



REGULATION ON MICROGRID DEVELOPMENT

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REGULATION ON MICROGRID DEVELOPMENT

CHAPTER I - GENERAL PROVISIONS

ARTICLE 1.- GENERAL PROVISIONS

Section 1.01.- Title.

This Regulation shall be known as the Regulation on Microgrid Development of the Puerto Rico Energy Commission.

Section 1.02.- Legal Basis.

This Regulation is adopted pursuant to Act 57-2014, as amended, known as the Puerto Rico Energy Transformation and RELIEF Act; Act 82-2010, as amended, known as the Public Policy on Energy Diversification by Means of Sustainable and Alternative Renewable Energy in Puerto Rico Act; Act 83-2010, known as the Green Energy Incentives Act; and Act 38-2017, known as the Uniform Administrative Procedure Act of the Government of Puerto Rico (“LPAU”, for its Spanish acronym).

Section 1.03.- Purpose and Executive Summary.

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 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, promoting customer choice, reducing carbon pollution and spurring economic development while integrating new technology and industry trends into Puerto Rico’s energy market. Accordingly, Microgrids and other distributed generation resources are a key component of the Government of Puerto Rico’s strategy for rebuilding and strengthening Puerto Rico’s electric power system.¹

The Commission seeks to harness the potential of decentralized energy resources including those identified as sustainable renewable or alternative renewable energy resources, as defined by Act 82-2010; combined heat-and-power; and other distributed resources, to strengthen the resiliency of the electric grid, empower customers, and increase reliance on renewable and highly-efficient resources across the Commonwealth. One statutory goal of microgrids is to reduce energy consumption based on fossil fuels through local renewable energy generation.

Because Microgrids can operate in an “islanded” mode, disconnected from the electric grid, they are able to independently provide electric service during grid outage

¹ See Request for Federal Assistance for Disaster Recovery, Build Back Better Puerto Rico, November 2017 at pp. 15-19.

periods or interruptions. Microgrids can contribute to rapid restoration of service, as there are areas where power could be restored quicker by the deployment of Microgrids rather than waiting reconnection to the grid at large.

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.

Section 1.04.- Applicability.

This Regulation shall apply to the registration, development and operation of Microgrids that serve end-use customers.

Section 1.05.- Interpretation.

This Regulation shall be interpreted in a way that promotes the highest public good and the protection of the interests of the residents of Puerto Rico, and in such a way that the deployment of Microgrids are carried out rapidly, justly, and economically.

Section 1.06.- Provisions of Other Regulations.

This Regulation may be supplemented by the provisions of other regulations of the Puerto Rico Energy Commission that are compatible with the provisions of this Regulation.

Section 1.07.- Unforeseen Proceedings.

When a specific proceeding has not been planned for in this Regulation, the Commission may attend to it in any way that is consistent with Act 57-2014.

Section 1.08.- Definitions.

- A. These definitions are to be used for this Regulation and are not intended to modify the definitions used in any other Commission regulation or order.
- 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 Resources” refers to the energy sources listed in Section 1.4(13) of Act 82-2010, specifically:
 - i. Conversion of municipal solid waste;
 - ii. Landfill gas combustion;
 - iii. Anaerobic digestion;
 - iv. Fuel cells; and

- v. Any other energy that the Commonwealth Energy Public Policy Office may define in the future through regulations as alternative renewable energy.
2. “Combined heat-and-power” (CHP) means equipment used to produce electric energy and forms of useful thermal energy (such as heat or steam), used for industrial, commercial, heating, or cooling purposes, through the integrated use of technology.
3. “Commission” means the Puerto Rico Energy Commission.
4. “Cooperative Member” or “Member” means a Person who, along with two or more Persons, share ownership interest in a Cooperative Microgrid and receive Energy Services and/or other Grid Services from the Cooperative.
5. “Cooperative Microgrid” means the joint-ownership of a Microgrid by three or more Cooperative Members through formal or informal organization or association. For purposes of this Regulation, a Cooperative may, but need not be, organized or operated pursuant to Act 164-2009, as amended, known as the Puerto Rico General Corporations Act or Act 239-2004, as amended, known as the General Cooperative Associations Act. The primary purpose of a Cooperative Microgrid is to supply Energy Services or Grid Services to its Cooperative Members.
6. “Customer” means any Person, as such term is defined herein, who consumes or uses electric power or energy services from a Third-Party Microgrid.
7. “Distributed Energy Resources” means Distributed Generation or electric energy storage.
8. “Distributed Generation” means an electric power generation facility in Puerto Rico connected to the Distribution Infrastructure or to a Microgrid and/or producing power for self-supply or sale.
9. “Distribution Infrastructure” means the physical equipment used to distribute electric power at voltages below 38,000 volts, including but not limited to poles, primary lines, secondary lines, service drops, transformers and Meters.
10. “Distributed Renewable Energy” means Distributed Generation powered by Renewable Resources which generates electric power for self-consumption, sale to third-parties or to supply an Electric Service Company.

11. "Electric Bill" means the document sent periodically by the Electric Service Company to a Customer listing all the components, charges, or rates that make up the final consumption cost each Customer must pay.
12. "Electric Power Distribution" or "Distribution" means the delivery of electric power from any electric substation or generator to any Customer through Distribution Infrastructure.
13. "Electric Power Grid" means the electric power transmission and Distribution Infrastructure of the Commonwealth of Puerto Rico.
14. "Energy Service" means electricity service provided to a Customer in Puerto Rico by an Electric Service Company.
15. "Electric Service Company" means any Person engaged in the generation, transmission, distribution, billing, or resale of electric power.
16. "Energy Storage" means any resource located in the Microgrid that is capable of receiving electric energy from the Electric Power Grid or any other generation resource, for later injection of electricity back to the Electric Power Grid or to serve any load.
17. "Grid Services" include ancillary services, demand response and other services supporting Distribution Infrastructure and/or Electric Power Distribution.
18. "Interconnection" means the connection of Distributed Energy Resources to Distribution Infrastructure.
19. "Meter" means the equipment used to measure consumption and/or generation of energy at the point of connection between an individual Customer or Cooperative Member and a Microgrid or Distribution Infrastructure, as well as associated communications and control capabilities.
20. "Microgrid" means a group of interconnected loads and Distributed Energy Resources within clearly defined electrical boundaries that acts as a single controllable entity that can connect and disconnect from the Electric Power Grid to enable it to operate in either grid-connected or off-the-grid (islanded) mode.
21. "Microgrid Operator" means the registered operator of a Microgrid, which shall be the primary party responsible for overseeing the operation of the microgrid equipment (including, but not limited to, Distributed Energy Resources and Distribution Infrastructure), providing maintenance, delivering contracted services, billing for such

services, and serving as the primary point of contact. The Microgrid Operator may or may not be the owner of the Microgrid.

