

**COMMONWEALTH OF PUERTO RICO  
PUERTO RICO ENERGY COMMISSION**

**IN RE:** ENERGY COMMISSION INVESTIGATION  
REGARDING THE STATE OF PUERTO RICO'S  
ELECTRIC SYSTEM AFTER HURRICANE MARIA

**CASE NO.:** CEPR-MI-2018-0001

**Subject: Regulation on Microgrid  
Development (Proposed Rules)**

**COMMENTS BY THE AUTONOMOUS MUNICIPALITY OF BAYAMÓN TO  
REGULATION ON MICROGRID DEVELOPMENT (PROPOSED RULES)**

**TO THE HON. PUERTO RICO ENERGY COMMISSION:**

**COMES NOW** the Autonomous Municipality of Bayamón (“AMB” or “BAYAMÓN”), submitting thru the undersigned attorney comments to Proposed Rules for Microgrid Development and, respectfully states as follows:

**I. RESPONDENTS’ INTEREST IN THESE PROCEEDINGS**

Bayamón is a municipality of Puerto Rico located on the northern coastal valley, north of Aguas Buenas and Comerío; south of Toa Baja and Cataño; west of Guaynabo; and east of Toa Alta and Naranjito. The AMB is a public entity, created pursuant to Act No. 81 of August 30, 1991, as amended, known as the Autonomous Municipalities Act of the Commonwealth of Puerto Rico of 1991” that exercises its jurisdiction over the above described territorial expanse. Section 17.001 of the Act authorizes AMB, as well as other municipalities with authority “to authorize the creation of nonprofit special corporations for municipal development, hereinafter “special corporations”, for the primary purpose of promoting in the municipalities whatever activities, enterprises and municipal,

commonwealth and federal programs addressed to their integral development and that will result in the general welfare of the inhabitants of the municipality through the growth and extension of diverse areas, such as ...*the generation of power from renewable sources of energy.*” (Emphasis added) Amongst the Municipalities powers, Section 2.001(w) indicates that AMB is empowered to: “Promote incentives for investments offer in equipment [sic], machinery and processes to avoid contamination, give incentives for the creation of direct and indirect employment that bolsters regional economic activity *promoting more links and incentives on external sources of energy to be carried out by the municipalities themselves or through the contracting of private, public or quasi-public entities.* (Emphasis added)

With a population of, approximately, 200,000 inhabitants, the Municipality is home to industrial, commercial, manufacturing, hotels and diverse service industries including hospitals and associated medical support facilities. The Municipality is home to property developers, banking and financial institutions, insurance companies, engineering and architectural firms, lawyers, landowners, general contractors and subcontractors that provide goods and services necessary for the design, authorization, construction and delivery of buildings and related infrastructure, schools and universities, all serving diverse sectors both within and beyond the territorial demarcation.

The heightened cost and increasing lack of reliability of the power grid owned and operated by PREPA has always adversely impacted the economic interests of AMB and its residents and visitors. This has become more than evident in the aftermath of

Hurricane María when economic activities within the Municipality were forced to cease, reduce or relocate operations and reduce their workforce.

Stable, reliable, accessible, reasonably priced power is dependent on stable reliable, resilient power generation and distribution. The existing PREPA owned and operated power generation and distribution system has been woefully inadequate. Any and all efforts aimed at improving the existing evidently unsustainable system is in the AMB's, its citizens and society's best interests.

Proposed Regulations are excessively restrictive and, more importantly, the product of apparent good intentions in the absence of energy pricing impacts information, cost/benefit considerations and minimal economic analysis. Provisions establishing ownership and sales restrictions applicable to municipal microgrids will adversely impact AMB's authority to engage in power generation activities.

## **II. PRELIMINARY STATEMENT AND REQUEST**

The federal Department of Energy defines a microgrid as “a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected or island mode.”<sup>1</sup> A less technical and more socially oriented description defines a microgrid as “an energy system specifically designed to meet some of the energy needs of a community.”<sup>2</sup> Within this context, microgrids can include facilities that: “(1)

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<sup>1</sup> Dan T. Ton and Merrill A. Smith, The Electricity Journal, *The U.S. Department of Energy's Microgrid Initiative*, Vol. 25, Issue 8, Oct. 2012, pp. 84-94, at p. 84.

