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April 25, 2016

VIA ELECTRONIC FILING

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Motion to Intervene and Comments on Essential Reliability Services and the Evolving Bulk-Power System—Primary Frequency Response—Docket No. RM16-6-000

Dear Secretary Collins:

This firm represents The Microgrid Resources Coalition ("MRC"). The MRC is pleased to submit its enclosed Motion to Intervene and Comments to FERC's solicitation for comment on the need to reform its rules and regulations regarding the provision and compensation of primary frequency response, as described in its February 18, 2016 Notice of Inquiry, Docket No. RM16-6-000, Essential Reliability Services and the Evolving Bulk-Power System—Primary Frequency Response.

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

Very truly yours,

C. Baird Brown
Attorney for the MRC

Established 1849

BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Docket No. RM16-6-000

Motion to Intervene and Comments of the Microgrid Resources Coalition in Response to FERC's Notice of Inquiry on Essential Reliability Services and the Evolving Bulk-Power System—Primary Frequency Response

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For the Microgrid Resources Coalition

April 25, 2016

1. Introduction

Pursuant to Rules 214 and 211 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("FERC" or "Commission")[1], the Microgrid Resources Coalition ("MRC") hereby moves to intervene and submits its comments in connection with the Commission's Notice of Inquiry, Docket No. RM16-6-000, Essential Reliability Services and the Evolving Bulk-Power System—Primary Frequency Response, dated February 18, 2016 ("NOI"). The MRC is a consortium of leading microgrid[2] 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.[3] In pursuing this objective, the MRC does not favor particular technologies deployed in microgrids or ownership structures for the assets that form a microgrid. The MRC's members are actively engaged in developing and operating microgrids in many regions of the United States.

In the NOI, the Commission seeks comment on the need for reforms to its rules and regulations regarding the provisions and compensation of primary frequency response ("PFR").[4] The Commission expresses concern that the nation's electric supply portfolio is shifting away from base load generation that has an inherent ability to provide primary frequency response and is shifting toward variable energy resources ("VERs") that do not naturally support system frequency.[5] In addition, the Commission cited the findings of The North American Electric

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[1] 18 C.F.R. § 385.211, 214.

[2] 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 loan on a non-emergency basis that (ii) is capable of operating either r in parallel or in isolation from the electric grid, and that (iii), when operating in parallel, can provide some combination of energy, capacity, ancillary or related services to the grid. Microgrids have advanced control systems that enable them to provide more, and more responsive, grid services than other distributed energy resources.

[3] The MRC is actively engaged in advancing the understanding and implementation of microgrids across the county. MRC members hold significant energy assets connected to the electric grids, provide energy generation and supply services, and are exploring microgrid construction and ownership in different locations throughout the country. MRC members include: Anbaric Transmission, ICETEC Energy Services, Concord Engineering Group Inc., NRG Energy, Inc., Princeton University, and The International District Energy Association ("IDEA").

[4] NOI at 1.

[5] *Id.; see also Id. at 6 – 7.*

Reliability Corporation ("NERC") studies that base load generators are modifying their governors to reduce their contribution to PFR.

The MRC supports the Commission's efforts to address these emerging issues. As a first step, the MRC suggests that the Commission more accurately evaluate the scope of the problem and create a response that efficiently meets the system's current requirements and that can adjust to the needs of the system over time. In evaluating possible solutions, the MRC suggests that:

- creating market structures suitable to eliciting the necessary resources is preferable to a command and control regulatory approach;
- resources providing PFR products should be appropriately compensated in those markets; and
- distribution level resources, including behind the meter resources such as microgrids, should be eligible (but not required) to provide PFR products if technically capable.

2. Create Markets to Secure and Compensate Primary Frequency Response Services at the Levels Needed

Since the Commission formalized its approach to ancillary services in Order 888,[6] Regional Transmission Organizations ("RTOs"), with Commission encouragement, have developed a range of market-based solutions to acquire needed services. A potential decline in primary frequency response does not pose a unique problem that requires a proscriptive remedy. A one-size-fits-all solution, such as a requirement that all new or existing generators provide equal levels of primary frequency response, seems out of character with the Commission's longstanding support of competitive, performance-based outcomes. Such an approach is bound to be economically inefficient. As the Commission points out, generators with rotating mass are naturally equipped to provide primary frequency response while VERs are not, and, by

[6] *See Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities: Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, Order No. 888, FERC Stats. & Regs. ¶31,036 (1996), *order on reh'g*, Order No. 888-A, FERC Stats. & Regs. ¶31,048, *order on reh'g*, Order No. 888-B, 81 FERC ¶61,248 (1997), *order on reh'g*, Order No. 888-C, 82 FERC ¶61,046 (1998), *aff'd in relevant part sub nom. Transmission Access Policy Study Group v. FERC*, 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom. New York v. FERC*, 535 U.S. 1 (2002).

definition, imposing a requirement on VERs is not a least cost solution.[7] Nor is it an example of allocating cost in accordance with cost causation. While variability in insolation or wind speed can effect frequency support requirements, the largest concern involves major system contingencies such as large generators tripping off. Even among rotating generators there may be wide differences in economics, including the opportunity costs, of providing primary frequency response. A competitive, performance-based solution is the best approach to cost discovery and containment.

