

GOVERNMENT OF PUERTO RICO PUERTO RICO ENERGY COMMISSION
CASE NUM.: CEPR-MI-2018-0001

Subject: Notice of Proposed Rulemaking and Public Comments

Comments are being hereby respectfully submitted as per Resolution of the Puerto Rico Energy Commission dated January 3, 2018 to its electronic address, comentarios@energia.pr.gov, pursuant to Pursuant to Act 38-201712, whereby the Commission published in a newspaper of general circulation a notice on the proposed rulemaking.

The comments contained in this document, together with those inserted in the Original Proposed Regulation revised and attached hereto are being respectfully submitted by Energy & Environmental Consulting Services Corp. (“ESCOPR”) a corporation organized and existing under the Laws of the Commonwealth of Puerto Rico that since its organization in 2003 has provided advisory services to its clients, saving dozens of millions of dollars in energy savings. Its chief executive officer, Jorge Hernández, PE, CEM, has a Bachelor Degree from the University of Puerto Rico and is presently completing a Master’s Degree in Energy Management Engineering in New York Institute of Technology. Eng. Jorge Hernández is a lifetime member of the Association of Energy Engineers, with certifications on Business Energy Professional-BEP, Certified Energy Manager-CEM and is also a registered energy auditor, 18 years of experience working in programs in the management and optimization of energy. From the year 2000 to 2004 acted as Energy Manager de Pfizer Pharmaceuticals.

Following the devastation resulting in the interruption of electrical services to the island residents and to the sectors including industries, commerce, hospitals and hotels, the Puerto Rico Energy Commission (CEPR) in CASE NUM.: CEPR-MI-2018-000, Subject: Notice of Proposed Rulemaking and Public Comments on January 3, 2018 issued a Resolution to attend the restoration of electricity and the energy crisis provoked in the aftermath of Hurricanes Irma and Maria, in said Resolution the CEPR states:

Aware of the need to restore electric service fast and effectively while simultaneously seeking its sustainable development in the long term, through Resolution and Order issued on November 10, 2017 ("November 10 Resolution"),² the Commission identified the installation of distributed

generation, energy storage and microgrid systems as available alternatives consistent with these objectives. On such occasion, the Commission determined that the aforementioned technologies allowed:

(i) the speeding-up of the electric service restoration throughout the Island, through the deployment of distributed generation projects financed, developed and operated by private or non-governmental entities; (ii) the strengthening of the electric system, reducing dependence on centralized sources of generation; (iii) the facilitation of electric service restoration on future occasions through the use of distributed generation systems and microgrids capable of operating independently from the rest of the electric grid; and (iv) the transferring of the responsibility of the restoration and provision of electric service to multiple entities, allowing for greater access to these technologies are part of the energy public policy furthered by Act 82-20104 and Act 57-20145. The damages caused by hurricanes Irma and María, and the complexity associated with restoring electric service does not allow for the continued delay in developing and implementing a regulatory framework that encourages the deployment of distributed generation, energy storage and microgrid technologies.

Accordingly, through the November 10 Resolution, the Commission requested comments from the general public and, in particular from individuals and entities with a direct interest in the electricity sector, regarding the standards that the Commission should adopt to encourage the development of distributed generation, energy storage and microgrid systems. A microgrid is of a "group of interconnected loads and distributed energy resources [...] that acts as a single controllable entity with respect to [Puerto Rico Electric Power Authority's] grid."⁶ That is, a microgrid allows one or more customers to maintain and operate an independent electrical system, separate from PREPA's electrical system, so that the availability of electric service does not depend exclusively on PREPA's service and infrastructure.

The Commission cites as examples of microgrids that of New York University (NYU) that continued to supply electricity in the aftermath of Hurricane Sandy:

There are several examples of microgrids that provide their users greater control over the cost, quality, reliability of service and generation resources. Likewise, the development of microgrids has allowed certain communities to resist natural phenomena, providing continued service during massive blackouts due to said atmospheric phenomena. Worth mentioning is the microgrid developed and implemented by the New York University ("NYU").

NYU has a microgrid with a total capacity of 13.4 MW, which supplies electricity to a total of 22 buildings and installations. This system is interconnected to the city of New York's main electrical network. NYU's microgrid supplies the energy demand of the buildings and installations within the microgrid using its own energy resources, only purchasing energy from the main power grid when its demand exceeds the microgrid's capacity. This arrangement allows NYU greater control over its electricity consumption, the costs associated with its electric service and its generation resources and technologies.

