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April 15, 2016

VIA ELECTRONIC DELIVERY

Betty Anne Kane
Chairman
Public Service Commission of the District of Columbia
1333 H St. NW, Suite 200, West Tower
Washington, DC, 20005

Re: Formal Case No. 1130 Modernizing the Energy Delivery System for Increased Sustainability

Dear Ms. Kane:

This firm represents The Microgrid Resources Coalition ("MRC"). The MRC is pleased to submit its enclosed Comments in Response to DC Public Service Commission Formal Case No. 1130 Modernizing the Energy Delivery System for Increased Sustainability.

Please feel free to contact us directly at the telephone numbers below.

Very truly yours,

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DISTRICT OF COLUMBIA
PUBLIC SERVICE COMMISSION

FC #1130

COMMENTS BY THE MICROGRID RESOURCES COALITION IN RESPONSE TO MODERNIZING THE ENERGY DELIVERY SYSTEM FOR INCREASED SUSTAINABILITY (MEDSIS)

Dated: April 15, 2016

The Microgrid Resources Coalition ("MRC") respectfully files its comments in connection with the DC Public Service Commission's Formal Case No. 1130, Modernizing the Energy Delivery System for Increased Sustainability ("MEDSIS"). The MRC strongly supports the Commission's efforts to explore a modernized grid through a stake-holder process. Although the MRC wishes to address general policy issues around microgrids and distributed generation, our comments respond in part to questions raised in the posted agenda for the April 28, 2016 workshop.

The MRC is a consortium of leading microgrid[1] 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. MRC members are currently engaged in a variety of microgrid-related activities with connection to PJM service territory generally, and the District of Columbia specifically.[2]

The MRC supports the Commission's approach to implementing its modernization goals by promoting the widespread deployment of distributed energy resources ("DER") and encourages it to lend particular consideration to microgrids. Microgrids are advanced DER poised to lead this change by providing efficient, low-cost, clean energy, enhancing local resiliency and sustainability[3], and improving the operation and stability of the regional electric grid through

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[1] The MRC defines a microgrid as a local electric system or combined electric and thermal system that (i) 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 that (ii) is capable of operating either in parallel or in isolation from the electrical grid, and that (iii), when operating in parallel, can provide some combination of energy, capacity, ancillary or related services to the grid. Microgrids typically have advanced control systems that enable them to provide greater volumes of more responsive (higher performing) grid services than other distributed energy resources.

[2] The Microgrid Resources Coalition is actively engaged in advancing the understanding and implementation of microgrids across the country, including in the District of Columbia. MRC members hold significant energy assets connected to the PJM grid, provide energy generation and supply services, and are exploring the potential for microgrid construction and ownership in DC. Members of the MRC include: Anbaric, Concord Engineering, ICETEC, The International District Energy Association, NRG, and Princeton University.

[3] For both the microgrid and the distribution system serving the surrounding community. MRC member operated microgrids have supported their local distribution utility during grid outages helping to bring back online their

unprecedented dynamic response. With the capability to shape generation and load profiles, microgrids are flexible resources able to competitively provide products to PJM while making the local distribution grid more resilient and self-healing through partnerships with distributional utilities. The comments below are offered in support of the Commission's framework scoping under MEDSIS. They reflect MRC member experience in developing, permitting, financing, integrating with markets, and operating microgrids. The MRC welcomes further collaboration with the Commission and stakeholders on fostering microgrid deployment in the District.

1. Microgrids Empower Customers

First and foremost, microgrid development empowers customers. Customers have multiple energy needs, including high-quality, reliable, low-cost electricity, but also heating, cooling, hot water, and steam for specialized processes. They have choices of energy sources, including gas, electricity, geothermal, solar, and biomass. Through thermal and electric storage and equipment optionality (such as steam vs. electric chillers) customers can optimize among those sources. Microgrids integrate and optimize the generation sources, storage, controls and load to meet customer requirements while simultaneously providing products to organized power markets and local distributional utilities.