Using the economic incentives in place of command-and-control regulation has repeatedly proven to be successful. As one now-familiar example, the Environmental Protection Agency's ("EPA's") Acid Rain Program adopted a cap-and-trade mechanism that authorized trading of NOx and SOx emission allowances between sources. This mechanism allowed the sources in each emissions basin with the lowest cost of reduction to reduce emissions and monetize their allocated allowances. Using this mechanism instead of a command-and-control requirement for equal emission reductions for each power plant cut the cost of meeting pollution control targets in half according to the Government Accountability Office's estimates. [8]

The MRC urges the Commission to encourage RTOs (and also single utility control areas) to create frequency response service markets. As a preliminary matter, NERC and its regional reliability councils need to establish and periodically review the requirements for primary frequency response on a planning horizon that allows for markets to respond, much as is now done with reserves. The Commission and control area operators need to then evaluate the technical requirements for the product and mechanisms to assure that the resources providing the service are capable of meeting those requirements. It appears that the current dead band, droop, and duration parameters for generator governors (or equivalent technical capability) work reasonably well, but to the extent that they need to change over time, they can be reset without incurring significant new capital costs. Moreover, in a portfolio of PFR resources, not all resources need to offer the same performance parameters in order to assure overall adequacy. As

[7] Imposing the same technical capability requirement on VERs will disproportionately increase the capital cost of renewable energy projects and at the margin will decrease deployment of these low-carbon assets, contrary to both federal and state policies.

[8] *See* Matthew P. Haskins, *Tax Issues Relating to Trading in Carbon emissions Rights*, Tax Notes (2009), at 382, *available at* http://www.pwc.com/us/en/washington-national-tax/assets/carbon_trading_0109.pdf.

a part of qualifying to participate in a PFR market resources would need to demonstrate performance in accordance with the parameters of the product (basic to enhanced) to be provided. Assurance of capability can be confirmed by the same monitoring mechanisms used for market access and product provision. Resources that provide frequency regulation in the PJM market, for example, are directly visible to system operators. Periodic inspection can be arranged if it proves necessary.

Market mechanisms need to be appropriate to the services required. The MRC believes the Commission is correct that capability is a primary concern, and also believes that PFR resources must be able to recover the capital cost of their capability with reasonable certainty. RTOs currently operate two kinds of procurements intended to address capability: capacity markets and black start procurement. Capacity markets as currently designed do not provide significant long term assurances of cost recovery, but rely instead on the comparative stability of the overall energy market to allow participants to consider long term investments. PFR is more similar to black start capability in the sense that only a subset of resources are needed and firmer assurances of cost recovery are likely be necessary. However, the current framework for selection of generator participants in the black start market lacks transparency. NERC has issued a guidance document regarding restoration of the interconnection that is not generally available to the public. The means by which RTOs procure these services in a deregulated environment varies widely, and the criteria for selection are not transparent.[9]

The MRC suggests that the Commission consider a process in which each RTO procures a revolving portfolio of contracted resources to meet its PFR allocation. These contracts could provide only for capability with shorter term markets for reservation of headroom, but it seems likely that integrated contracts that include payments for capacity, reservation, and costs of delivery may make more sense at least as an initial matter. The contracts should be standardized, and the procurement process would resemble state standard-offer service proceedings for

[9] Several years ago, California ISO proposed introducing a pro-forma, FERC-approved black start agreement that would provide standardized terms that all generators included in the black start plan would be required to sign. California ISO, however, does not publicly share the criteria by which it selects generators to be one of its black start providers. New England ISO has historically sought a more robust roster of black start generators. While this ISO has approached potential generators to become black start providers, the criteria for the selection of these generators is difficult to obtain readily. Moreover, during the 2011 – 2014 period, New England ISO's black start capability steadily declined.

acquiring provider-of-last-resort power by wires-only utilities in many deregulated states. Each RTO should present for Commission approval a plan for a balanced portfolio of long- and shorter-term contracts that allow for flexibility as future needs evolve, and acquire and maintain that portfolio through periodic competitive requests for proposals or auctions. The price for capability would be based on bid values. The prices for reservation could be bid, or could be established on a daily or other short term based on the providing resource's lost opportunity in the energy markets.

While Order No. 819 revised the Commission's regulations to foster competition in the sale of primary frequency response service,[10] these revisions did not create a framework for developing an organized PFR market. The MRC recommends that the Commission move to expand its guidance to establish a transparent competitive procurement process for all PFR resources.

3. Consider Locational Issues and Local Resources

The NOI does not raise locational issues and their impact on the grid. To the extent that location plays a factor in the performance and value of PFR resources, a security-constrained procurement process for PFR capability would be required. The Commission should explore these issues.

The MRC also recommends that any procurement process for PFR resources take advantage of the ability of distribution level resources to provide frequency support. In particular, microgrids and other demand response resources frequently employ behind-the-meter gas cogeneration to meet included load. MRC member Princeton University participates in the PJM frequency response market with its 15 MW aeroderivative cogeneration facility, which could be equipped to provide PFR that meets grid standards. In addition, microgrids frequently employ multiple technologies including thermal and electric storage assets and advanced system controls that permit them to supply a wide range of hybrid services to the grid. The MRC strongly encourages that any PFR procurement policy take advantage of the abilities of distribution level resources to increase competition and reduce cost. This approach is consistent

[10] NOI at 25 – 26.

with FERC Order 819 and its general impetus to encourage and support the development of behind the meter and distribution-level resources.[11]

4. Conclusion

The MRC thanks the Commission for considering the above comments in response to its NOI. We hope the brief discussion of issues and initial feedback presented in these comments help to highlight some of the Commission's options regarding the issues the NOI raises.

[11] *See Third-Party Provision of Primary Frequency Response Service*, Order No. 819, 153 FERC ¶61,220 (2015). In this Order, the Commission notes that among the key components of horizontal market power are the definition of products and the determination of the appropriate geographic scope of the relevant market for each product. *Id.* at 12, ¶17.