22. "Municipality" means the local government legal entity organized and existing pursuant to Article VI, §1 of the Constitution of the Commonwealth of Puerto Rico and Act No. 81 of August 30, 1991, as amended, known as the Autonomous Municipality Act of the Commonwealth of Puerto Rico.
23. "Owner" refers to the Person or Persons with a direct proprietary interest in a Microgrid system. The proprietary interest over a Microgrid system is separate and independent from the proprietary interest over the equipment used by the Microgrid to supply Energy Services and/or Other Grid Services. As such, Microgrid equipment vendors who lease or offer third-party financing options are not subject to the provisions of this Regulation, provided such equipment vendors do not offer Energy Services and/or Other Grid Services, as such terms are defined herein, or do not otherwise act as Microgrid Operator.
24. "Person" means a natural person; a legal entity created, organized, or existing under the laws of the Commonwealth of Puerto Rico, the United States of America, any state of the union, or any foreign state or country; a Municipality or a consortium of Municipalities; or a government entity (other than PREPA).
25. "Personal Microgrid" means a Microgrid owned by no more than two Persons producing energy primarily for consumption by its owner(s).
26. "PREPA" means the Puerto Rico Electric Power Authority, a corporate entity created by virtue of Act No. 83 of May 2, 1941, as amended, and any successor distribution or transmission owner or operator.
27. "Renewable Resource" means any combination of Alternative Renewable Energy Resources or Sustainable Renewable Energy Resources.
28. "Sustainable Renewable Energy Resource" refers to the energy sources listed in Section 1.4(15) of Act 82-2010, specifically:
 - 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.

29. “Third-Party Microgrid” means a Microgrid that is not a Personal Microgrid or a Cooperative, and is owned and/or operated by any Person or Persons for the primary purpose of engaging in the sale of Energy Services and/or Other Grid Services to Customers.

- C. Every word used in the singular in this Regulation shall be understood to also include the plural unless the context indicates otherwise.

Section 1.09.- Controlling Version.

Should any discrepancy between the Spanish version and the English version of this Regulation arise, the provisions of the English version shall prevail.

Section 1.10.- Severability.

If any article, provision, word, sentence, paragraph, or section of this Regulation is disputed, for any reason, before a court and declared unconstitutional or void, such ruling shall not affect, damage, or invalidate the remaining provisions of this Regulation, but their effect shall be limited to the article, provision, word, sentence, paragraph, or section that is declared unconstitutional or void. The nullity or invalidity of any article, word, sentence, paragraph, or section in any specific case, shall not affect or jeopardize in any way its application or validity in any other case, except if it specifically and expressly invalidates all cases.

Section 1.11.- Forms.

The Commission shall establish the forms it deems necessary to conduct the proceedings pursuant to this Regulation, and shall inform the public via its website. Notwithstanding, the fact that the Commission has not adopted one or more forms, is in the process of reviewing them, or the Internet website is out of service, shall not release any party of its obligation to comply with the provisions stated herein, provide the information required by this Regulation or otherwise comply with any applicable Commission order.

Section 1.12.- Mode of Submission.

The forms, documents, and appearances required by virtue of this Regulation or any order of the Commission must be submitted before the Commission in electronic format according to the instructions which, from time to time, the Commission establishes through an order in relation to the electronic filing system.

If the electronic filing system is temporarily not operating or functioning, the forms, documents, and appearances required by virtue of this Regulation or by any order of the Commission shall be submitted before the Commission in accordance with any instructions that the Commission shall provide at that time through an order.

Section 1.13.- Effect of Submission.

In filing any document before the Commission, the party undersigning such document shall be deemed to have certified that the content of said document is true and that, according to the signer's best knowledge, information, and belief, formed after reasonable inquiry, the document is based on reliable and trustworthy facts, arguments, judicial sources, and information.

Section 1.14.- Confidential Information.

If in compliance with the provisions of this Regulation or any of the Commission's orders, a person has the duty to disclose information to the Commission considered to be privileged, pursuant to applicable evidentiary privileges, said person shall identify the alleged privileged information and request in writing for the Commission to treat such information as confidential, pursuant to Article 6.15 of Act 57-2014. In identifying privileged information and requesting confidential treatment by the Commission, the requesting party shall follow the rules and procedures established by the Commission in Resolution CEPR-MI-2016-0009, as such resolution may be amended from time to time, for the filing, handling and treatment of confidential information. Except in the case of information protected under the attorney-client privilege, the claim of confidential treatment shall, under no circumstances, be grounds for denying such information from being filed with the Commission.

Section 1.15.- Validity.

Pursuant to Section 2.8 of the LPAU, this Regulation shall enter into effect thirty (30) days after its submission to the Department of State and the Legislative Library of the Office of Legislative Services.

Section 1.16.- Penalties for Non-Compliance

Any Person who fails to comply with any of the requirements set forth in this Regulation may be subject to a Notice of Non-Compliance pursuant to Chapter IV of Regulation 8543² and may, as a result of such non-compliance, lose its status as a

² Regulation on Adjudicative, Notice of Noncompliance, Rate Review and Investigation Procedures.

registered Microgrid system or be subject to any other applicable administrative sanction or penalty deemed appropriate by the Commission.