Customer decisions about usage of other utilities, such as water and sewer services, are often integrated in the decisions about energy use. Those uses may soon expand to include wide use of electric or plug-in hybrid vehicles. Customers also frequently have non-monetary goals, such as decreasing their carbon footprint. Customers generally are the only ones that can effectively make integrated choices between energy sources, between modes of operation, and between monetary and non-monetary goals for their energy usage. Microgrids can be deployed in a wide variety of configurations capable of providing a range of integrated services that can be tailored to a diverse set of customer requirements.

2. Microgrid Performance

Microgrids achieve energy efficiency levels far superior to conventional generation thanks to their ability to employ sophisticated and flexible technology in response to specific load

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community's substations by exporting power. This is in addition to helping shelter the community and providing services to first responders.

configurations. By using cogeneration to serve balanced electric and thermal loads, microgrids can achieve generation efficiencies above 80 percent, as compared to efficiencies of between 30 percent to 50 percent for conventional generation. In addition, including renewable energy allows microgrids to undertake flexible hybrid generation operations. 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 generating and thermal generating systems. The microgrid context makes them economic.

3. Microgrids Provide Services to the Distribution and Transmission Grid

The same flexibility that provides benefits to their hosts makes microgrids uniquely suited to create efficiencies for the grid. Microgrids moderate power prices and grid congestion, by efficiently shifting load to times of lower demand and prices and by locating generation closer to loads. Microgrids can make it economically feasible to place generating capacity in congested areas of the grid and can reduce contingencies that threaten grid stability. Microgrids regularly provide standardized products such as energy (including demand response), capacity and ancillary services, including enhanced performance products, to organized power markets. However, through fine tuning its own generation and load, a microgrid can shape its system profile to create a wide variety of customizable load and generation modification products and services ("Profile Products"). Profile Products can be tailored to solve specific distribution grid (station to circuit) problems, providing local distribution utilities with tools to achieve reliable and self-healing operations.

High performance microgrids that employ multiple energy management technologies can simultaneously provide multiple products and services using multiple dynamic objective

functions. Microgrid resources make the operation of the grid more competitive and provide PJM and distribution utilities with advanced capabilities to ensure overall system and distribution network reliability and service quality. In the MEDSIS workshop agenda the Commission raised a question about achieving load shedding by ramping up distributed generation. In MRC members' experience, such load shedding by DERs is unlikely to have negative impacts, but instead increases the reliability of the grid. PJM currently derives a significant portion of its reserve margin from demand response, much of which is provided by behind-the-meter generation.

The Commission further expressed concern regarding which regulatory body holds the authority to govern a demand response facility. Interconnection procedures that assure the security of the grid are overseen jointly by the distribution utility and PJM as a part of the management of the transmission system. The Supreme Court's recent decision in *Federal Energy Regulatory Commission vs. Electric Power Supply Association* substantially resolved the remaining regulatory uncertainty, clarifying that FERC holds the authority to regulate demand response provided to ISOs/RTOs such as PJM from distribution level resources.[4] Further, the decision upheld FERC order 745 dictating locational marginal pricing rates for demand response providers.[5] Given the clarification of FERC's role in regulating how distribution level resources, that are also retail customers,[6] participate in the organized power markets, limited oversight remains for the Commission as to DER provision of products to PJM's wholesale markets.[7]

4. Regulation of Microgrids

Microgrids raise interrelated regulatory issues as to the authority to serve retail customers within the microgrid, the ownership of distribution wires within the microgrid, and the sale or transfer of power generated within the microgrid. The workshop agenda also raises questions regarding

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[4] *Federal Energy Regulatory Commission vs. Electric Power Supply Association,* 577 U. S. ____ (January 25, 2016). ("*FERC v. EPSA*").

[5] *See* 134 FERC ¶ 61,187, *Demand Response Compensation in Organized Wholesale Energy Markets*, March 11, 2011.

