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

IN RE: OPTIMIZATION PROCEEDING OF MINIGRID TRANSMISSIONS AND DISTRIBUTION INVESTMENTS	**CASE NO.:** NEPR-MI-2020-0016 **SUBJECT:** Questions for Stakeholders

INDEPENDENT CONSUMER PROTECTION OFFICE
ANSWERS TO QUESTIONS (5-11) FOR STAKEHOLDERS

TO THE PUERTO RICO ENERGY BUREAU:

COMES NOW, INDEPENDENT CONSUMER PROTECTION OFFICE ("ICPO") , through its Executive Director, and respectfully submit answers to Questions 5-11 for Satakeholders pursuant PREB's Resolution dated March 24, 2021:

1. On December 22, 2020, the Energy Bureau of the Puerto Rico Public Service Regulatory Board ("PREB" or "Energy Bureau") issued a Resolution and Order through which it initiated the referenced case to commence the Optimization Proceeding described in the IRP Final Order of August 24, 2020. As part of the December 22, 2020 Resolution, the PREB scheduled an initial two-day Technical Workshop, open to all stakeholders and PREPA. On March 24, 2021, the PREB issued a Resolution including several questions with the purpose of gathering input form PREPA and stakeholders. In said Resolution, the PREB required that answers by PREPA and stakeholders to questions 5 to 11 be filed within three (3) weeks from the notification date of the same.

2. As required by the PREB, herein the ICPO provides its answers to questions 5-11.

QUESTIONS 5-11:

-QUESTION # 5:

Q: What are the best "no regrets" distributed energy resource solutions for Puerto Rico? Why? How should they be deployed, implemented or procured? Please be as specific in your response as is possible, including identifying the scale and type of distributed resourse solution, and the likely physical locations (i.e., e.g., rooftops, substations, brownfields, greenfields) and any other relevant attribute or consideration.

A: BESS installations is one possible "no regrets" solution for Puerto Rico. BESS installations may be done at distribution substations (or at any point within their feeders) with already, near to, or forecasted to be saturated feeders in order to reduce the pressure on the distribution equipment due to reverse power flow on them and to serve also as a benchmark for future applications throughout the Island. These units are as compact and safe as an enclosed substation, and they may be scattered in neighborhoods or load centers as well.

Distributed generating sources should be located, as a goal, in places that can be identified as high energy density demand, and at the same time with a large potential area for solar collection, with the highest production-demand correlation available. This approach may be done with a ranking matrix procedure to sort and select the best available locations. In addition these generation sources, at these suitable locations, lower voltage distribution feeders should be upgraded by increasing conductor gauge and substations to 13.2 kW at high load centers with a high number of available hours of sunlight, such as town centers (cascos de pueblos) and neighborhoods with many commercial and industrial customers that share distribution infrastructure with residential customers.

-QUESTION # 6:

Q: How should the resiliency value of specific distributed resource solutions be gauged?

A: The gauging of distributed resources solutions will depend on the equipment used and how it is integrated as a system, including loads to serve, and how "hardened" the installation was done for survival purposes. In order to gauge these distributed resource solutions, they have to be compared with similar applications and locations to see how these have performed through project inspections and records with similar existing or modeled projects. Gauged parameters for the equipment or system may include the following:

- **the degree of expected survival in different foreseeable contingencies to provide service,**
- **how long this system can provide uninterrupted service**
- **the equipment or system expected operational lifespan**
- **how low operational and maintenance requirements are**

- **the degree or percentage of damage that the equipment or system may sustain and still be able to provide service,**
- **and how easy or difficult recovery may be done if damage occurs. In this aspect, for example, BIPV facilities are harder to recover from impact damage than a typical rooftop PV on a flat roof, since it is difficult as time passes to procure exact or even similar PV modules for replacement.**

-QUESTION # 7:

Q: How can the Energy Bureau support the most rapid deployment of distributed energy solutions for increased resiliency?

A: The Energy Bureau can support rapid deployment of distributed energy solutions in two ways:

- **First, the Energy Bureau can promote a program for approximately 3 kWDC photovoltaic systems (depending on PV module ratings availability) with matching energy storage for the 3 kWDC production to be interconnected and with net metering. The photovoltaic systems will be pre-engineered and able to supply no more than 20 Amps at 240 VAC for critical loads, by inverters or systems that will be grid tied and allowed to be on net metering. These projects may be financed by FEMA or CDBG funds and may be operated similar to the Weatherization Assistance Program in Puerto Rico, where the projects are procured and installed by qualified suppliers and installers under local Government supervision and managed by a Government agency such as AFI or PPPE, or as an alternative by one or more non-profit organizations. These systems will cover minimum critical loads at homes during blackouts and will be grid tied during "blue sky" conditions. These PV systems shall be automatically granted interconnection, and FEMA or CDBG funds should be used for any distribution upgrade related to those interconnections. These PV systems are small, which allows for more systems on feeders. If a customer that has one such PV system, and later wishes to increase capacity, they should do a new expedited process, as per Act 17-2019, for the system upgrade if the capacity will be under 25 kW, and the regular process if the capacity goes over 25 kW.**

- **Second, we encourage the Energy Bureau to continue the enforcement of the interconnection progress of PREPA and LUMA for distributed energy resources. Specific recommendations regarding this topic were filed by the ICPO before the Energy Bureau on April 9, 2020 on case docket number NEPR-MI-2019-0016.**

-QUESTION # 8:

Q: What is PREPA's role or LUMA's role in facilitating DERs for resiliency? Please comment on each of the following potential roles for PREPA or LUMA.

