295 potential facilities drawn from various databases compiled by RMI, FCPR, and RPPR during prior projects and community engagements. For example, RPPR and RMI provided information from a jointly executed incubator program that promoted the development of microgrid projects with local community organizations, and FCPR provided information it had compiled from community health centers across Puerto Rico. Other government agencies and non-profits operating in the energy

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and resilience space, such as the Environmental Protection Agency (EPA) and the Asociación de Salud Primaria de Puerto Rico, submitted additional facilities to be considered for the Pilot selection.

Due to budget and scope constraints in the pilot process, 154 facilities were excluded from the original list. However, some of the excluded facilities could still be considered by the fund upon activation. Table 2 shows the list of facilities excluded in the first screening and the rationale for exclusion.

**Table 2. Facilities excluded from the list of critical facilities for the pilot program**

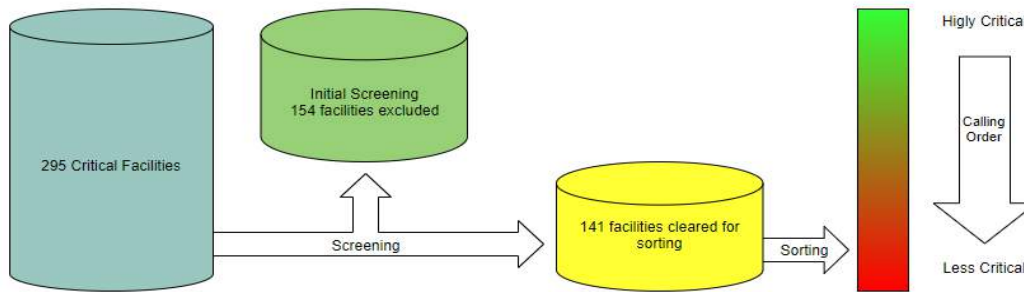
Facility Type	Count	Rationale
Education	3	Public facility (does not pay electricity)
Local government facility	21	Public facility (does not pay electricity)
Community aqueducts	2	Included in other energy resilience initiatives
Hospital	3	System size likely to be > 50 kW
Health facility (CDT)	3	Public facility (municipal)
Health Clinic 330	69	System Size likely to be > 50 kW. Also, most of these facilities have been included in other energy resilience initiatives.
Church	11	The pilot phase has a tight schedule, and most churches have complex administrative structures which are time consuming to address. These could be eligible under CERF.
Community Centers	37	Co-managed with municipalities and likely to not currently pay for electricity
Public Security	5	Public Facility (does not pay electricity)

Type	Number of facilities	Percentage of Total
Alternative Education	13	9%
Community Health Clinic	1	1%
Corporate Offices	6	4%
Critical Business	54	38%
Daycare Centers	12	9%
Elderly Center	5	4%
Food Security	5	4%
Health Facility – aid functional diversity	4	3%
Health related facility	3	2%
Housing	1	1%
NGOs – multiple services	12	9%
Other Business	5	4%
Services for the homeless	3	2%
Shelters	17	12%
<b>Total</b>	<b>141</b>	<b>100%</b>

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The facilities were first ranked based on vulnerability and health relation criteria and the outreach strategy was to approach the most vulnerable facilities first.

**Figure 2. Schematic of Re-prioritization Process**



In about two weeks, the team reached 63 facilities primarily over the phone due to COVID limitations., Of the 16 facilities that submitted applications for the pilot phase, 11 facilities submitted electric bills and paperwork in compliance with the pilot program requirements. Table 3. summarizes the demographics of such facilities.

**Table 3. Characteristics of facilities that applied to the pilot phase**

Facility Type	For profit	For profit	Non profit	Non profit	Non profit	For profit	Non profit	Non profit	For profit	Non profit	For profit
Location	Utuado	Patillas	Arecibo	Toa Baja	Caguas	Coamo	Moca	San Juan	Isabela	Lajas	Juana Diaz
<b>Energy Requirements</b>											
Average kWh/month	5869	4313	11657	1248	731	364	14824	18530	13066	1050	1206
Average (kWh/yr)	69309	51073	139888	14983	8777	4373	177896	222368	156800	12602	14472
<b>PV size and cost estimation</b>											
Peak Sun Hours (per Year)	1941	2040	2132	2050	1960	1988	2023	1999	2087	2161	2117
Estimated PV kWp	45.62	31.91	82.50	9.19	5.63	2.77	110.57	139.87	94.47	7.33	8.60
Estimated PV USD/kWp	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280	2,280
Estimated PV Cost (USD)	107 K	75 K	188 K	21 K	12 K	6 K	252 K	318 K	215 K	16 K	19 K
<b>Battery size and cost estimation</b>											
Estimated BESS (kWh)	66.46	48.97	134.14	14.37	8.42	4.19	170.59	213.23	150.35	12.08	13.87
Estimated BESS (USD/kWh)	805.0	805.0	805.0	805.0	805.0	805.0	805.0	805.0	805.0	805.0	805.0
kWh/kWp ratio	1.48	1.56	1.63	1.56	1.49	1.52	1.54	1.52	1.59	1.65	1.61