The microgrid's ability to disconnect from the main power grid allows NYU to continue receiving uninterrupted electrical service, regardless of the availability of the electric service provided by the incumbent energy service provider. As an example, after the Hurricane Sandy in 2012, NYU suffered no interruption in its electrical service and was able to continue operations without major setbacks, despite the fact that electric service in the majority of the city was interrupted for several days.

The ECPR in its January 3, 2018 Resolution in synthesis expresses the proposed structure in which the microgrids are to be implemented, as delineated in its Proposed Regulation.

The proposed regulation provides for microgrids based on renewable resources (which generate at least seventy-five percent (75%) of their energy from renewable resources, and use fossil energy resources in a limited way, for example, to provide reliability and back-up service), as well as microgrids based on "combined heat and power" or "CHP" technology (where the use of thermal energy must represent at least fifty percent (50%) of the total energy produced). The proposed regulation also provides for

hybrid systems, which combine renewable resources with fossil based augmentation including CHP technology.

The Proposed Regulation defines Sustainable Renewable Energy as that energy generated from renewable resources as defined in Section 1.4 of Act 82-2010, including:

- i. Solar energy;
- ii. Wind energy;
- iii. Geothermal energy;
- iv. Renewable Biomass Combustion;
- v. Renewable Biomass Gas Combustion;
- vi. Combustion of biofuel derived solely from renewable biomass;
- vii. Qualified hydropower;
- viii. Marine and hydrokinetic renewable energy, as defined in Section 632 of the “Energy Independence and Security Act of 2007” (Public Law 110-140, 42, U.S.C. § 17211);
- ix. Ocean thermal energy; or
- x. Any other clean and/or renewable energy that the Commission may define in the future through regulation or order as renewable energy.

At the present, although the above mentioned technologies are available and have been available for implementation since the enactment of Act 82 of 2010, the same represent only 4% of the total generated electrical power in the island, the prime reason being in the case of the most prevalent technology, Solar and Aeolic, due to the fact that the grid cannot absorb more sustainable energy until such time as PREPA renovates its generating fleet without their input destabilizing the grid.

This being the case, an immediately available feasible option in the Proposed Regulations is CHP by itself or in hybrid form, where technically applicable. Nevertheless, the ECPR must take into account the following facts that could adversely affect the success in implementing the Proposed Regulation.

The economic reality of energy in Puerto Rico is that it is expensive for both businesses and residents and is likely to remain so as the island is separated from the mainland by 1000 miles of ocean. The goal of fostering the most efficient use of expensive resources (human, monetary and natural) would be well served by encouraging the installation of CHP and load independent microgrids (CHP or engine driven load stabilization for renewable based microgrids). Providing for the elimination of taxation (“Crudita”) on the fuel for all sectors that have the energy demand to apply CHP such as Hospitals, Hotels, local manufacturing that do not export and other commercial sectors. Actually only under Act 73 of 2008 Fuel Tax is exempt on CHP and Act 135-136, fuel tax is exempt for the hotels industry for all thermal needs including CHP. Also is recommended the tax elimination on any imported equipment used for the creation and operation of micro-grids would create an immediate incentive to foster the investment required to rebuild the island into a more efficient economy. Why the treasure department wants to tax on an energy that is not being actually taxed, actually PREPA do not pay taxes on fuel and any equipment to generate our energy, the same energy (kwh) that will be supplied by a micro-grid?

Contrary to the case of NYU cited as a guideline to follow, Puerto Rico does not have natural gas pipelines.

Solar and Aeolic application require space and distance from noise emitting equipment such as utility scale “windmills” that may not be available in congested areas already populated, the most vivid example and also most critical being hospitals.

Fuels, such as LPG, Biogas and LNG, the cleaner fuels readily available for use in CHP applications, have a higher cost than in the US mainland because Puerto Rico is not a producer and the same must be shipped to the island as is the case with the fuels and equipment to be used in microgrid applications.

The higher cost is exacerbated by the fuel tax imposed on these fuel by Act 1 of 2015, imposing a duty of \$15.50 per barrel on petroleum derivatives, except in the case of entities, mostly involved in manufacturing, holding a tax exemption decree as per Act 73 of 2008 and hotels as per Act 135 of 2016, when the fuel is use for cogeneration of electricity for their own use or that of their subsidiaries.

Before the restoration of power, which at this moment has not been completed, the sectors most affected in a situation such as that under

consideration for prevention for the future, were residential areas, hospitals, and commercial entities that must pay for the fuel tax for backup power and/or cogeneration of electricity for their own use, if technically available for their particular needs under present regulations or proposed by the ECPR by microgrids. Other sectors, as explained above, could have other options under existing legislation to continue from day to day until power is restored.