[6] "…[T]ransactions that occur on the wholesale market have natural consequences at the retail level. And so too, of necessity, will FERC's regulation of those wholesale matters." *FERC v. EPSA* at 18.

[7] Note the Commissions does have jurisdiction over retail demand response / peak load shedding programs run by distributional utilities and compensated through retail rate structures. However, most public utility commissions in PJM are looking to the wholesale market as a more efficient option for demand response that does not involve addressing specific constraints at the distribution level.

the review and approval of distributed generation (including microgrid sited generation) under current and prospective regulatory structures.

The MRC believes that several microgrid structures can be implemented within the District's existing regulatory framework. In the simplest instance, the DC Public Utilities code definition of "Electric Company" currently excludes self-supply with on-site generation, which allows for development and continued expansion of single customer microgrids, including ones operated by a designee of the owner(s).[8] The DC Public Utilities code also provides an exception from the definition of "Electric Company" exempting a building owner or lessor providing electric supply services to occupants of a building solely for use by the occupants.[9] In each case the property owner typically owns the wires within its property to self-serve or serve its tenants. By extension, a group of customers on contiguous parcels can form a common entity with collective property rights that allow it to own or lease wires (and generation) to serve the co-owners or members of the entity.[10]

Additionally, current regulations also allow for a utility - microgrid partnership, in which the utility owns the wires within the microgrid, while a microgrid developer or customers retain ownership of the included generation. In this posture, the utility (and PJM) interconnects any included generation in the microgrid as it would any other generation, taking into account the overall controls provided by the microgrid. The utility meters and bills its customers and retains the duty to serve as the provider of last resort. It serves its customers in ways that do not fundamentally change with the superposition of the microgrid, except when the microgrid is in island mode.[11] In grid connected mode the load of the included customers may be met by customer-provided generation within the microgrid, utility imports, or the developer or third party who is a licensed Electricity Supplier.

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[8] "Any person who purchases electricity for its own use or for the use of its subsidiaries or affiliates; or …" DC Code § 34-207(B)(i).

[9] "The term excludes any building owner, lessee, or manager who, respectively, owns, leases, or manages, the internal distribution system serving the building and who supplies electricity and other related electricity services solely to occupants of the building for use by the occupants." D.C. Code § 34-207.

[10] We recognize that this is subject to the authority of the District government to permit siting of wires in public streets if that were to be desired DC Code §34-301(1)) , and don't expect this to be a solution deployed over large sections of existing city fabric. It is more applicable to campus and mixed-use development type settings.

[11] The utility and the microgrid need an agreement governing the provision of service in island mode. The agreement would specify the priority of circuits in island mode among other microgrid operational rules.

In each of the structures discussed above, electricity from generation resources within the microgrid is either self-supplied, supplied by a landlord to a tenant, or supplied by a registered electricity supplier. Any electricity imported from outside the microgrid would be resold to customers within the microgrid by a registered electricity supplier, utility or a landlord. Where a registered electricity supplier is involved it may be an existing third party entity with a contractual relationship with the microgrid or a special purpose electricity supplier formed to serve the customers of the microgrid, likely under long-term contracts. Any sale of energy by a generator within such a microgrid, either to a registered electricity supplier that serves the microgrid, to PJM, or to another wholesale market participant is a wholesale sale of energy. Such sales are regulated exclusively by FERC.[12]

Planned microgrid generation seeking to obtain a public interest determination should be evaluated based on articulated metrics regarding health, safety, and environmental concerns.[13] The Commission need not conduct an overlapping evaluation of interconnection criteria or address contract rates or other economic performance factors in the process. The MRC encourages the Commission to set out a clear and streamlined approval process for microgrid generator public interest determinations.