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<b>BESS Cost (USD)</b>	<b>53 K</b>	<b>39 K</b>	<b>107 K</b>	<b>11 K</b>	<b>6 K</b>	<b>3 K</b>	<b>137 K</b>	<b>171 K</b>	<b>121 K</b>	<b>9 K</b>	<b>11 K</b>
<b>System cost estimation</b>											
<b>Total System Cost (USD)</b>	<b>160 K</b>	<b>114 K</b>	<b>296 K</b>	<b>32 K</b>	<b>19 K</b>	<b>9 K</b>	<b>389 K</b>	<b>490 K</b>	<b>336 K</b>	<b>26 K</b>	<b>30 K</b>

**Table Notes and Assumptions:**

- \*PV system designed to provide 100% of the yearly energy requirements
- \*Peak Sun Hours Source = Solar Atlas - Global Tilted Irradiation @ optimum tilt angle converted to PSH @ 1:1
- \*Average performance ratio calculated from Solar Atlas (PVout kWh/kWp)/(Global Tilted Irradiation @ optimum tilt angle).
- \*BESS kWh is estimated by assuming a critical demand 35% of the average daily kWh x 24 hours.
- \*Estimated BESS size (kWh) is given in total battery capacity.
- \*PV Capital Cost (USD/kWp) is the average from previous RMI projects and project quotes.
- \*BESS Capital Cost (USD/kWh) is the average from previous RMI projects and project quotes.
- \*Data is subject to change after assessing critical load needs.

Pilot Selection: From the facilities that applied to the pilot phase, three were selected as primary candidates. The selection process considered several quantitative factors such as criticalness ranking, closeness to ideal system price (based on pilot phase budget), and qualitative aspects such as importance during emergencies, community impact and alignment with pilot phase goals.

**Table 4. Sample pilot facilities.**

<b>Pilot #1: Service Station in Utuado</b>	<b>This facility is primarily a gas station serving a remote mountainous community. During emergencies, their services are particularly critical, and they serve as a market and pharmacy as well.</b>
<b>Pilot #2: Pharmacy in Patillas</b>	This small business helps provide medicines, including with delivery during COVID-19 and helped distribute aid after Hurricane Maria.
<b>Pilot #3: Non-Profit in Toa Baja</b>	This non-profit works with children and adolescents in a vulnerable area outside San Juan. The group provided support to more than 400 families after Hurricane Maria and helps provide health clinics to the community.

**Table 5. Techno-financial details of the three facilities selected for implementation**

<b>Critical Ranking</b>	<b>Rank</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>Region</b>		Utuado	Patillas	Toa Baja
<b>Type of Pilot</b>	Type	Service Station	Pharmacy	Education and Development
<b>PV System Size</b>	kW	47	32.9	9.3
<b>PV System Cost</b>	USD	<b>107 K</b>	<b>75 K</b>	<b>21 K</b>
<b>Battery System Size</b>	kWh	66.46	48.97	14.37



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<b>Battery System</b>	<b>USD</b>	<b>53 K</b>	<b>39 K</b>	<b>11 K</b>
<b>Total System</b>	<b>USD</b>	<b>160 K</b>	<b>114 K</b>	<b>32 K</b>
<b>Contingencies</b>	<b>%</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>
<b>Total System Plus Contingencies</b>	<b>USD</b>	<b>176 K</b>	<b>125 K</b>	<b>35 K</b>

**Table Notes and Assumptions:**

- \*Estimated BESS size (kWh) is given in total battery capacity.
- \*PV Capital Cost (USD/kWp) is the average from previous RMI projects and project quotes.
- \*BESS Capital Cost (USD/kWh) is the average from previous RMI projects and project quotes.
- \*Data is subject to change after assessing critical load needs.

