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October 28, 2016

**VIA ELECTRONIC FILING AND HAND DELIVERY**

David J. Collins
Executive Secretary
Maryland Public Service Commission
William Donald Schaefer Tower
6 St. Paul Street, 16th Floor
Baltimore, MD, 21202

Re: State of Maryland Public Service Commission– ML#199669 – Comments in Response to Notice of Public Conference In the Matter of Transforming Maryland's Electric Distribution Systems to Ensure that Electric Service is Customer-Centered, Affordable, Reliable, and Environmentally Sustainable in Maryland ("PC44")

Dear Secretary Collins:

This firm represents The Microgrid Resources Coalition ("MRC"). The MRC is pleased to submit its enclosed comments in response to the Notice of Public Conference that the Public Service Commission of Maryland (the "Commission") issued regarding PC44.

We also wish to inform the Commission that the MRC and the International District Energy Association are jointly hosting a Microgrid Summit event at the National Press Club in Washington, DC on December 7th. Details about the event can be found here. We wholeheartedly welcome Commission staff members to participate in the event and respectfully request that the Commission avoid scheduling the public meeting in conflict with the Microgrid Summit event.

Please feel free to contact me directly at the telephone number above.

Very truly yours,

C. Baird Brown
Attorney for the MRC

CBB/BCP

**Microgrid Resources Coalition**
**Comments on Notice of Public Conference for PC44**

## 1. Introduction

The Microgrid Resources Coalition ("MRC") is pleased to provide comments to the Public Service Commission of Maryland's (the "Commission") Notice of Public Conference ("Notice") issued on September 26, 2016, in the Matter of Transforming Maryland's Electric Distribution Systems to Ensure that Electric Service is Customer-Centered, Affordable, Reliable and Environmentally Sustainable in Maryland ("PC44"). The MRC is encouraged to see the Commission addressing the important policy issues raised by the proliferation of new distributed energy resources ("DER") and strongly supports the Commission's efforts. The MRC also fully endorses the stated goals of PC44 – to ensure that electric distribution systems in Maryland are customer-centered, affordable, reliable and environmentally sustainable.[1] Those goals are advanced by the range of services provided by DER – particularly, advanced DER like microgrids.

The MRC is a consortium of leading microgrid owners, operators, developers, suppliers, and investors formed to advance microgrids through advocacy for laws, regulations and tariffs that support their access to markets, compensate them for their services, and provide a level playing field for their deployment and operations. In pursuing this objective, the MRC intends to remain neutral as to the technology deployed in microgrids and the ownership of the assets that form a microgrid. The MRC's members are currently engaged in a wide variety of Microgrid-related activities across the United States.[2]

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[1] Notice at 1.

[2] The MRC is actively engaged in advancing the understanding and implementation of microgrids across the country, including in Maryland. MRC members hold significant energy assets connected to the PJM grid, provide energy generation and supply services, and are exploring microgrid construction and ownership in Maryland. MRC

The MRC defines a microgrid as "a local electric system or combined electric and thermal system that: (1) includes retail load and the ability to provide energy and energy management services needed to meet a significant proportion of the included load on a non-emergency basis; (2) is capable of operating either in parallel or in isolation from the electrical grid; and (3) when operating in parallel, can provide some combination of energy, capacity, ancillary or related services to the grid." This language captures microgrids' ability to sell services to the larger grid and the opportunity for substantial efficiencies achieved through co-management of electric and thermal loads.

Advanced DER like microgrids are already providing a range of services to the grid with the potential to help advance the stated goals of PC44. The following comments discuss that potential in greater detail with reference to the specific electric distribution system topics outlined in the Notice.

## 2. Benefits and Costs of DERs

The MRC strongly supports calculating the benefits and costs of DER but believes that inclusion of other types of DER beyond solar, including advanced DER like microgrids, is essential for such an analysis to be comprehensive. DER covers a vast range of technologies, from "dumb" and unresponsive to smart, flexible and dispatchable, and the value of DER depends on both the services that the DER provides and the location on the grid where they are provided. There is not a single value by state or by technology.