<sup>2</sup> Thomas Bourgeois, Jordan Gerow, Franz Litx and Nicholas Martin, *Community Microgrids: Smarter, Cleaner, Greener*, p. 2 (Pace Energy and Climate Center, Pace Law School, 2013), available at: <http://energy.pace.edu/publications/community-microgrids-cleaner-greener>.

generate electricity, heating and/or cooling; (2) distribute the energy generated; and (3) manage energy consumption intelligently in real time. A community microgrid thus puts local leaders in a position to transform a community's energy system.”<sup>3</sup>

The Commonwealth has recognized microgrids potential benefits since 2016, upon the approval of Law No. 133 of Aug. 5, 2016. As therein stated, the “goal of microgrids is to reduce energy consumption based on fossil fuels through renewable energy generation and strategies to reduce energy consumption. When “[a]ppropriately designed, operated, and sited microgrids can create economic benefits for both users and non-users of the microgrid. Microgrids may incorporate a suite of distributed energy resources (“DER”) including energy efficiency investments, electric generation technologies utilizing combined heat and power (“CHP”), solar photovoltaic (PV), energy storage, optimizations algorithms, and intelligent energy management.”<sup>4</sup> This integrated local energy portfolio can directly create benefits by significantly reducing the overall energy costs for the microgrid users compared to purchasing energy from the main grid, deliver power and heat resiliency to the site and indirectly reduce costs for all grid users by lowering peak load on the entire electric system.”<sup>5</sup>

Just as in the case of Hurricane Sandy, and the power outages caused in the US east coast, Hurricane María has brought microgrids to the forefront of energy topics and policy in Puerto Rico. The instant regulatory proceeding is a clear example. However, while stateside jurisdictions have taken more cautionary, nuanced approaches

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<sup>3</sup> *Id.*

<sup>4</sup> Dan Leonhardt, Tom Bourgeois, Brad Bradford, Jordan Gerow, Nick Martin & Laxmi Rao, Pace Energy & Climate Ctr., *Microgrids & District Energy: Pathways To Sustainable Urban Development*, p. 5 (2015), available at: Pace: <http://digitalcommons.pace.edu/environmental/1>.

<sup>5</sup> *Id.*

that have included pilot projects at universities, at critical facilities or communities that contain important communal resources,<sup>6</sup> PREC, while unquestionably well intentioned, has embarked down an exceptionally complex road, at a critical moment in time, in an attempt to develop the legal, structural, financial and operational parameters that it proposes should dictate microgrid deployment in Puerto Rico.

This occurs at a time when the Puerto Rico Electric Power Authority (“PREPA”), with the aid of American Power Association members, is still enmeshed in the complexities of restoring power to, approximately, over a half million utility customers, located specially in rural and isolated communities. Concurrently, PREPA is still without an Executive Director; the Governor has announced plans both to privatize the utility and to implement an executive branch reorganization plan, currently before the Commonwealth Legislature, that will restructure the public services and utilities regulatory agencies, including this Commission;<sup>7</sup> the PREPA Board has adopted a “*Vision for the Future of Power in Puerto Rico* to provide focus to efforts to transform the power utility, in accordance with the privatization plan presented by Governor Ricardo

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<sup>6</sup> Todd Linsky-Paul, *What States Should Do: A Guide to Resilient Power Programs and Policy*, Resilient Power, p. 5, (June, 2015), available at: <https://www.cleaneogroup.org/ceg-resources/resource/what-states-should-do-a-guide-to-resilient-power-programs-and-policy/>

“At this writing, most active state resilient power programs are concentrated in the Northeast. Massachusetts has implemented a \$40 million program, New Jersey has implemented a \$3 million resilient energy storage program and a \$200 million Energy Resilience Bank—the first such institution in the nation—Connecticut has implemented a \$48 million microgrid program, New York has a \$40 million microgrid program underway, Rhode Island has drafted a solicitation for a resilient power study, and Maryland has established a task force and produced a report, and is planning a solicitation. Vermont has supported a \$12.5 million resilient power, solar+storage microgrid project with additional U.S. Department of Energy (DOE) funding. These programs have largely been funded by system benefit charges, alternative compliance payments from utilities, and supportive federal solicitations and disaster relief funds.”