Section 1.17.- Compliance with Other Applicable Legal Requirements

In developing a Microgrid System pursuant to this Regulation, the owner, operator and/or developer of such Microgrid system shall also ensure to fully comply with any and all applicable legal and regulatory requirements established and enforced by other relevant local, state and federal government entities. The granting of an authorization to operate as a registered Microgrid system under this Regulation shall not relieve a party from fully complying with other applicable legal and regulatory requirements enforced by any other government entity.

CHAPTER II - MICROGRID PROVISIONS

ARTICLE 2.- MICROGRID CATEGORIES

Section 2.01.- Microgrid Classification.

- A. Microgrids shall be classified as on of the following:
 - 1. Personal Microgrid.
 - 2. Cooperative Microgrid.
 - 3. Third-Party Microgrid.
 - 4. Any other ownership or operational arrangement not contemplated herein may be submitted for Commission review, along with any supporting information the Commission may deem relevant.
- B. Microgrids shall be subject to various requirements based on their classification, as follows:
 - 1. Except as otherwise stated in Section 2.02 of this Regulation, there are no other requirements for Personal Microgrids under this Regulation.
 - 2. The requirements for Cooperative Microgrids are described in Article 4 of this Regulation.
 - 3. The requirements for Third Party Microgrids are described in Article 5 of this Regulation.
 - 4. The requirements for Microgrids owned or developed by PREPA are outside the scope of this Regulation. PREPA proposed microgrids shall be addressed through applicable resource planning processes.
 - 5. The requirements for systems of types not listed above are the same as those for Third Party Microgrids, except as determined by the

Commission under the exemptions process described in Article 7 of this Regulation.

Section 2.02.- Sale of Energy Services and other Grid Services.

- A. Except as otherwise provided in sub-section (C) of this Section, Personal Microgrids may provide Energy Services and/or other Grid Services to its Owner(s) or to PREPA.
- B. Except as otherwise provided in sub-section (C) of this Section, Cooperative Microgrids may provide Energy Services and/or other Grid Services to its Members or to PREPA.
- C. Personal Microgrids and Cooperative Microgrids may sale excess Energy Services and/or other Grid Services to Person(s) other than those listed in Subsections (A) and (B) of this Section, as applicable, subject to Commission authorization. In such cases, the Microgrid must submit, during its application or at any moment thereafter but before engaging in the sale of such Energy Services and/or other Grid Services, a detailed request to the Commission describing the proposed arrangement between the Microgrid and the Person(s). Such Microgrids must provide any information relevant to the proposed arrangement or that may be required by the Commission. The Commission shall issue a determination on the request within thirty (30) days of receipt.

ARTICLE 3.- MICROGRID TECHNICAL REQUIREMENTS

Section 3.01.- Microgrid Composition

A Microgrid shall consist, at a minimum, of generation assets, loads and Distribution Infrastructure. Microgrids shall include sufficient generation, storage assets and advanced distribution technologies³ to serve load under normal operating and usage conditions. If a Microgrid includes Meters, all members of each customer-class must be equipped with comparable metering technology.

Section 3.03.- Eligible Generation Resources

Microgrids may use either “renewable,” “combined heat-and-power,” or “hybrid,” generation resources, each described as follows:

- A. **“Renewable” Microgrids** - Renewable Microgrids have the following qualifications:

³ Advanced distribution technologies are equipment such as sensors, power conditioning equipment and other equipment suitable for regulation of voltage and/or frequency, control systems, communication systems, and automation technologies.

1. The primary energy source of the Microgrid must be one or more Renewable Resource(s) as defined in Section 1.08 of this Regulation.
2. For Renewable Resources to be the “Primary energy source”:
 - a. Seventy-five percent (75%) of the energy output of the system during the 12-month period beginning with the date the Microgrid first produces electric energy and each 12-month period thereafter must be from a Renewable Resource;⁴
 - b. The fuel used by non-renewable generation must be no more than 2,500 Btu per total energy provided by the microgrid⁵;
 - c. The non-renewable generation must operate at a heat rate of no more than 13,000 Btu/kWh at full output; and
 - d. The sum of installed renewable energy generating capacity and electrical energy storage capacity (in MW) of the Microgrid shall exceed the expected peak demand of the Microgrid.
3. Except as otherwise provide herein, use of fossil fuel by a Microgrid may not, in the aggregate, exceed twenty-five percent (25%) of the total energy output of the system during the 12-month period beginning with the date the Microgrid first produces electric energy and each 12-month period thereafter.
4. Use of fossil fuel by a Microgrid is limited to those purposes identified in 18 C.F.R. §292.204(b)(2) or to operate the Microgrid during periods when the Renewable Resources are unavailable.⁶
5. A Renewable Microgrid Operator may apply for an exemption, under Article 7 of this Regulation, of the twenty-five percent (25%) limit on

⁴ For microgrid delivering power as alternating current output will be measured at the alternating current terminals of the generator, after any inverter converting direct current power to alternating current. For microgrids delivering power as direct current, output will be measured at the direct current terminals of the generator, after any inverter converting alternating current power to direct current.

⁵ As an example, this standard may be met by a generator operating at 10,000 Btu/kWh, providing 25% of the Microgrid electric energy.

⁶ Use of oil, natural gas and coal by a Microgrid, under Section 3(17)(B) of the Federal Power Act, is limited to the minimum amounts of fuel required for ignition, startup, testing, flame stabilization, and control uses, and the minimum amounts of fuel required to alleviate or prevent unanticipated equipment outages, and emergencies, directly affecting the public health, safety, or welfare, which would result from electric power outages.

energy output from fossil fuels due to electrical equipment damage from *force majeure* events.

