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Comments on Puerto Rico Energy Commission Microgrid Rules,

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The Institute for Energy Economics and Financial Analysis (IEEFA) appreciates this opportunity to comment on the Puerto Rico Energy Commission's draft egulation on microgrid development. Given the strong interest from private solar developers in Puerto Rico and the fact that only two-thirds of electric customers have service four months after Hurricane Maria, IEEFA welcomes the urgency with which the Commission has sought to create a clear regulatory environment for microgrids in Puerto Rico.

The future of the electrical system in Puerto Rico is highly uncertain. Electrical demand will certainly continue its downward trend, though it is unclear how much more demand will fall as a result of Hurricane Maria. PREPA needs to address its lack of compliance with the Mercury and Air Toxics Standard by retiring many of its existing units. PREPA has proposed several natural gas conversions and new units, though it is not clear how PREPA can finance anything, nor is it clear how much new generation PREPA will actually need. By creating a clear regulatory environment for decentralized power generation, the Commission can help to resolve one of the fundamental uncertainties moving forward, namely how much decentralized generation capacity Puerto Rico can reasonably achieve over the next several years. This will contribute to ensuring that reasonable resource-planning decisions are made regarding the timing of existing unit retirements and the build-out of new utility-scale generation.

IEEFA is generally supportive of the Commission's draft regulation on microgrid development and believes that the Commission has done a reasonable job of balancing the complexity of possible microgrid generation and ownership structures, the need to ensure adequate consumer protections, and the urgency of creating a stable regulatory framework that is not unduly burdensome on potential microgrid developers. IEEFA offers the following comments on specific issues raised by the draft regulation:

(1) Renewable energy

Under the draft regulation, a microgrid qualifies as a "renewable microgrid" if at least 75% of the annual generation of the microgrid is from a renewable energy resource, where "renewable energy" includes both "alternative" and "sustainable" energy sources. IEEFA opposes the inclusion of "alternative energy" in the definition of a "renewable microgrid" because it is misleading to designate microgrids based on solid waste incineration or landfill gas as "renewable." Solid waste incineration in particular is not an appropriate fuel source for a microgrid because incinerators are well-known to produce toxic air pollution[1] and therefore should not be sited close to load.

Additionally, IEEFA believes that the requirements in Section 5.03(A)(3) and Section 6.04(A)(3) are inconsistent with the requirement (Section 3.02(A)(4)) that fuel oil or natural gas cannot comprise more than 25% of the microgrid's annual generation. Sections 5.03(A)(3) and 6.04(A)(3) specify that municipal, third-party or large cooperative renewable microgrids that include diesel generation must consume less than 12.5 gallons of diesel fuel per month per kW of solar capacity. Assuming a diesel generator heat rate of approximately 10,000 BTU/kWh, 12.5 gallons of diesel would generate 174 kWh per month. Assuming a solar capacity factor of 22%, one kW of solar would generate 161 kWh per month. Thus the diesel generation would far exceed the 25% of total generation threshold.

(2) Microgrid size definitions

The draft regulations define three size classifications for microgrids (Section 2.01): (1) individual systems; (2) small systems ("those with at least three (3) and no more than (10) customers or customer-owners and total generating capacity of no more than 250 kW") and (3) large systems ("those with more than 10 customers or generating capacity over 250 kW"). Size only matters for cooperative systems because the draft proposes different regulations for small versus large cooperative systems. However, it seems possible that a system's size could be ambiguous under the above definitions. For instance, it is plausible to imagine a 10-15 person cooperative residential microgrid system smaller than 250 kW; such a facility would meet both the large definition (based on number of customers) and the small definition (based on capacity). IEEFA suggests that the size definition be based solely on the number of customers.

Additionally, IEEFA believes that the regulations should reflect the fact that a microgrid might expand over time by adding customers or capacity. The regulations should require a small cooperative microgrid (regulated under article 4) to notify the Commission if it expands in size to become a large cooperative microgrid (regulated under article 5), without having to re-register its system.

(3) Microgrid Rates

[1] Emissions from waste-to-energy facilities can include particulate matter, dioxins, heavy metals (including mercury) and other air pollutants. Many of these pollutants are emitted at rates higher than coal-fired power plants. (See, for example, Environmental Integrity Project, "Waste to Energy: Dirtying Maryland's air by seeking a quick fix on renewable energy?", October 2011.)

IEEFA is concerned that the draft regulation pegs the cap on rates charged by municipal and third party-owned microgrids to the rates charged by PREPA in perpetuity. While we understand that in the short-term this may be a reasonable approach to setting rates to avoid the delay of numerous simultaneous microgrid rate proceedings, we believe that rates should, as a general principle, reflect the microgrid's costs, not PREPA's costs. We would suggest that after a year of operation, a microgrid and/or its customers be allowed to petition the Commission for the establishment of cost-based annual rates based on the microgrid's actual cost of service. IEEFA recommends that the Commission be permitted to begin reviewing the rates of microgrids (at the request of the microgrid or its customer(s)) one year after the microgrid has commenced operation, not three years after the approval of applications (Section 6.14).

Additionally, regarding the ability of microgrids to lease PREPA infrastructure (Section 6.12), the regulations should make clear that PREPA has responsibility for maintenance of infrastructure that is leased to microgrids for the duration of the lease term. The microgrid should have the ability to petition the Commission to withhold all or a part of the lease fee if it can demonstrate that PREPA is not fulfilling its maintenance obligation. If a microgrid wants to lease from PREPA, PREPA should be required to lease equipment to microgrids for as long as the microgrid is in operation, assuming that the microgrid fulfills its payment obligations to PREPA.