PV and/or BESS located at distribution substation or feeders that serve areas with low opportunities to have self-generation, such as apartment buildings, should be considered as a priority.

a. Should PREPA or LUMA be responsible for analysis of microgrid options? Why or why not?

Yes, LUMA or PREPA should be able to create ancillary services to the grid in "blue sky" or normal conditions to allow the consumer to have a return on investment for their equipment and at the same time help LUMA or PREPA defer distribution upgrades, or increase its reliability, resiliency, and longevity of the distribution system.

b. PREPA currently facilitates the development and integration of distributed through procurement of VPPs, and through development of Demand Response programs. Should PREPA or LUMA support direct installation of DERs through specific procurement tariffs?

PREPA has just begun an RFP process to establish the first VPP project(s), therefore the Demand Response Program is in an early planning stage. However, PREPA or LUMA should support direct installation of DER's through specific procurement tariffs to incentivize the use of storage for more than backup purposes, which is the main purpose consumers have at this time. This may help to cope also with the expected changing load profile as electric vehicles become mainstream throughout the Island.

c. Should PREPA or LUMA directly participate in the installation and maintenance of distributed photovoltaic systems with storage? Would this be in alignment with Act 17-2019 and other Puerto Rico public policy that supports "prosumers"?

Utilities in nature are conservative and slow to react to technology changes and shifting consumer preferences. DERs are small systems, and, although some economy may be reached by a buy down volume strategy, the utility has to be fast at implementation. Low installation rates may lead to expensive obsolete inventory, and higher installation costs. In the end, the free energy market, which is one of the goals of Act 17-2019, will be adversely affected.

-QUESTION # 9:

Q: In general, concerning the best microgrid candidate sites across Puerto Rico:

a. Comment on the number, size, facility type, and resource configurations identified at the microgrid sites in the Sandia microgrid report (159 sites)and in PREPA's Appendix 1 IRP filing ("50 potential zones").

A. Please refer to answer 9b.

b. Should all of these sites be specifically targeted for microgrid development for resiliency reasons? Explain why or why not.

A. It seems that the Sandia report and PREPA IRP approach for microgrids were centered in high load density areas. However, in areas where the load is more scattered, the energy demand is less dense, and the terrain is more complex or difficult to access, less practical microgrids will be compared to stand-alone DER solutions. This is due to a higher possibility of distribution infrastructure failure due to an extreme event. This possibility of failure increases as the distance between generation and loads increases on complex terrain, or when the distribution infrastructure is inaccessibility (even on foot). For example, complex terrain that is typical in the center of the Island may cause landslides that will affect the distribution network as well the road access affecting recovery time. As another example, older densely populated housing developments located in metro areas experienced many months without power after Hurricane Maria due to the inaccessibility of their distribution poles, transformers, and wires, which were located in fenced back yards that were covered with vegetation and had right of way intrusions of structures.

c. Comment on how microgrid applications should be paid for, differentiating between "public" and "private" microgrids.

A. If the microgrid is destined to provide service to subsidized loads such as CILT and public housing, then special consideration should be given to increasing their resilience, and the related O&M cost of those services should ba as low as possible.

-QUESTION # 10:

Q: In general, concerning stand-alone DER solutions (i.e., not microgrids) across Puerto Rico:

a. How should stand-alone DER solutions be procured or paid for?

A:See answer question 7, 10b, and the following:

Many consumers that have the resources to buy or find sensible financing for stand-alone DER solutions. However, education of consumers on the benefits of DER for normal or "blue sky" conditions beyond as a way to have backup power is necessary. It is also crucial to ensure that the PREPA or LUMA interconnection process is fast and efficient in order to develop trust in consumers that their systems will be soon in service and net metering credit will be honored and correct.

b. Should the Energy Bureau differentiate between resiliency provided by public purpose DER solutions (e.g. town centers, municipal buildings, water and sewer facilities), and private purpose DER solutions, when considering alternative deployment and procurement vehicles for those resources?

Special consideration should be given to subsidized services such as CILT or CELI in municipalities and public housing, while increasing their resilience and keeping the related O&M costs of those services as low as possible.

-QUESTION # 11:

Q: Provide any other additional comment, response, or supporting documentation that will help the Energy Bureau determine the optimum combinations of distributed resources and more conventional wires hardening approaches for providing resiliency for Puerto Rico load.

A: See responses to previous questions

WHEREFORE, the OIPC respectfully requests that the Energy Bureau take notice of the abovementioned answers to questions 5-11 of its March 24,2021 Resolution.

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