- B. **“Combined heat-and-power” (CHP) Microgrids** – CHP Microgrids must meet the following requirements during the 12-month period beginning with the date the Microgrid first produces electric energy and each 12-month period thereafter:⁷
1. The useful thermal energy output of the system is no less than fifty percent (50%) of the total energy output.
 2. The fuel input, minus the useful thermal energy output, is no more than 7,000 Btu per kWh of generator output.
- C. **Hybrid Microgrids** – In order to be considered as a “Hybrid”, a Microgrid must comply with the following:
1. The renewable portion of its generation capacity must meet the requirements of Renewable Microgrids established in Subsection A of this Section; and
 2. The combined heat-and-power portion of its generation capacity must meet the requirements of CHP Microgrids established in Subsection B of this Section.
 3. Any application for a Hybrid Microgrid under this Regulation shall explain how the renewable, CHP and any storage and backup capacity will operate and comply with the requirements described in this Section.

Section 3.04.- Forms of Demonstrating Compliance

- A. Renewable Microgrids must demonstrate compliance with the qualifications in Section 3.03(A) of this Regulation. The following three alternatives for demonstrating compliance are acceptable. Applicants shall select the preferred alternative and identify such in the application for registration.
1. Operational Plan.

Include an operational plan describing the type of generation assets on the Microgrid and how they will be used to meet anticipated demands and, for each year thereafter, submit an annual operational report detailing fuel usage and demonstrating compliance with the qualification in Section 3.03(A) of this Regulation.

⁷ Appendix B of this Regulation contains several examples on how to meet these requirements.

2. Oil- and gas-fired generators.

Renewable Microgrid with generating assets limited to solar photovoltaics and oil- or natural gas-fired generators shall be assumed to comply with these requirements if it consumes less than a monthly fossil fuel limit, as calculated using the template provided in Appendix A of this Regulation and submitted along with its application. Microgrids shall maintain monthly records of fuel consumption, and submit an annual fuel consumption report for each year the Microgrid is in operation.

3. Diesel-fired generators.

Any Renewable Microgrid with generating assets limited to solar photovoltaics and diesel-fired generators shall be assumed to comply with these requirements if it consumes less than 3.5 gallons of diesel fuel per month per kilowatt of photovoltaic capacity. Microgrids shall maintain monthly records of fuel consumption, and submit an annual fuel consumption report for each year the Microgrid is in operation.

B. CHP Microgrids must demonstrate compliance with the qualifications in Section 3.03(B) of this Regulation, as follows.

1. Applications for CHP Microgrids shall include a description of the generation and heat-recovery equipment to be installed and the use of the thermal energy, as well as a heat flow plan showing the fuel input, electric generation and useful thermal energy output and consumption for typical operating conditions. Where more than one generator is to serve the Microgrid, the application shall describe all the generation assets and how they will be dispatched to meet anticipated electric and thermal demands.

2. Microgrids shall be required to submit annual operational reports detailing fuel usage, electric generation, and thermal energy consumption, demonstrating compliance with the qualification in Section 3.03(B) of this Regulation.

C. Hybrid Microgrids shall submit separate demonstrations of compliance for both the renewable portion and the CHP portion of the Microgrid.

Section 3.05.- Codes and Standards

Microgrids shall comply with the applicable codes and standards identified by the Commission through resolution and/or order. The Commission may, from time to time, review and, when necessary, modify and update, the codes and standards that shall apply to Microgrids under this Regulation.

Section 3.06.- Interconnection with PREPA's System

Microgrids may interconnect with the Electric Power Grid in accordance with applicable regulations or procedures adopted by PREPA, its successor or the operator of the Electric Power Grid.

ARTICLE 4.- REQUIREMENTS FOR COOPERATIVE MICROGRIDS

Section 4.01.- Ownership Restriction

No single Member of a Cooperative Microgrid may possess or control more than thirty-five percent (35%) ownership stake.

Section 4.02.- Size of Cooperative Microgrids

Cooperative Microgrids shall be classified based on size according to the following:

1. Small Cooperative Microgrids are those with a total generating capacity of 250 kW or less; and
2. Large Cooperative Microgrids are those with a generating capacity exceeding 250 kW.

Section 4.03.- Application and Registration

Any Person interested in developing a Cooperative Microgrid must submit an application for registration as described in Article 6 of this Regulation. This application shall contain at least the following information:

A. Contact information:

1. The application must provide the following contact information:

- a. Name of the Microgrid Owner.
- b. Name of the primary contact (Cooperative Microgrids must designate at least one Cooperative Member as the primary contact).
- c. Mailing address
- d. E-mail address; and
- e. Phone number.

2. Name and contact information (as described above) of the Microgrid Operator, if such Person is different from the Person identified as the Microgrid Owner.

B. Operational structure: The application shall identify the proposed Microgrid as a Small or Large Cooperative, as applicable.

- C. Location: The application must identify the Municipality (or Municipalities) in which the Microgrid is located, and a map showing the geographical boundaries of the proposed Microgrid.
- D. Number of Members: The application shall identify the number and type of Cooperative Members that will be served by the Microgrid, such as, but not limited to:
 - 1. Public housing buildings and households,
 - 2. Other multi-family buildings and households,
 - 3. Other single-family households,
 - 4. Critical facilities (e.g. hospitals, other medical facilities, water- and waste-water-treatment facilities, police stations and fire stations)
 - 5. Irrigation customers,
 - 6. Retail stores, and
 - 7. Other commercial and industrial buildings.
- E. Type of Generation: The application must identify the type of generation proposed for the Microgrid, as provided in Section 3.03 of this Regulation, and the form for demonstrating compliance therewith, as provided in Section 3.04 of this Regulation.
- F. System resources: The application must list the planned sizes and types of assets (including, as applicable, generation, storage, inverters, and other major electrical equipment) to be added or connected to the Microgrid.
- G. Equipment vendor: The application shall include the name and contact information for the primary vendor(s) or installer(s) of the Microgrid.
- H. Certification of Design: Prior to construction, the application shall include a certification of the Microgrid design signed and stamped by licensed engineer.

Section 4.04.- Rate for Service

- A. The cost-per-share shall be determined by the Members of the Cooperative Microgrid.
- B. Cooperative Microgrids may collect deposits at the discretion of its Members. Deposit amounts shall be fair, just, and reasonable, and shall not discriminate against any individual Cooperative Members.
- C. Rates for Service may be based on consumption, peak load, or another metric at the discretion of the Members of the Cooperative, provided such rates are

fair, just, and reasonable, and not discriminatory against any individual Members of the Cooperative.