5. Comparative Regulatory Structures

The Commission's workshop agenda requests comment on regulations in other jurisdictions that the District should consider implementing. The MRC encourages the Commission, without

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[12] FERC has exclusive jurisdiction over the "transmission of electric energy in interstate commerce," and over the "sale of electric energy at wholesale in interstate commerce," and over "all facilities for such transmission or sale of electric energy." 16 USC 824(b); e.g., Pennsylvania Power & Light Company, 23 FERC ¶ 61,006 at 61,018, reh'g denied, 23 FERC ¶ 61,325 (1983); Southern Company Services, Inc., 37 FERC ¶ 61,256 at 61,652 (1986); Florida Power & Light Company, 40 FERC ¶ 61,045 at 61,120-21, reh'g denied, 41 FERC ¶ 61,153 at 61,382 (1987); Houlton Water Company v. Maine Public Service Company, 60 FERC ¶ 61,141 at 61,515 (1992); Northern Indiana Public Service Company, 66 FERC ¶ 61,213 at 61,488 (1994); Connecticut Light and Power Company, 70 FERC ¶ 61,012 at 61,030, reconsid. denied, 71 FERC ¶ 61,035 (1995); Central Vermont Public Service Corporation, 84 FERC ¶ 61,194 at 61,973-75 (1998); Progress Energy, Inc., 97 FERC ¶ 61,141 at 61,628 (2001); Armstrong Energy Limited Partnership, LLLP, 99 FERC ¶ 61,024 at 61,104 (2002); Niagara Mohawk Power Corporation, 100 FERC ¶ 61,019 at P 17 (2002); Barton Village, Inc. v. Citizens Utilities Company, 100 FERC ¶ 61,244 at P 12 (2002); Virginia Electric and Power Company, 103 FERC ¶ 61,109 at P 6 (2003); Southern California Edison Company, 106 FERC ¶ 61,183 at P 14, 19 (2004); Midwest Independent Transmission System Operator, Inc., 106 FERC ¶ 61,337 at P 14 & n.17 (2004); Entergy Services, Inc., 120 FERC ¶ 61,020 at P 28 (2007); Aquila Merchant Services, Inc., 125 FERC ¶ 61,175 at P 17 (2008); *Federal Energy Regulatory Commission vs. Electric Power Supply Association,* 577 U. S. ____ (January 25, 2016) at 3.

[13] DC Code § 34-1516.

delaying projects in development, to consider an integrated planning process similar to those implemented by New York and California. The New York process requires each distribution utility to undertake an integrated planning process that goes beyond capital expenditure planning for the utility and integrates contributions that can be made by private capital through DER.[14] This process is required to provide sufficient transparency so that would-be DER providers can understand the opportunities. We would hope such a process would also provide opportunities for DER providers to participate in the planning process. The purpose is not to determine what technologies or services are best, or to conduct *a priori* benefit/cost analyses, but to ensure that the planning process and subsequent procurement processes do not unduly narrow the range of possible solutions to be considered. The former function should result in a public identification of the forward security needs of the system at a level that permits DER providers to make creative proposals for solutions.

The Commission might also consider California's forward planning initiatives. Legislation passed in 2013 requires utilities to submit distributed resources plan proposals to the California Public Utilities Commission for approval. The plans identify optimal locations for the deployment of distributed resources.[15] In a related proceeding, the California Public Utilities Commission is engaging in stakeholder processes following a Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning, and Evaluation of Integrated Demand-Side Resource Programs. The rulemaking is pursuing an approvals and procurement framework for DER in the context of the overarching needs of the grid and recognizing that "the lack of a comprehensive and consistent procurement and implementation process is one of the key barriers to increased reliance on preferred resources to offset or defer system infrastructure upgrades."[16] Both New York and California's models are the result of industry recognition that thoughtful,

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[14] *See* NY Public Service Commission, *Order Adopting Regulatory Policy Framework and Implementation Plan*, February 26, 2015.
[15] California Public Utilities Code § 769.
[16] California Public Utilities Commission, Rulemaking 14-10-003 RESPONSES OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION PURSUANT TO THE JOINT ASSIGNED COMMISSIONER AND ADMINISTRATIVE LAW JUDGE'S RULING REQUESTING RESPONSES TO QUESTIONS, May 15, 2015.

long-term distribution system planning to integrate DERs and microgrids plays a key role in permitting private capital to be deployed to benefit the grid and the empowerment of customers.