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members include: Anbaric Transmission, Concord Engineering Group, ICETEC Energy Services, Inc., Massachusetts Institute of Technology, NRG Energy, Inc., Princeton University, and Thermo Systems LLC. The MRC is affiliated with the International District Energy Association ("IDEA"), which connects members from all over the country operating combined heat and power plants and microgrids.

*a. Range of DER Capabilities*

All DER are not created equal. For example, the typical rooftop solar PV installation does not communicate to the grid in real time and is unable to modulate production in response to signals from the grid or its owner. At the other end of the spectrum, microgrids are typically smart and responsive – able to communicate with the grid operator and respond with finely tuned output. They bid into day-ahead and real-time markets not only for demand response, but for regulation and other ancillary services, and the existing markets in the most advanced Regional Transmission Organizations ("RTOs") do not exhaust their capabilities.[3] The ancillary services that are needed by the grid today may not be the ones needed tomorrow.

*b. Specific Capabilities of Advanced DER*

A modern microgrid can provide the services the grid needs when the grid needs them. Using electric and thermal storage capabilities, a microgrid can locally manage variable renewable generation, particularly on-site solar. By "smart" management of thermal loads, microgrids can effectively use buildings themselves as thermal storage to manage load shape. These and similar efficiency and energy management strategies not only save money but also significantly reduce the environmental impact of providing energy services.

In addition, customers served by microgrids typically make substantial investments in energy efficiency. They adopt passive measures that reduce energy consumption, and more efficient HVAC and other systems that, when coupled with sophisticated controls, allow them to manage their load shape as well as further reduce load. These investments are made to operate in tandem with their electrical and thermal generating systems. The microgrid context makes them economic.

[3] The Princeton microgrid provides demand response and regulation and is capable of spinning reserve if allowed by PJM. ICETEC has helped numerous projects achieve the same level of operation.

Microgrids' ability to shape their demand and output allows them to provide "profile products" to the grid by adjusting their generation and load to shape system profiles in order to provide load and generation modification services beyond traditional demand response or ancillary services. Such products can be in response to real-time dispatch or market signals in the organized power markets as well as pursuant to long- term contracts with utilities for distribution system support services. Microgrid Profile Products can be unique, customizable solutions to localized planning and operational challenges. Microgrids employing multiple energy management technologies can simultaneously provide multiple services using multiple dynamic objective functions. Microgrids can moderate power prices and grid congestion by efficiently shifting load to times of lower demand and pricing and by locating generation closer to loads.

Microgrid operators frequently also invest in operational or switching capabilities to enhance resiliency or reliability, such as black start and "islanding," especially for mission-critical load clusters such as research institutions, healthcare or manufacturing facilities where costs of interruption can be damaging economically and functionally. The ability to maintain operations during severe weather events or extreme temperature conditions are obviously beneficial to the host facility, but additionally provide regional benefits by alleviating triage costs or emergency response urgency for distribution utilities, enabling service restoration to occur more uniformly since mission-critical needs are already being met. Further, Microgrids are capable of directly aiding the restoration of their community's services by working with the local distribution utility to export services from island mode in support of local substations and circuits.

### 3. Distribution System Planning

The MRC encourages the Commission to include the potential of advanced DER, including larger scale microgrids and community-based microgrid solutions in discussions of distribution system planning. Planning should consider not only the ability of the grid to "handle"[4] DER penetration, but, following the lead of New York and California,[5] should consider the locations where advanced DER can help the grid. Utilities can then make procurements for the kinds of DER and profile products discussed above. And, while some services to the grid are hyperlocal in character, many are not, and DER can be aggregated to provide grid services. The MRC encourages Maryland to avoid artificial limitations in its consideration of DER's potential to provide advanced grid services and to explore policies that would ensure that distribution systems have the capability to not only increase DER penetration but also to support the full potential of services that advanced DER can provide to the system as a whole.