<sup>7</sup> See, P del S. 809, of Jan. 19, 2018. The proposal would join the Commission, the Telecommunications Regulatory Board and the Public Service Commission under one umbrella. Notorious for its past and current inefficiencies and susceptibility to partisan political influence, the role of the Public Service Commission in the new structure will greatly determine the quality and significance of future power utility oversight.

Rosselló”;<sup>8</sup> finally, the utility is, as is of public knowledge, at this moment seeking a \$1.3B loan so that it can keep operating.

In sum, the finances and, ultimately, existence of the principal power utility in Puerto Rico are up in the air and the final structure and authority of this Commission is a matter of sheer speculation. This is the factual context for the instant regulatory proposal. This Commission proposes to address in one year, what other jurisdictions have devoted years of broad based shareholder involvement, study, experimentation, federal, technical and academic assistance to understand, prior to attempting to regulate, in the extensive fashion proposed PREC.

Under these circumstances, the Municipality respectfully submits that PREC should postpone consideration of proposed regulations until such time as both PREPA and the Commissions’ final shape, form and authority, and in the case of PREPA, or its successor in interest, its capital and rate structure, assets and income potential are established and better understood or known.

Absent the Commission’s acquiescence to this request, the Municipality, in addition, offers the following comments to the proposed regulations.

### **III. COMMENTS**

#### **A. Section 1.03 – Purpose and Executive Summary**

##### **1. Current and Proposed Wording**

The Puerto Rico Energy Commission (“Commission”) adopts and enacts this Regulation to assist in the development of microgrids throughout Puerto Rico. The prolonged outages and its impacts on the citizens of Puerto Rico caused by

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<sup>8</sup> See Press Release, *PREPA’s Governing Board Adopts a New Vision for the Transformation Announced by the Governor of Puerto Rico*, Feb. 1, 2018, available at: <https://www.aeepr.com/Noticias/noticiasread.asp?r=YQVATMSJWX>.

Hurricanes Irma and Maria highlights the need to foster the creation of microgrids as a means of delivering *reliable* energy services to customers in need, *avoiding the loss of power at critical facilities, lowering energy costs, reducing carbon pollution, spurring economic development and reducing or delaying power utility capital investments* while integrating new technology and industry trends into Puerto Rico’s energy market.

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...

With this Regulation, the Commission intends to provide a stable and predictable regulatory framework, capable of fostering innovation and economic growth through continued investments in the development and deployment of microgrid systems, *reliable energy and reduced energy expenditures*.

## 2. Basis for Comments

As drafted Proposed Regulations fail to acknowledge that microgrids provide cost positive services to power utilities, or the grid, as well as their potential to prevent the loss of power at critical facilities or infrastructure<sup>9</sup> such as: hospitals and doctor’s offices; facilities for the elderly; police and fire stations; water treatment plants; universities and schools; strategic manufacturing and transportation facilities or job sites; emergency shelters and response facilities, amongst others.<sup>10</sup>

### **B. Section 1.09.- Definitions**

#### 1. Current and Proposed Wording

B. For the purposes of this Regulation, the following terms will have the meaning established below, except when the context of the content of any provision clearly indicates something else:

1. “Alternative Renewable Energy” means that energy produced or generated from the following resources, as defined in Section 1.4 of Act 82-2010:

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<sup>9</sup> This term is proposed for inclusion as a defined term in Section 1.08.

<sup>10</sup> *Supra*, n. 2, pp. 6-9. Microgrids and lower energy costs, reduce carbon pollution, spur economic development, reduce costs on the utility distribution system, contribute to critical infrastructure resiliency, business continuity and emergency preparedness and planning

- i. Conversion of municipal solid waste;
- ii. Landfill gas combustion;
- iii. Anaerobic digestion;
- iv. Fuel cells;
- v. *Qualified hydropower*; and
- vi. Any other energy that the Commonwealth Energy Public Policy Office may define in the future through regulations as alternative renewable energy.

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6. “Community System ~~Solar~~” a voluntary program whereby *a distributed energy resources system* ~~a solar electric system~~ provides power and/or financial benefit to multiple community members in which community members may or may not own the system itself.