Furthermore, a possible aggravation to the high cost of implementing CHP is that it is not clear, whether the transitional charges behind the meter charges for electricity generated established by the ECPR June 21, 2014 in CEPR-AP-2016-0001, RESTRUCTURING ORDER, as requested by PREPA Revitalization Corporation, are being considered in the Proposed Regulation; this is especially a matter to be taken into account under the present legal scenario created by PREPA's petition for bankruptcy under Title III of PROMESA and furthermore the announcement by the Honorable Governor Ricardo Rosello's announcement of PREPA's privatization, acquiesced by the Fiscal Oversight and Management Board (FOMB) at its meeting on February 1, 2018, as may be understood by the comments of its Chairman José B. Carrión in a release before the session that the Board "looks forward to reviewing the Government's plans, and intends to incorporate any transformation of PREPA [Puerto Rico Electric Power Authority] into the revised Fiscal Plan."

Although the present comments being filed before the ECPR may in some ways go beyond the purpose of its request for public comments, based on our extensive experience in working in energy efficiency in Puerto Rico and as an integrator in the development of CHP projects, we respectfully request that the following comments be taken into account by the ECPR, as they are directly associated to its intentions to resolve a latent issue affecting our access to energy efficiency, that in our humble opinion must be resolved concomitantly with the purpose for which the Proposed Regulation is based.

Act 57 of 2014, on which ECPR bases its authority to enact the Proposed Regulation, created an initial policy framework, by establishing an efficiency requirement of at least 60% for highly efficient fossil energy production (See

Article 6.29 of said Act). PREPA's or private entities in their stead, have only a viable option to achieve this goal in the short or medium term is to purchase energy under its avoided cost from co-generators (including CHP ones), as i) it takes over 2 years to build an efficient combined cycle plant, and ii) sustainable energy options such as wind and solar are limited until PREPA's existing plants are updated and the grid is stabilized such that additional energy, capacity or ancillary services are adequately absorbed at competitive PPA rates.

Seccion 3.03 Combined Heat-and-Power Microgrids, should eliminate the minimum requirement of 7000 BTU per KWH as a HEAT RATE. There are just very few CHP configurations that can achieve this limit. The only industrial type CHP that can achieve such limit is when a client replace AIR COOL Chillers by using CHP with Absorption chillers only or by using carbonate FUEL CELL. Other EPA and international acceptable CHP configuration such as Power-Heating, Power-Power, Cooling-Heating, Heating Cooling or Tri-cogeneration will not achive 7000 BTU/KW. ALL types of CHP are good if waste heat can be useful to supplement or eliminate two or more form of energy (Power,Cooling and Heating) . Limiting heat rate will limit the applicability of CHP-Micro grid investments on the island

The purchase by PREPA and/or private utilities of excess energy produced by microgrids is contemplated by the Proposed Regulation, but the limitations on the cost of fuel, the duties imposed on the same for some vital sectors of our economy, plus the possibility of the aforementioned behind the meter charges, and the yet to be regulated by the ECPR to be paid by PREPA and/or private utilities to microgrids connected to the grid for excess energy could affect the viability of the microgrids as conceived by the Proposed Regulation.

We respectfully suggest to the ECPR that the Proposed Regulation for microgrids takes into account the recommendations by the US Department of Energy study of March 2016, Combined Heat and Power (CHP) Technical Potential in the United States, attached hereto, which addresses not only the issue under consideration, but also the wider scenario of the imperative need of achieving energy efficiency and lowering the high cost of energy, a process that presupposes legislative action, conceivably beyond the powers vested on the ECPR, in order to define for the purposes of the Proposed Regulation, what is an eligible business as to the

incentives provided for Energy Producers to qualify for the incentives granted by Act 73 of 2008, as well as, but not limited to, consider amendments to the aforementioned limitations as to duties imposed on fuel and the inclusion of the hospital and commercial sectors as to the exemptions granted by the above cited legislation for fuel used in CHP applications, in an economy that has been in recession for at least ten years and consequently losing its workforce due the exodus of industries to areas with lower energy costs and work towards an all-encompassing regulation for the future of energy in Puerto Rico, consonant with Federal Energy Public Policy, taking into consideration the prime importance as having the ECPR as an independent regulator, as vehemently expressed on February 1, 2018 in an interview by Noticel.com by the FOMB Chairman, Jose B. Carrion III in light of the present privatization scenario under consideration by the present Administration.

Respectfully submitted,

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By, Jorge Hernández, PE, CEM

President