The allocation of funds to these projects should allow a photovoltaic system with battery support system to provide resilience to the microgrid. The total CAPEX (including a 10% cushion to cover eventual contingencies) for these projects is approximately \$336,000.

**Chapter IV: The Proposed Community Energy Resilience Fund**

**Section IV.1: Overview**

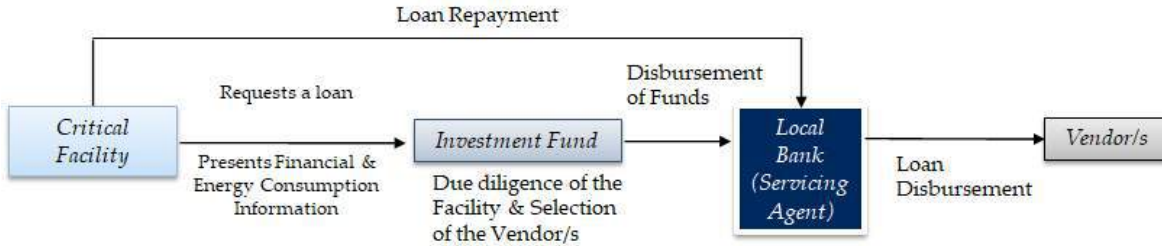
With an estimated \$2.6 billion required to finance more than 23,000 critical facilities, the best way to use limited concessionary capital to provide resilience to more critical facilities in Puerto Rico, is to create a blended fund financed by both concessionary capital and debt.

The CERF team has created momentum in assembling a strong coalition of partners and proposing an initial fund structure to accomplish its goals. The CERF team expects that the fund manager will provide valuable changes to the model and strategy in order to achieve the Fund’s objectives. **As such, team is eager to receive modifications and alternative structures that deviate from the one described.**

Our initial analysis indicates that the Fund size can be between \$50 and \$70 million. As mentioned previously, we would propose that facilities with a higher criticality have a higher priority to access concessionary capital to leverage the debt and reduce risk for the investment capital. Financing conditions will vary for each facility according to their financial situation, but in the proposed structure it is expected that the interest charge should cover the Fund’s costs including management fees, debt servicing fees, operation and maintenance costs for the facilities, and provide a return to the investors. One potential structure involves the Fund making disbursements directly to a Servicing Agent. The role of the Servicing Agent will be to process the loans, make payments directly to the EPCs, and collect debt payments form the facilities. Figure 3, illustrates the suggested role the different parties can have in the financing:

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**Figure 3. Schematic of Suggested Roles in Financing**



### Section IV.2: Fund Allocation Rationale

We believe that for the Fund to be sustainable and reach the most critical facilities as possible, it is key to efficiently allocate capital from both concessionary capital and debt. A pure debt option for some of these facilities would be too expensive for the facilities, and too risky for the fund investors. As it is the case for many critical facilities in Puerto Rico, the use of concessionary capital for these projects will allow the facility to pay for the financing and debt to reduce risk.

The CERF team proposes that the debt cover capital expenditures only, while the concessionary capital can cover eventual contingencies, and a portion of capital expenditure down payments, and the rest will fund a loan loss reserve. The rationale for this loan loss reserve is to reduce risk for the investor by covering delayed or defaulted payments.

As a reference, pilot facilities blend of debt to concessionary capital, was set to allow facilities to have a saving on their yearly PREPA bill when compared to the debt payments (the critical facility will be using solar energy instead of PREPA energy and PREPA bill savings enables repayment of the loan to CERF).

## Chapter V: Suggested Third Party Providers

### Section V.1: Technology Providers

Local Puerto solar installation companies can and should be recruited to design the electrical and physical characteristics of the microgrids, procure all equipment and install the equipment to the point of commissioning. It will be at the discretion of the fund manager whether or not these sub-specialties would be provided by EPC contractors or outsourced to firms with expertise in design and others who do the procurement and installation. Furthermore, to leverage economies of scale, the fund manager can opt to procure equipment in bulk. Vendors may provide financing options which can be beneficial to the cash flows of the Fund.

### Section V.2: Local Banks and Servicing Agents

Local Banks and credit unions have an established foothold in Puerto Rico. They are in close relation with the residents of the island and have expertise on its financial landscape. Ideally, these institutions will be retained as servicing agents to collect payments from borrowers and make disbursements to the EPC contractors directly for approved projects at the Fund's directive. Local banks and credit unions have both the human and the technical resources to carry out the servicing agent role and have already expressed their interest to perform this task for the Fund.