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...

25. “Microgrid,” means a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to PREPA’s grid. ~~The goal of microgrids is to reduce energy consumption based on fossil fuels through local renewable energy generation and strategies to reduce energy consumption.~~ A microgrid can connect and disconnect from PREPA’s grid to enable it to operate in both grid-connected or off the grid (*islanded*) mode.

## 2. Basis for Comments

As previously indicated, microgrids provide diverse services both to their customers as well as to utilities or the grid. Limiting the role of microgrids, as proposed, distorts the multifaceted services provided by microgrids; limiting them to the sole aspect of fossil fuel consumption reduction, which may not at all times, and under all circumstances be the sole or principal purpose behind proposed microgrid development and deployment. This definition serves to improperly limit microgrids based on distributed energy resources, which may incorporate both renewable and non-renewable energy sources where other factors, based on typical microgrid services, could

serve to justify or support their establishment.<sup>11</sup> As proposed the regulations provide no reason or justification for this constrained view of role or purpose of microgrids.

The provided definition of “Alternative Renewable Energy” excludes Qualified Hydropower, contrary to the definition provided in Law No. 133-2016. The proposed regulation provides no explanation or justification, cost based or other wise, for this exclusion.

Finally, “community solar” is not the only technically feasible, potential community based microgrid, distributed energy system. Proposed regulations provide no justification, cost based or otherwise, for this constrained definition.

**C. CHAPTER II - MICROGRID PROVISIONS**

**ARTICLE 2.- MICROGRID CATEGORIES**

**Section 2.01.- Microgrid Classification.**

**Article 4 (Small Coop Systems)**

**Article 5 (Large Coop Systems)**

**Article 6 (Large Municipal Systems & Third-Party Systems)**

Proposed Regulations contain various policy preferences expressed in terms of system classifications based on ownership, size and number of customers. To the extent that microgrids are to operate grid-connected, Section 9 of Law No. 133-2016, states that the Commonwealth’s Public Policy on Interconnection is to:

... to ensure that the procedures for the interconnection of distributed generators to the electric power system of the Electric Power Authority are effective in terms of costs and processing time, in order to *promote the development of these types of projects and incentivize economic activity through the reduction of energy costs in the residential, commercial, and industrial sectors.* (Emphasis added)

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<sup>11</sup> *Supra*, n. 1, at p. 87, Figure 2, which depicts the Chevron Energy Solutions’ Project at the Santa Rita Jail in Dublin, Cal.. Known as the CERTs microgrid, the system includes a 1MW fuel cell, 2MW advance energy storage system, 1.2MW rooftop solar photovoltaic system, five 2.3 MW wind turbines and 1.2 MW diesel generators, and a computerized Distributed Energy Resources Management System (“DERMS”)

It should also be observed that Section 2.5 of Law No. 38 of June 38 2017, known as the Puerto Rico Uniform Administrative Procedure Act (“LPAU”, according to the Spanish language acronym) provides that new or amended regulatory enactments must also include both a justification and a cost/benefit analysis of the proposed regulations.

Proposed regulatory classifications based on size, ownership and number of customers have potential system cost and economic feasibility impacts, with ultimate effects on energy prices and customers, as well as grid related benefits, which this Commission does not mention, much less describe or evaluate. This analysis is necessary to comply with prior cited Section 9’s Public Policy on Interconnection. Proper cost benefit analysis of these policy choices is, likewise, necessary to, in this case, satisfy LPAU’s Section 2.5 cost benefit analysis requirements.

**D. ARTICLE 3.- MICROGRID TECHNICAL REQUIREMENTS**  
**Section 3.01.- Microgrid Composition**

Proposed Regulations contain various policy preferences expressed in terms of system classifications based on renewable energy resources contribution to system total energy inputs as well as restrictions on fossil fuel use. As drafted, Proposed Regulations provide that:

1. The primary energy source of the system must be a renewable energy resource(s) as defined in Section 1.08 of this Regulation.
2. “Primary energy source” means that:
  - a. Seventy-five percent (75%) of the total energy input of the system (in MWh) on an annual basis must be from a renewable energy resource(s); and
  - b. The installed renewable energy generating capacity (in MW) of the system exceeds the expected peak load of the microgrid.
3. Use of any grade of fuel oil or natural gas by a microgrid is limited to those purposes identified in 18 C.F.R. Åò292.204(b)(2).3 In particular, such use