It is also unclear how the Commission arrived at the flat fee of $25 per month per customer for leasing PREPA infrastructure. If microgrids are to have the option of paying a flat fee to PREPA, it should be cost-based. Additionally, all microgrids (including small systems) should have the option of using Appendix A to determine their lease fees.

Finally, IEEFA recommends that all microgrids be metered. If microgrids are metered, both customers and generators can be more easily held accountable for how much energy they are consuming or producing. Additionally, metering will assist the Commission in arbitrating disputes about just and reasonable rates.

(4) Consumer Protections

It is essential that Puerto Rican electrical customers be protected from the actions of potentially predatory or unscrupulous project developers. The draft regulation appropriately gives customers recourse to 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 system owner" (Section 6.14) for a municipal or third party-owned system. IEEFA assumes that this gives the Commission the authority to order spending if necessary to improve inadequate service.

IEEFA is concerned that the draft regulations appear to allow a microgrid developer to terminate service without advance notice to customers (Section 6.11). The draft states that "contracts may require a notice period for service termination, not to exceed sixty (60) days," but it does not establish a minimum notice period. Further it is not clear who would take over service to customers if a microgrid operator goes bankrupt or otherwise decides to terminate service to all of its customers. Does PREPA have an

obligation to be the default service provider? IEEFA further suggests that the contracts be required to specify the conditions under which service termination would occur. In particular, a microgrid owner should not be allowed to terminate or otherwise discriminate against customers who have petitioned the Commission for rate review of the microgrid based upon unreasonable rates, undue burden, imprudence, or inadequate service.

IEEFA is also concerned that the possibility of residential customers being locked into a very long (as much as 20 years) contract for microgrid service would be a barrier to residential customer participation (Section 6.11). We suggest that if a contract with a residential customer is longer than five years, that the contract include a provision for transferring the contract obligations to the next owner of the house or paying a reasonable exit fee to the microgrid owner.

IEEFA suggests that the Commission consider adopting a "Customer Bill of Rights" to ensure that unscrupulous developers cannot take advantage of customers through contracts that are not sufficiently protective of consumer interests. Such a "Customer Bill of Rights" would standardize procedures for disconnection, termination, delinquent payments and customer complaints.[2]

(5) Microgrids in outage situations

The draft regulations do not specifically consider the operation of microgrids during a prolonged, multi-month outage situation, such as the one many Puerto Ricans continue to suffer. Specifically, Section 6.10(A) states, "Microgrid owners covered under Article 6 of this Regulation are prohibited from discriminating against individual customers in the immediate vicinity of the microgrid if those customers do not have access to PREPA service and would like to take service from the microgrid." The phrase "if those customers do not have access to PREPA service" is unclear. Should a microgrid be obligated to extend electric service to additional nearby customers in the event of a prolonged outage? How far does this obligation extend? Similarly, does a microgrid have an obligation during an outage situation to export power and sell power to PREPA (assuming that this is technically possible)?

Microgrids should consider including load reduction commitments in contracts for operations during power outages, so that microgrids have greater flexibility during an outage - to temporarily expand service, to sell excess power to PREPA or, conversely, to withstand possible fossil fuel supply interruptions.

IEEFA recommends that the Commission have the ability to waive restrictions on fossil fuel use in the event of a prolonged (multi-month) PREPA outage situation, in which it is possible that the microgrid might rely more on generators in the absence of back-up power from the grid.

[2] An example of a customer bill of rights is: http://www.dps.ny.gov/HEFPA_Brochure_12-08.pdf

In addition to the possibility of a PREPA outage, microgrids will also face maintenance and forced outages of their generators. It is important to clarify whether PREPA has an obligation to serve microgrid customers during those times.

(6) PREPA's role

The draft regulation explicitly does not cover the regulation of PREPA-owned microgrids; however, it is unclear in defining PREPA's role in non-PREPA-owned microgrids. As stated above, IEEFA believes that PREPA should have an obligation to lease infrastructure to a microgrid that wants to lease from PREPA. PREPA should also have an obligation to purchase excess power generated by a microgrid at a reasonable rate. Finally, PREPA should be defined as the default service provider, with a responsibility to provide service in the event of a planned or forced microgrid outage and to customers whose microgrid service is terminated.

(7) Future development of microgrids in Puerto Rico

IEEFA appreciates the importance of this regulation in clarifying the regulatory environment for microgrids in Puerto Rico. However, more could be done to facilitate the deployment of microgrids, especially for critical loads and for areas that have not yet received power after Hurricane Maria. We urge the Commission to take additional steps, via a separate proceeding, to proactively encourage the development of microgrids in Puerto Rico, especially given that there is very little existing experience in Puerto Rico with microgrids.

For example, the Commission could take a leading role in identifying targeted sites for microgrids – based on critical loads, CHP potential, geographic location or other criteria. The Commission could also take advantage of the technical expertise offered by various parties that responded to the Commission's initial set of questions on microgrid rulemaking (in proceeding CEPR-IN-2017-0002), by encouraging these technical assistance providers to convene stakeholder groups and suggest optimal microgrid configurations in targeted areas. The Commission could identify third-parties with the expertise in, for example, generator maintenance or customer billing, that could provide services to communities lacking those resources. While there is significant interest in microgrids in Puerto Rico, the lack of knowledge and experience suggests that targeted technical assistance could be very beneficial to actually developing projects. We believe this information would be helpful in formulating PREPA's next IRP, so that the role of microgrid providers and PREPA in collectively providing electrical service to Puerto Rico can be clear.