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PR Energy Commission (PREC)  
Seaborne Building 268  
Ave. Muñoz Rivera  
Plaza Level Suite 202  
Hato Rey, PR 00918

Re: Comments to the rules for “Regulation on Microgrid Development”

Gentlemen:

There is consent and ample evidence that Microgrids and Distributed Energy Resources could improve the reliability, stability, cost and fast recovery of the PR Electric Grid (The Grid) and help re-growth the economy and quality of life of all of us. I have no words to describe how the Combine Heat and Power (CHP) Plant that we are implementing at the Hospital de la Concepcion in San German was able to continuously operate before, during and after Hurricane Maria, but specifically how were saving lives and providing medical, social services and hope to individuals all over PR.

While I am excited on how the PREC is working and addressing its role and driving many areas of the PR electrical industry, and very excited on how Microgrids, DERs, Renewables, Smart Grid and IoT, between other areas, could make a fast track transformation in PR, I will like to express on the proposed rules for the Regulations on Microgrid Development as follows.

Section 1.08.B.25 – (Microgrids) Please consider deleting “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 goal is not part of its definition nor it is correct to state that microgrids goals are the ones indicated.

Section 2.01.B – Please consider removing this section. I am sure the Commission intentions are not to limit the implementation or rights to own of any entity.

Section 3.03.A. (CHP) – Disagree on the CHP qualifications

1. This sections state “The useful thermal energy output of the system must be no less than fifty percent (50%) of the total energy output...”. In other words, any generating technology with an electrical efficiency over 50% will be disqualified for a CHP Plant since the thermal output is below 50% of the energy output. While this statement today

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may not have major implications, I proposed that to qualify for a CHP the plant, the recoverable thermal output shall be at least 75% recovered, when the facilities operations permit it and recovery is economically feasible. CHP facilities that do not comply with such good efficiency practices could be allow to be interconnected at higher interconnection rates (at described in next statements).

2. This section states “The fuel input, minus the useful thermal energy output, shall be no more than 7,000 Btu per kWh of generator output...” Assuming that the fuel input refers to the fuel BTU input, then the fuel input, minus the useful thermal energy output is the electrical output plus the non-recoverable thermal energy. I presume this limitation is not the desired intent. I recommend using the CHP efficiency constraint on previous clause. Is the efficiency on any plant were the thermal recovery is not possible due to operational or economic reasons, will self-regulate based on the market competitiveness and higher operational cost.

### Section 2.01.A & C – Microgrid classifications

Similar to section 2.01.A, it is understood that Microgrids classification criteria should take into consideration its size, island mode operation capabilities and whether or not they engage ancillary services to the Grid (like frequency and voltage regulation, black start capabilities, dispatchability, etc.). Regarding the size classifications indicated in section 2.01.C, I have hesitations:

1. Individual systems – any size restrictions, only limited to 1 or 2 customers-owners. To that extent, 2 industrial facilities with a 20MW CHP plant will classify for an individual system? or then a single owner with a CHP plant of 1MW will be a large customer?
2. Small Systems – why the commission will like to dedicate resources to 4 residential customers that install a common PV microgrid?
3. Large Systems – why the commission will like to dedicate resources to (2) commercial customers that install a common 300KW CHP Plant?

The Commission resources are limited, and now we need them the most and fulltime on projects that creates the foundation to a new Grid Model. Like me, many have felt “hostage” from the current Grid Monopoly, PREPA; that have been self-regulated for years. PREPA track record shows: high electrical energy costs, slow response, lack of maintenance, seriously deteriorated infrastructure, lack of vision and planning, bureaucracy, lack of accountability, were employees are rewarded not by merits or performance, but mostly by political affiliations. But shall we blame PREPA employees? I must say that most of the PREPA personnel I know are well qualified or experts on the field. Could we blame all the politics that have made this chaos, the ones that legislated most of the 12 riders on the residential energy tariff (GRS), the previous PREPA management or all? But now we have an active Energy Commission, and many of us are betting on the PREC.

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In addition to the Microgrids classifications above, I have serious concerns on how this Microgrids Rules will open or be used for a Grid De-Regulation. Shall PR bet on energy communities?, possibly at the cost of reliability and Grid stability. What benefit could have several islanded Microgrids if the majority of the industry or population get a more unreliable grid with power quality issues. Why deregulate at all? Why not fix what have being missing?

Before getting into the Microgrids classifications, please allow me to expose some additional information:

1. As per the QF Rider, any CHP Plant shall be compensated at \$0.0767/KWh for a Firm Generation (secondary rates, highest ones)
2. Above rates are significant lower that the lower energy producing facilities in PR (public or private)
3. PREPA energy cost, sector weighted average costs is \$0.2045/KWh
4. From 1 & 2, PREPA rates are 266.7% higher that the approved rates for any CHP plant discouraging any CHP or DER development.
5. There is no commercial and technical rules for DER or Microgrids development
6. There is no technical or commercial rules for grid ancillary services

On idealized competitive markets, the marginal cost (\$0.0767) shall closely compare to billed energy rates. The 266.7% increase over the marginal cost is just a text book example of the market power exerted by the PREPA monopoly, where the traditional system means to prevent it is a strong energy regulator. We now have an energy regulator! While the market structure is a relevant issue on an electrical market, the proposed model to address a strong and agile Microgrid and DER market is to address this structure need. For such achievement I propose:

1. In conjunction with PREPA and DER's proponents, finalize the Grid Codes and technical requirements for interconnections that enable a stronger, resilient and stable grid.
2. Create the economic model such the DER proponents makes a fair distribution of the energy incomes and assure a bankable recovery of the investment.
3. Emphasize on microgrid locations were the energy could be produced at the highest efficiency, specially in industrial and commercial parks, and on locations of critical infrastructures like Hospitals, Water Treatment or Distribution Facilities, Police & shelters.
4. Foster and reward initiative on energy storage or smart grid technology leading to high load or generating capacity factors
5. Create a special rate for off-grid solar so that investors could charge by the energy produced and bill customers directly. This tariff could also be implemented on locations where the utility restoration will still be delayed as a means to a fast recovery.

For the above, I propose classifying the Microgrids by current sectors as residential; commercial, industrial or power producer. For all markets, since the implementation of a market structure and

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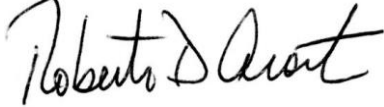
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architecture is complex and shall be carefully evaluated, I suggest creating a transitional Power Exchange and hold temporarily on the proposed rules.

With this Power Exchange and the Energy Commission effect over PREPA, I hope a new and brilliant beginning could be achieved for the energy market and for PR.

Regards,

A handwritten signature in black ink, appearing to read "Roberto D. Acosta". The signature is written in a cursive style with a large initial "R".

Roberto D. Acosta, PE