- should be limited to the minimum amounts of fuel required to alleviate or prevent outages of electrical service to microgrid customers.
4. Use of any grade of fuel oil or natural gas by a microgrid may not, in the aggregate, exceed twenty-five percent (25%) of the total energy input of the system during the 12-month period beginning with the date the facility first produces electric energy and any calendar year subsequent to the year in which the facility first produces electric energy.
  5. Renewable microgrids may not use solid fossil fuels.

Proposed Regulation's policy preferences expressed in terms of system classifications based on renewable energy resource contributions to microgrid system total energy inputs as well as restrictions on fossil fuel use have potential system cost and economic feasibility impacts, with ultimate effects on energy prices and customer, as well as grid related benefits, which this Commission does not mention, much less describe or evaluate. This analysis is necessary to comply with prior cited Section 9's Public Policy on Interconnection. Proper cost benefit analysis of these policy choices is, likewise, necessary to, in this case, satisfy LPAU's Section 2.5 cost benefit analysis requirements.

**E. ARTICLE 4.- REQUIREMENTS FOR SMALL COOPERATIVE SYSTEMS**  
**Section 4.01.- Ownership and Sales Restrictions**  
**ARTICLE 5.- REQUIREMENTS FOR LARGE COOPERATIVE SYSTEMS**  
**Section 5.01.- Ownership and Sales Restrictions**

Proposed Regulation's policy preferences expressed in terms of cooperative systems undefined size (large or small), control or ownership stake (not to exceed 35%) and potential customer base ( (may not sell energy or grid services to customers, other than PREPA, who have no ownership stake in the system) have potential system cost and economic feasibility impacts, with ultimate effects on energy prices and customer, as well as grid related benefits, which this Commission does not mention, much less

describe or evaluate. This analysis is necessary to comply with prior cited Section 9's Public Policy on Interconnection. Proper cost benefit analysis of these policy choices is, likewise, necessary to, in this case, satisfy LPAU's Section 2.5 cost benefit analysis requirements.

**F. ARTICLE 6.- REQUIREMENTS FOR SMALL MUNICIPAL SYSTEMS, LARGE MUNICIPAL SYSTEMS, AND THIRD-PARTY SYSTEMS**

Section 6.01 of the Proposed Regulations provides that:

In accordance with the goals of Act 133-2016, Small Municipal Systems, Large Municipal Systems and Third-Party Systems may sell energy and/or other grid services to customers of the microgrid or to PREPA, subject to the following requirements and restrictions:

A. Small and Large Municipal systems must be owned by a single municipality, a group of municipalities, or another administrative division of the Commonwealth.

Law No. 81 of August 30, 1991, as amended, known as the Act of Autonomous Municipalities of Puerto Rico, authorizes Commonwealth municipalities, such as AMB, to enter into contractual arrangements with public or private, natural or judicial entities, in pursuit of a wide variety of activities including those related to energy generation projects. The prior cited restrictions established in the Proposed Regulations limiting AMB's involvement in the sale of energy to systems owned by "a single municipality, a group of municipalities, or another administrative division of the Commonwealth" is contrary to the powers conferred to municipalities by Law No. 81 and thus, beyond the Commission's authority to enact. As such, cited restriction should be deleted.

**G. General Comments**

AMB fears that the Commissions relatively restrictive microgrid regulatory proposal will serve to stifle microgrid deployment, particularly in low-income sectors, isolated rural communities and for critical facilities. The unknown future of Puerto Rico's principal power generator and sole grid operator limits the development of data based cost estimates and power pricing scenarios for microgrids.

As evidenced by recent events, Municipalities, and AMB in particular, are specially suited to assist in the identification of suitable sites and communities for the deployment of microgrids in low-income sectors and for critical facilities. The Commission should explore ways of recruiting these resources in future evaluations of proposed microgrid siting.

In San Juan, Puerto Rico this 5<sup>th</sup> day of February 2018.

Respectfully submitted,

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