Section 4.05.- Additional Requirements Applicable to Large Cooperatives

Large Cooperatives shall also comply with the following reporting requirements. Small Cooperatives are not required to provide the information described herein.

- A. Large Cooperatives shall submit an annual report on fuel usage, generation, and sales to the Commission. This report shall include:
 1. Electric generation by resource type;
 2. For CHP microgrids, useful thermal output by resource type;
 3. Fuel use by resource type;
 4. Capacity factor by month and year;
 5. Total electricity production (in kWh);
 6. Any change in the number of Members, including additions and departures of Members; and
 7. Any other information that the Commission may require.
- B. Large Cooperatives must maintain and submit to the Commission copies of any reports required by the US EPA and the Puerto Rico Environmental Quality Board.

ARTICLE 5.- REQUIREMENTS FOR THIRD-PARTY MICROGRIDS

Section 5.01.- Ownership and Sales Restrictions

Third-Party Microgrids may sell Energy Services and/or other Grid Services to Customers who are directly connected to the Microgrid system as well as to PREPA, subject to the non-discrimination requirements in Section 5.10 of this Regulation.

Section 5.02.- Certification

In addition to complying with the requirements set forth in this Regulation, any Microgrid Operator considered an Electric Service Company, as such term is defined in Section 1.08(A)(5) of Regulation 8701,⁸ shall comply with any and all applicable requirements set forth in Regulation 8701.

For the purposes of this Regulation, a Microgrid Operator overseeing the operation of a Third-Party Microgrid, or a group of Third-Party Microgrids, with an aggregate generating capacity of one megawatt (1 MW) or more will be considered an Electric

⁸ Amendment to Regulation No. 8618 on Certification, Annual Fees, and Operational Plans for Electric Service Companies in Puerto Rico.

Service Company. In such cases, the Microgrid Operator shall comply with the requirements of Section 3.07(A)(1)(a), 3.07(A)(2) and Article IV of Regulation 8701.

Section 5.03.- Registration

Any Person interested in owning and/or operating a Third-Party Microgrid must submit an application for registration as described in Article 6 of this Regulation. This application must contain at least the following information:

A. Contact information:

1. The application must provide the following contact information:

- a. Name of Microgrid Owner;
- b. Mailing address;
- c. E-mail address; and
- d. Phone number.

2. The application shall identify the name of the Person that will serve as Microgrid Operator and the contact information described in items (b), (c) and (d) above, if different from that of the Microgrid Owner.

B. Operational structure: The application shall identify the proposed Microgrid as a Third-Party Microgrid.

C. Location: The application must identify the Municipality (or Municipalities) in which the Microgrid is located, and a map showing the geographical boundaries of the proposed Microgrid.

D. Number of customers: The application must include the total expected number of Customers to be served by the Microgrid.

E. Type of Generation: The application must identify the type of generation proposed for the Microgrid, as provided in Section 3.03 of this Regulation, and the form for demonstrating compliance therewith, as provided in Section 3.04 of this Regulation.

F. System resources: The application must list the planned sizes and types of assets (including, as applicable, generation, storage, inverters, and other major electrical equipment) to be added or connected to the Microgrid.

G. Equipment vendor: The application shall include the name and contact information for the primary vendor(s) or installer(s) of the Microgrid.

H. Certification of Design: Prior to construction, the application shall include a certification of the Microgrid design signed and stamped by licensed engineer.

- I. Sample documents: The application shall include the following:
 - 1. A model contract for Commission review and approval, in accordance with Section 5.09 of this Regulation.
 - 2. A sample bill for Commission review and approval.
 - 3. Any prospective changes to the model contract or the bill format submitted along with the application must be approved by the Commission prior to their implementation.
- J. Billing model:
 - 1. Third-party Microgrids shall bill their customers on a per-kWh basis.
 - 2. Microgrids unable to bill on a per-kWh basis may request authorization from the Commission for an alternative payment structure. Such request shall explain the reasons why the use of a per-kWh billing method is preferable, as well as the preferred alternative payment structure and the calculations supporting that structure, as described in Section 5.04(D) of this Regulation.
- K. Proposed rate structure, as described in Section 5.04 of this Regulation

Section 5.04.- Rate Structure

- A. Microgrid Operators must charge uniform rates across all Customers of the same customer-class of a single Microgrid system. Within a customer-class, charges may be structured in any non-discriminatory manner, including but not limited to energy rates varying by usage block, time of use, season, system load and condition.
- B. The rate at which energy and grid services are sold shall be project specific cost-based rates, supported by substantial documentation. It shall be computed as the expected annual costs divided by expected sales. The expected annual costs shall be calculated as follows:
 - 1. The projected investment in the microgrid system, net of tax credits, grants or subsidies, times a carrying charge, which shall be the levelized payment at a cost of capital over the life of the project (in years).
 - 2. Plus the annual operating costs of the system, including fuel, maintenance of generation, fees, regulatory charges, meter reading and billing.
- C. For non-metered Microgrids, Microgrid Operators may charge for Energy Services and Grid Services on an alternative basis (for example, per kilowatt

of installed or diversified load, or per month). In this case, Microgrid Operators must provide, along with their applications, calculations supporting this alternative charge, demonstrating that it does not exceed the maximum rate established in parts (B) and (C) of this section.

- D. Microgrid Operators shall submit, for Commission approval, a proposed rate structure, including all supporting documentation.

Section 5.05.- Deposits

Microgrid Operators may require payment of a reasonable deposit. Such deposit shall be uniform among Customer's of the same customer-class.

Section 5.06.- Billing

- A. Electric Bills shall be rendered in regular periodic intervals for all Customers taking service from the Microgrid and in accordance with the terms of the contract. Payment shall be due within thirty (30) days of the issuance of the Electric Bill which may be issued electronically or by mail.
- B. All Electric Bills must be drafted clearly and plainly so that they are easy to understand without requiring that readers possess any specialized knowledge for their comprehension and must include the contact information of the Commission and the Independent Consumer Protection Office.