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## **Chapter VI: CERF Team Background**

### **About The Rockefeller Foundation**

The Rockefeller Foundation advances new frontiers of science, data, and innovation to solve global challenges related to health, food, power, and economic mobility. As a science-driven philanthropy focused on building collaborative relationships with partners and grantees, The Rockefeller Foundation seeks to inspire and foster large-scale human impact that promotes the well-being of humanity throughout the world by identifying and accelerating breakthrough solutions, ideas, and conversations.

### **About Rocky Mountain Institute**

Rocky Mountain Institute (RMI)—an independent nonprofit founded in 1982—transforms global energy use to create a clean, prosperous, and secure low-carbon future. It engages businesses, communities, institutions, and entrepreneurs to accelerate the adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewable energy. RMI has offices in Basalt and Boulder, Colorado; New York City; the San Francisco Bay Area; Washington, D.C.; and Beijing.

### **About Resilient Power Puerto Rico**

Resilient Power Puerto Rico leverages its network of committed collaborators to: strengthen communities' capacities to assess and address their critical needs; increase local access to knowledge, tools, and resources for sustainable and equitable community development; and foster the continuity of critical built and social infrastructure systems.

### **About Fundación Comunitaria de Puerto Rico**

FCPR promotes access to water, renewable energy, housing, economic development, and education by strengthening community capital to bridge the inequality gap in our communities.

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**Appendix A**

**Additional Details on Pipeline and Survey Results:**

<b>Type of CF</b>	<b>Quantity</b>	<b>Priority</b>	<b>Level of interest</b>	<b>Repayment Ability</b>	<b>Approx. Size</b>
Small Business	13228	3	High	High	50-100 kW
Admin Building	123	3	Low	Low	200-300 kW
Communications Tower	2658	1	High	High	200-300 kW
Bus Transit Center	13	3	Medium	Medium	More than 300 kW
Gas Station	1100	3	High	High	100-200 kW
Community Center	664	3	High	Low	50-100 kW
Financial Institution	543	3	High	High	200-300 kW
Correctional Facility	39	1	Medium	Medium	More than 300 kW
Dam	64	2	High	Low	More than 300 kW
Grocery Store	469	2	High	High	More than 300 kW
Disaster Relief Center	28	1	High	Medium	200-300 kW
Daycare	223	3	High	High	25-50 kW
Emergency Operations Center	21	1	High	Medium	200-300 kW
Hospital	136	1	High	High	More than 300 kW
Fire and Rescue Station	93	2	High	Low	100-200 kW
Food or Water Supplier	134	2	High	High	200-300 kW
Pharmacy	122	2	High	High	50-100 kW
Government/Federal Facility	25	2	High	Medium	More than 300 kW
University	105	3	High	High	More than 300 kW
Homeless Shelter	23	3	Medium	Low	50-100 kW
Elderly Care Facility	75	2	High	High	100-200 kW
Medical Clinic	122	1	High	Medium	100-200 kW
Control Tower	19	1	High	High	More than 300 kW
Police Station	47	2	Medium	Low	50-100 kW
Port Facility	12	2	High	Medium	200-300 kW
Rehab Center	90	2	Low	Medium	50-100 kW
School	1108	3	Medium	Medium	100-200 kW
Science Facility	19	3			
Shelter	420	3	Medium	Medium	100-200 kW
Airport	17	2	High	High	More than 300 kW
911 Center	3	1	High	High	200-300 kW
Waste Disposal Facility	16	3	Low	Low	
Wastewater Treatment Plant	67	3	Low	Medium	
Water Pump Station	961	3	Medium	Medium	
Water Treatment Plant	89	3	Medium	Medium	
Water Well or Tower	229	3	High	Low	Less than 25 kW
<b>TOTAL</b>	<b>23,105</b>				

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In this classification, Tier 1 facilities add over 23,000 facilities, for a total of more than 773,000 kW of installed capacity. Within Tier 1 facilities, the higher number corresponds to Communication Towers, for 86% of the total Tier 1 installed capacity.

The largest number of facilities corresponds to small businesses, which represent 57% of the total. They are mostly Tier 3 cases, but with a high level of interest and capacity of repaying the systems, so it is highly likely that this will be a key segment for the Fund.