6. Utility-Private Partnerships for Distribution Support Solutions

The MRC encourages the Commission to consider the possibility of long-term contracts allowing utilities to support microgrid deployment without incurring the full burden of the project. One way is through RFPs for DER solutions arising from the distribution system planning activities recommended in the previous section. The MRC believes RFPs can be valuable if they identify problems and broad parameters for solutions, but do not seek to impose particular technology solutions. Private respondents to RFPs will often have more information about potential DER technical solutions. In addition, because DER providers may themselves be major customers or have long-term relationships with major customers, they may well have more information about the economics of solutions that depend on optimizing one or more customers' systems to respond to the grid's planning and operational needs while also serving customer needs.

The MRC also suggests the consideration of a process for unsolicited proposals from microgrid providers to meet needs identified in distribution system planning. In particular, we suggest a model based on Virginia's Public Private Transportation Act, which allows private developers to make unsolicited proposals to resolve transportation system issues identified in state and regional transportation plans. This statute permits, but does not require that unsolicited projects be bid out before they are awarded, in the discretion of the relevant public planning agency. In this context, we assume that the Commission would either directly approve or give policy guidance on when a utility would be permitted to proceed with a non-competitive procurement based on factors such as the quality of the proposal and the urgency of the need. This has been a successful model in Virginia for over 20 years.

Whether the distribution utility initiates an RFP or responds to an unsolicited proposal, the result will be negotiated contractual arrangements that form a "partnership" between the utility and the microgrid provider. This "Utility-private partnership" is analogous to public/private partnerships that are often used to provide crucial infrastructure for municipal services and transportation. These contractual arrangements spell out not only the infrastructure to be constructed but also the terms of operation including the services to be provided by a microgrid and the compensation for

those services – essentially a negotiated tariff. It will be important not to force such arrangements into a rigid set of service definitions. As discussed above, microgrids can provide Profile Products that are at least as varied as can be provided by a generator, including rapid response, steady state operation, timed ramping, and providing regulation around any agreed load and/or generation profile. These "Distribution Support Solutions" can be designed to meet the particular needs of the distribution system in emergencies or in daily operation. As an example, a utility could accept proposals from three microgrids to provide generation/load reduction to support a substation during critical periods as an alternative to distribution system reinforcement. The contracts could call for response in a local crisis (not just peak system demand) and require that maintenance schedules between the three resources be coordinated. Such contracts can also specify specific liquidated damages for non-performance, which can provide a much finer tuned response than permanent adjustment of demand charges.

Utility-private partnership contracts for Distribution Support Solutions can allocate the risks and benefits of long-term investment appropriately among the parties. While the contract may provide specific payments for services that are guaranteed for the financing term of the project, the investment will also be supported by the value provided to microgrid customers. At the same time ratepayers bear less risk of stranded assets while enjoying a more reliable distribution system. Utility-private partnership projects would attract more risk-taking capital from third parties and also more patient capital from certain customers than utilities can attract.[17] Under this construct, payments by the utility for microgrid provided Distribution Support Solutions would be fully recoverable from ratepayers.[18]

7. Conclusion

The MRC thanks the Commission for the opportunity to provide comments on this case. We look forward to engaging further with the Commission's stakeholder process.

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[17] As a general matter, long-term contracts with utilities for Distribution Support Solutions will support the financing of microgrid assets in a way that PJM markets cannot. A long-term contract allows the utility's payments to support a portion of the invested capital, but only to the extent that the microgrid actually delivers those services.

[18] An important corollary is that to the extent that a microgrid is not providing specific grid support services pursuant to a contract (or offering them in other PJM or supplier markets) it must be free to optimize value for its customer or customers. That value is supporting the capital investment. It is not the job of the microgrid to optimize the grid—rather it is the job of the microgrid to provide contracted services when called upon to do so.