Section 5.07.- Bill Objections and Suspension of Service

All Electric Bill objections and suspension of service procedures will be conducted in accordance with Regulation 8863, Regulation on the Procedure for Bill Review and Suspension of Electric Service, or any future regulation approved by the Commission to that effect.

Section 5.08.- Complaint Procedure

Microgrid Operators shall develop and publish a procedure for addressing any complaints, other than bill disputes, a Customer may have with regards to the Energy Services and/or other Grid Services provided to the Customer. The procedures shall clearly describe the process through which a Customer may file any complaint or grievance with the Microgrid Operator and the process through which the Microgrid Operator will address said complaint or grievance, including the time period within which such complaints or grievances will be addressed.

Any Customer dissatisfied with a determination made by the Microgrid Operator in relation to a complaint or grievance made pursuant to this Section may file a complaint with the Commission for review of such determination by the Microgrid Operator. Such complaint shall be filed pursuant to Regulation 8543.

Section 5.09.- Standard Contract

Microgrid Operators shall develop a standard form contract to be used for all Customers with the exception that rates may vary for each customer-class. The contract shall be written in plain language and shall include, but not be limited to:

1. The effective date of the contract;
2. The termination date of the contract;
3. All rates and charges for which the customer shall be charged, including, but not limited to, late payment fees and reconnection fees, as applicable;
4. The billing period;
5. The terms and conditions for the suspension of service to the Customer, including the requirements for reconnection;
6. An existing Customer's shall be authorized to transfer their rights and responsibilities under a Microgrid contract to a subsequent Customer.
7. Force majeure provisions
8. Terms and conditions by which the Microgrid Operator may have the right to enter the Customer's premises;
9. Provisions against the theft of power.
10. The name and contact information to whom Customers shall address any inquiries and complaints;
11. The procedure for addressing and resolving complaints or grievances, other than bill objections, as required by Section 5.08 of this Regulation.
12. Provisions for termination of the contract by either party in accordance with Section 5.11 of this Regulation;
13. A provision that if the contract is assigned, ceded or transferred, the same terms and conditions shall apply; and,
14. The contract shall be governed and construed in accordance with the laws and under the jurisdiction of the Commonwealth of Puerto Rico.

Section 5.10.- Non-Discrimination

- A. Microgrid Operators covered under Article 5 of this Regulation are prohibited from unduly discriminating against individual Person in the immediate vicinity of a Microgrid if such Persons wishes to receive service from the Microgrid.

- B. In order to demonstrate non-discrimination:
 - 1. Microgrid Operators must submit a map of the proposed Microgrid boundaries showing the loads to be interconnected to the Microgrid.
 - 2. The Commission at its discretion may review the maps and determine whether or not the proposed Microgrid boundaries constitute discrimination.
- C. Microgrid Operators may request reconsideration of a Commission determination of discrimination, in which case they shall demonstrate either of the following:
 - 1. That based on cost, it is not feasible to connect the Persons who have been excluded. In this case, the Microgrid Operators shall be required to submit a calculation showing that providing service to a specific Person would exceed the average cost of providing service to other Customers of the same customer-class such that the average rate charged to the excluded Person would not permit the Microgrid Operators to recover its costs plus a reasonable return, if applicable.
 - 2. That it is technically not feasible to connect the Person. In this case, the Microgrid Operators shall be required to submit an affidavit signed by a licensed engineer describing the technical barriers that prevent delivery of service to a specific customer.

Section 5.11.- Contract Length and Exit Requirements

- A. The length of the contract shall be sufficient to allow the Microgrid Operator to recover its costs plus a reasonable return, but in no event, shall the contract term exceed twenty (20) years if a residential customer is one of the contracting parties.
- B. Microgrid Operators may terminate operation and/or remove equipment upon receiving permission from the Commission.
- C. Termination of service:
 - 1. All contracts shall contain language in which each party agrees that either party can seek a termination of service.
 - 2. Termination of service may be triggered by either a Microgrid Operator or a Customer.
 - 3. A notice period of no less than thirty (30) calendar days shall be given by the terminating party to the other party before terminating a contract. The contract shall specify the circumstances under which either party may be entitled to terminate a contract. Notice of

termination shall be made in writing and delivered by email or regular postal service.

4. Microgrid Operators may charge a reasonable exit fee for termination of service on metered and non-metered Microgrids during the first five (5) years of the contract period, provided, however, that in cases in which a Customer transfer a contract obligation to another Customer, whom shall henceforth use the service provided to the property, the transferring Customer shall not be required to pay an exit fee.
5. In the event a Microgrid Operator, for whatever reasons, is unable to continue providing service to its Customers, such Microgrid Operator shall exercise due diligence to find a new operator who shall assume responsibility to provide service to the Customers under similar terms of service. Should the Microgrid Operator be unable to secure a new operator, such Microgrid Operator shall work with PREPA to ensure that the Microgrid's Customers continue to receive uninterrupted electrical service once the Microgrid ceases providing service. Alternatively, a Microgrid Operator may offer its Customer the option of assuming ownership of the Microgrid, in which case, should the Customers accept, shall apply to the Commission to register and convert the Microgrid into a Cooperative Microgrid.
6. In lieu of the above, a Microgrid Operator may provide additional service guarantees, such as, but not limited to, performance bonds, provided such guranatees ensure Customers will continue to receive uninterrupted electrical service in the event of a default by the Microgrid Operator.

Section 5.12.- Reporting

- A. Microgrid Operators shall be required to submit an annual report on fuel usage, generation, and sales to the Commission. This report shall include:
 1. Electric generation by resource type;
 2. Thermal generation by resource type, for CHP Microgrids;
 3. Fuel use by resource type;
 4. Capacity factor by month and year;
 5. Total sales;
 6. Any change in the number of Customers, including additions and departures of Customers; and
 7. Any other information that the Commission may require.

