Puerto Rico Energy Commission
REGULATION ON MICROGRID DEVELOPMENT

Proposed comments on regulation

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Overview

The areas that require our input are:

1. Section 1.08.18 Definition of storage
2. Section 1.08.25 Definition of microgrid
3. Article 3 Section 3.02.A.4 High carbon / fuel use of back-up generators
4. Article 6 Section 6.04.A.3 Diesel-fired generator fuel restrictions

Introduction

We welcome the opportunity to comment on the CEPR Regulations for Microgrid Development.

Specific Comments

Section 1.080.18: Definition of storage, page 7

18. "Energy Storage" means any resource capable of receiving electric energy from the grid or any other generation resource, to store for later injection of electricity back to the grid or to any load, regardless of where the resource is located on the transmission system, distribution system, or behind a customer's meter.

Strictly the regulation should define "Electricity Storage", which is a specific subset of Energy Storage. The UK definition for Electricity Storage is [1]:

"Electricity Storage" in the electricity system is the conversion of electrical energy into a form of energy which can be stored, the storing of that energy, and the subsequent reconversion of that energy back into electrical energy.

"Electricity Storage Facility" in the electricity system means a facility where Electricity Storage occurs.

[1] Ofgem, September 2017: Clarifying the regulatory framework for electricity storage: licensing, available: https://www.ofgem.gov.uk/publications-and-updates/clarifying-regulatory-framework-electricity-storage-licensing

"Energy Storage" converts electricity into another energy vector, such as hydrogen or heat/cold, that is electricity in, something else out, removing the electricity system and would essentially be seen as demand, rather than storage. While both are storage, they have different roles in the electricity system.

It is important to get the definition correct for "Electricity Storage" in this regulation, so that should CEPR wish to regulated or manage "Energy Storage" in the future, there is no conflict with the treatment of "Electricity Storage".

Section 1.08.25: Definition of Microgrid, page 7-8

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.

We support the definition of a Microgrid used in the Regulation

Article 3 Section 3.02.A.4: Limits on the use of Back-up Generators, page13

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.

And (footnote):

Use of oil, natural gas and coal by a facility, 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. Such fuel use may not, in the aggregate, exceed twenty-five percent (25%) of the total energy input of the facility 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.

It is likely that in Puerto Rico the fuel of choice will be propane. Propane is not specifically mentioned in the footnote, an extract from the Code of Federal Regulations: *18 CFR 292.204 – Criteria for qualifying small power production facilities*. Does the requirement to only draw no more than 25 % of the total energy input in a microgrid in a twelve-month period apply to plant fired using propane?

The use of propane should be clarified in the Regulation if it is not captured by 18 CFR 292.204

Additionally, it may be difficult to restrict the operation of back-up fossil fuel plant in a microgrid to only 25 % in a twelve-month period. While this requirement may be appropriate for power systems that are reliable, island systems, particularly those exposed to extreme weather events and recovering island systems, may routinely breach this condition, resulting in penalties, which can be severe (Article 3 Section 3.02.C).

18 CFR 292.204 specifically *includes* emergency outages, where the generator would be needed to alleviate or prevent adverse impacts on public safety, health and welfare. The CEPR may want to consider (if possible) *excluding* the operation of generation in response to an emergency situation. Or CEPR may want to address the scope of penalties incurred during operation to support a Microgrid in an emergency situation.

Article 6 Section 6.04.A.3: Diesel-fired generators fuel restrictions, page 23

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 12.5 gallons of diesel fuel per month per kilowatt of photovoltaic capacity. To use this provision, microgrid owners must assert their intention to do so in their applications to the Commission, maintain monthly records of fuel consumption, and submit an annual fuel consumption report.

Care is needed to ensure that this restriction on fuel use for a diesel generator is appropriate in the Puerto Rico power system.