### 4. Advanced Metering Infrastructure ("AMI")

The MRC suggests that any consideration of AMI should include the ability of AMI to support two-way communication to allow controllable DER to provide the types of advanced grid services discussed above.

[4] Notice at 3.
[5] *See* New York State Public Service Commission, *Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision—Docket No.* 14-00581/14-M-0101; California Independent System Operator Corporation, *Distributed Energy Resource Provider Initiative—Docket No. ER16-1085-000*.

## 5. Rate Design

The MRC strongly supports the availability of time-of-use rates and performance-based compensation. One key to encouraging development of the full range of services that advanced DER can provide is to provide pricing for services that is (a) unbundled from sales of power and (b) based on the value that such services provide to the system.

The MRC believes that the diversity of capabilities provided by advanced DER like microgrids cannot be integrated with the grid through a one-size, DER-specific tariff but only though valuation of the particular services whether provided by DER or other resources. The benefit of DER will be lost if DER is addressed as a single category of technology and policy discussions center around simple DER, primarily solar, with limited output controls and no communication to the control area operator, rather than the full array of existing and potential DER types. The MRC is also concerned that social or system benefits (such as carbon reduction) or detriments (such as stranded assets resulting from load reduction) are not unique to DER and should not be allocated to and addressed within a single class of customers. The MRC strongly supports unbundling the services provided by DER from sales of power to customers who deploy DER, providing specific compensation for different classes of services whether provided by DER or other resources, and encouraging utilities to explore the range of services that can be provided by sophisticated DER such as microgrids.

Finally, the functional unbundling of services should distinguish distribution-level services from RTO services. The recent decision in FERC v. EPSA[6] clarified that FERC holds jurisdiction over demand response transactions as part of the wholesale market and generally suggests that RTOs can acquire services from DER through aggregators or directly. Rate

[6] *Federal Energy Regulatory Commission v. Electric Power Supply Association* (*EPSA*), 136 S. Ct. 760 (2016).

designs that lump grid services with power purchases can only reduce competition in the RTO markets to the detriment of all customers.

**6. Energy Storage**

The MRC supports a review of energy storage and its role in providing grid services. However, we encourage the Commission to also consider the combined effect of different types of resources behind a single meter to provide load management resources to the system. In a basic example, battery storage combined with solar produces a different resource than either solar or batteries alone. When electric or thermal storage is deployed in a sophisticated microgrid it is simply one of the many tools for managing load shape. The important frame of analysis is the services provided, not the technology.

**7. Interconnection Process**

The MRC agrees with the Commission's inclusion of the interconnection process as a topic for discussion and agrees that such a discussion should focus on implementing policies that promote competitive, efficient and predictable DER markets that maximize customer choice.

**8. Limited-Income Marylanders**

Limited income customers by definition will have limited ability to participate by direct investment in individual DER such as rooftop solar. For these customers, DER may only be available through community programs, virtual net metering or other forms of aggregation. While microgrids have the capability to serve larger communities, they face significant regulatory impediments to doing so in Maryland as the MRC has noted in prior filings with the

Commission.[7] To increase access, regulatory limitations on community microgrids and multi-customer DER must be relaxed.

## 9. Conclusion

The MRC thanks the Commission for considering the above comments in response to the Notice. We hope this brief discussion is helpful to the Commission and its staff and would be happy to discuss in further detail.

[7] *See* MRC, *Comments in Response to Baltimore Gas and Electric Company's December 18, 2015, Public Purpose Microgrid Proposal*, Maryland Public Service Commission, *Docket No. ML#180913*, 6-8 (available at http://www.microgridresources.com/data/files/Site_18/MRC%20Comments%20MD%20PSC%20ML%20180913.pdf ).