- B. Microgrid Operators must maintain and submit to the Commission copies of any reports required by the US EPA and the Puerto Rico Environmental Quality Board.

Section 5.13.- Rate Review

- A. Any Operator or Customer of a Third-party Microgrid may petition the Commission to conduct a rate review for the service provided by the Third-party Microgrid, subject to the following restrictions and requirements:
 - 1. Microgrid rates shall not be subject to review by the Commission for the first three (3) years after the Commission approves their application for registration.
 - 2. Petitions for rate review may be brought by either Customers or Microgrid Operators.
 - a. Customers may petition for rate review on the basis of unjust or unreasonable rates, on the basis of undue burden, or on the basis of imprudence or inadequate service on the part of the Microgrid Operator.
 - b. Microgrid Operators may petition for rate review on the basis of unjust or unreasonable rates or on the basis of insufficient cost recovery.

CHAPTER III PROCEDURES

ARTICLE 6.- REGISTRATION PROCESS

Section 6.01.- Registration Form

- A. Any person interested in developing a Microgrid must complete a registration form, as applicable, for the classification of their Microgrid.
- B. Registration forms will be available at the Commission website, and will include at a minimum the information set forth in Sections 4.03 and 5.03 of this Regulation, as applicable. Applicants must submit this form to the Commission in electronic or paper format.
- C. If the registration form is not available, applicants may provide the information required for the relevant Microgrid type to the Commission in a paper or electronic format of their choice.

Section 6.02.- Commission Review

- A. The Commission shall review all applications for completeness and compliance with this Regulation, pursuant to the provisions of LPAU.

- B. The Commission shall issue a determination on each application within thirty (30) days of receipt:
 - 1. Granting the Microgrid status as a Registered Microgrid, subject to compliance with Section 6.03 of this Regulation;
 - 2. Requiring additional information and/or specific revisions; or
 - 3. Denying registration of the Microgrid.
- C. The Commission may issue a determination of denial of any application on the basis of Microgrid location, cost, composition, or other considerations.
- D. **Ongoing duty to notify.** If, at any point prior to or after a Commission determination has been made pursuant to this Section, any of the information provided by a Microgrid owner and/or operator as part of an application for registration changes or is expected to change, the Microgrid owner and/or operator shall have the responsibility of notifying the Commission of such change no later than ten (10) days from the date the change takes place. Failure to promptly update and notify the Commission of any such changes may result in a Notice of Non-Compliance, pursuant to Section 1.16 of this Regulation.

Section 6.03.- Compliance Certifications

- A. After a Microgrid has been fully constructed, but prior to beginning operation, the Microgrid owner and/or developer shall file with the Commission the following:
 - 1. A written certification signed by a licensed engineer indicating that the Microgrid, as built, complies with all regulations including, but not limited to, regulations of the U.S. EPA, all codes and standards as ordered by the Commission under Section 3.05 of this Regulation, and local siting regulations and ordinances.
 - 2. A certification of the Microgrid 'as built' design signed and stamped by a licensed engineer.
 - 3. A certification of inspection signed by a licensed engineer or licensed electrician, when authorized by law to do so.
- B. The filing of the documents and information required in Sub-section (A) of this Section shall constitute authorization to the Microgrid owner and/or operator to begin operation of the Microgrid.
- C. The Commission may review the information provided and may require the Microgrid owner and/or operator any additional information the Commission determines necessary or convenient. In the event of non-compliance or if the

Commission determines, from the information provided, that the Microgrid fails to comply with any of the requirements set forth in this Regulation, the Commission may, at its discretion, take any appropriate action necessary to ensure the safety and reliability of the service provided to the microgrids Members or Customers.

Section 6.04.- Filing Fee

- A. Except for Microgrids covered under Section 5.02 of this Regulation, any application for registration of a Microgrid system shall include payment of a filing fee as follows:
 - 1. Small Cooperative Microgrids: \$50.00
 - 2. Large Cooperative Microgrids
and Third-Party Microgrids: \$100.00

- B. Microgrids covered under Section 5.02 of this Regulation shall be exempt from payment under this Section. Proof of payment of the applicable fees under Regulation 8701 shall be provided in order to claim the exemption from payment established herein.

ARTICLE 7.- EXEMPTIONS

Any Microgrid Operator may file a request for exemption or modification of any of the requirements under this Regulation. Any request for exemption shall describe the provision from which the applicant seeks exemption or for which the applicant requests a modification and shall include a clear justification of the applicant's request. This opportunity to file for an exemption may occur at the time of seeking approval or at a later date such as when the Microgrid is already in operation due to a change in circumstances. In ruling on such motions, the Commission shall consider the reasonableness of the request; the cost impact on the project and the Members or Customers of the Microgrid project including the prudence of incurred or anticipated costs, if applicable; whether the exemption is supported by the Members or Customers or potential Members or Customers of the Microgrid; whether the exemption is in the public interest and any other relevant factors pertaining to the requested waiver.

ARTICLE 8.- RECONSIDERATION AND JUDICIAL REVIEW

Section 8.01.- Request for Reconsideration

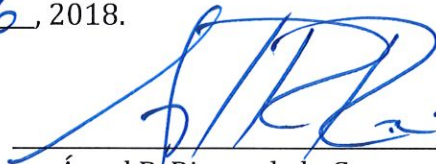
Any person that is not satisfied with a decision made by the Commission under this Regulation may file, within the term of twenty (20) days from the date copy of the notice of such decision is filed by the Commission's Clerk, a request for reconsideration before the Commission wherein the petitioner sets forth in detail the

grounds that support the request and the decisions that, in the opinion of the petitioner, the Commission should reconsider.

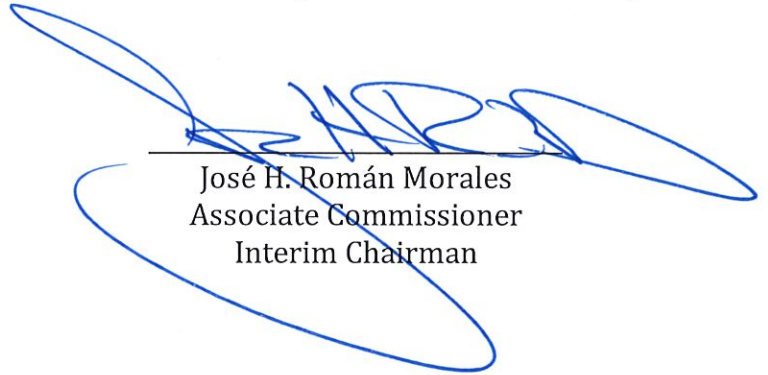
Section 8.02.- Judicial Review

Any person dissatisfied with a final decision of the Commission under this Regulation may, within thirty (30) days from the date copy of notice of a final decision addressing a request for reconsideration is filed by the Commission's Clerk, or within thirty (30) days from the date copy of the notice of a Commission final decision is filed by the Commission's Clerk, if a request for reconsideration has not been filed, appear before the Court of Appeals of the Commonwealth of Puerto Rico by way of writ of judicial review, pursuant to Section 4.2 of LPAU and the applicable Rules of the Court of Appeals.

Agreed upon by the Puerto Rico Energy Commission, in San Juan, Puerto Rico, on May 16, 2018.



Ángel R. Rivera de la Cruz
Associate Commissioner



José H. Román Morales
Associate Commissioner
Interim Chairman

Appendix A Fuel Limit Calculator

Note: tabs highlighted in yellow require users to input values that are specific to their proposed systems.

Allowable Fuel (AC). See below for Allowable Fuel (DC) Calculator.

Input	Units	Value	Source/Notes
Fuel Type			[A]; User input
PV Capacity on System	kW (AC)		[B]; User input
PV AC Capacity Factor	%		[C]; User input
Hours per Year	Hours	8760	[D]
Annual PV Generation	kWh		[E] = [B] * [C] * [D]
Minimum generation from PV	%	75%	[F]; Limit
Allowable Generation from Fuel	kWh/year		[G] = [E] * ((1/[F])-1)
Heat Rate of Generator	BTU/kWh		[H]; User input
Allowable Fuel Energy	MMBTU/year		[I] = [G]*[H]/1,000,000
Fuel Heat Content	MMBTU/gal or MMBTU/cubic foot		[J]; See Conversions table
Allowable Fuel	Gal/year or Cubic foot/year		[K] = [I] / [J]
Months per Year	Months	12	[L]
Allowable Fuel	Gal/month or Cubic foot/month		[M] = [K] / [L]
Liters per Gallon	Liters/gal	3.79	[N]; Conversion factor
Allowable Fuel	Liter/(month*kW PV)		[O] = [M] * [N] (Note: not applicable for natural gas calculations)

Allowable Fuel (DC)

Input	Units	Value	Source/Notes
Fuel Type			[A]'; User input
PV Capacity on System	kW (AC)		[B]'; User input
PV AC Capacity Factor	%		[C]'; User input
Hours per Year	Hours	8760	[D]'
DC-to-AC Ratio		1.15	[E]'
Annual PV Generation	kWh		[F]' = [B]' * [C]' * [D]' * [E]'
Minimum generation from PV	%	75%	[G]'; Limit
Allowable Generation from Fuel	kWh/year		[H]' = [F]' * ((1/[G]')-1)
Heat Rate of Generator	BTU/kWh		[I]'; User input
Allowable Fuel Energy	MMBTU/year		[J]' = [H]'*[I]'/1,000,000
Fuel Heat Content	MMBTU/gal or MMBTU/cubic foot		[K]'; See Conversions table
Allowable Fuel	Gal/year or Cubic foot/year		[L]' = [J]' / [K]'
Months per Year	Months	12	[M]'
Allowable Fuel	Gal/month or Cubic foot/month		[N]' = [L]' / [M]'
Liters per Gallon	Liters/gal	3.79	[O]'; Conversion factor
Allowable Fuel	Liter/(month*kW PV)		[P]' = [N]' * [O]' (Note: not applicable for natural gas calculations)

Conversion Factors Table

Fuel Type	Heat Content	Unit
Diesel	0.138	MMBTU/gal
Natural Gas	0.001	MMBTU/cubic foot
Residual Fuel Oil	0.150	MMBTU/gal
Kerosene	0.135	MMBTU/gal

Source: <https://www.eia.gov/outlooks/aeo/pdf/appg.pdf>

Appendix B

Section 3.03(B) of this Regulation establishes that CHP Microgrids must meet the following requirements during the 12-month period beginning with the date the Microgrid first produces electric energy and each 12-month period thereafter:

1. The useful thermal energy output of the system is no less than fifty percent (50%) of the total energy output.
2. The fuel input, minus the useful thermal energy output, is no more than 7,000 Btu per kWh of generator output.

The following table contains four different examples of hypothetical CHP systems. For illustration purposes, each system has a Fuel Input of 1,000 MMBtu.

CHP Unit	Fuel Input (MMBtu)	Useful Thermal Output (MMBtu)	Useful Thermal Output (%)	Net Input (MMBtu)	Net Electric Output (MWh)	Heat Rate (Btu/kWh)	CHP Useful Thermal Output > 50% Input?	Efficiency CHP HR < 7,000 Btu/kWh?
	[1]	[2]	$\frac{[2]}{[1]} \times 100$	$\frac{[3]}{[1] - [2]}$	[4]	$\frac{[3]}{[4]} \times 1,000$		
1	1,000	700	70%	300	60	5,000	Yes	Yes
2	1,000	100	10%	900	150	6,000	No	Yes
3	1,000	700	70%	300	40	7,500	Yes	No
4	1,000	350	35%	650	70	9,286	No	No

In the previous example, CHP Systems #1 and #3 met the first requirement (useful thermal energy output of the system is no less than fifty percent (50%) of the total energy output) and CHP Systems #1 and #2 met the second requirement (fuel input, minus the useful thermal energy output, is no more than 7,000 Btu per kWh of generator output). Therefore, CHP System #1 met both requirements.