

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

*Re: Electric Storage Participation in Regions with Organized Wholesale Electric Markets, Docket No. AD 16-20-000*

Dear Secretary Bose:

The Office of Energy Policy and Innovation issued a general request for comments for the above captioned cause. In accordance with this request, please find attached Enel Green Power's comments. Please do not hesitate to contact me if you have any questions regarding these responses and comments.

**Respectfully submitted,**

**/s/ Jeff Riles, Jr.**

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**UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION**

**Electric Storage Participation in Regions            )**  
**With Organized Wholesale Electric Markets        )**

**Docket No. AD16-20-000**

**COMMENTS OF  
ENEL GREEN POWER NORTH AMERICA, INC.**

**I.       COMMUNICATIONS AND CORRESPONDENCE**

Communications and correspondence concerning EGP-NA's comments should be directed to the following:

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**II.       OVERVIEW OF ENEL**

Enel Green Power North America, Inc. ("EGPNA") is a subsidiary of the Enel Group ("Enel"). Enel is a global power business with more than 61 million customers and a net installed capacity of 89 GW. In the United States, EGPNA is a leading owner and operator of renewable energy plants, with over 100 projects operating and under development in 22 states. EGPNA's current capacity exceeds 2.5 GW. These facilities span the breadth of renewable energy generation, from renewable hydropower, to wind, geothermal and solar energy.

Since 2010, Enel has pioneered research that helped launch the screening and testing for various energy storage solutions throughout the value chain of the energy system. This research

has resulted in pilot storage projects that aim to improve the viability of a smart, flexible and resilient power grid. Applications have included stand-alone tests in addition to renewables-integrated storage facilities. Accordingly, Enel has several energy storage systems installed or under construction around the world. In the United States, Enel is testing several technologies, applications and business models to integrate battery storage at solar and wind power plants. This type of technological innovation is an emerging and key focus for EGPNA.

### **III. COMMENTS**

EGPNA thanks the Federal Energy Regulatory Commission (“Commission”) and its Office of Energy Policy and Innovation for the opportunity to submit comments regarding Regional Transmission Organizations (“RTOs”) and Independent System Operators (“ISOs”) market rules for electric storage resources. The modernization of the electric grid into a flexible and interactive system is occurring throughout various RTOs/ISOs. Energy storage is a critical and essential technological innovation that is enabling this modernization.

FERC’s role in assessing and addressing the value that energy storage offers in the operation of RTOs and ISOs is critical. FERC has already begun to address this emerging paradigm through FERC Order 755 and FERC Order 784. But, the true economic value of energy storage remains uncalculated and unquantified under many existing market rules and structures at the RTO/ISO level. The value that energy storage provides, either as a standalone solution or in the aggregate, can result in lower power costs for consumers and ratepayers and, enhanced reliability and resiliency across the power grid. Additionally, modularity benefits from energy storage provide additional flexibility for system operators.

Throughout the United States, energy storage is already playing a key role through ancillary services. For instance, as the Midcontinent Independent System Operator, Inc. (“MISO”) points out in their response, Stored Energy Resources (“SER”) are capable of providing regulating reserve. However, MISO also articulates that there is still more to be done

to understand how energy storage can function as Behind the Metering Generation or Controllable Load. In fact, all of the RTOs/ISOs have demonstrated ways that energy storage can function generally, but also forecast that more work is needed. Thus, in all of this, it is still unclear how a modern energy storage system in the United States can provide both ancillary or regulatory services, and also function as a demand resource under existing market rules and structures. To that end, EGPNA offers the following policy recommendations to FERC:

**1. FERC should encourage RTOs/ISOs to design methods for addressing anticipated intermittent generation.**

In establishing Order 755, this Commission aimed to undo unnecessary discrimination in the procurement of frequency regulation within RTOs/ISOs (or “Balancing Authorities”). Accordingly, several RTOs/ISOs have or are in the process of establishing schemes to pay for performance. However, pursuant to, and in addition to this process, more clarity is needed regarding how RTOs/ISOs plan to specifically quantify the amount of better performing services that will be procured, and how customers will be charged for those services. For example, the Western Area Power Administration (“WAPA”) WALC region has initiated substantial efforts to this end, and EGPNA would ask for further refinement. *See Attachment 1.*

Additionally, the California Independent System Operator Corporation (“CAISO”) has a Commission-approved pay-for-performance program. But, its minimum performance criterion of 25 percent accuracy effectively signals next to no performance expectations. Without clearer instructions, regulatory uncertainty exists, and market participants may be unsure how to approach capacity development. Such ambiguity may hinder entry of more potential economic solutions. While an imminent need for these services might not exist in today’s marketplace, this important emerging market piece is a key part of grid modernization. Thus, appropriate planning and a clear policy framework will help support its growth.

**2. RSOs and ITOs procedures should be designed or amended to allow energy storage to interconnect with specified functionality.**

In general, RTOs/ISOs have interconnection procedures that are prohibitive to energy storage. For instance, many energy storage projects are studied as both persistent sources of generation and load. By definition, this doubles the regulatory burden on energy storage assets to interconnect to the power grid. Moreover, this framework effectively ignores the value that energy storage is capable of providing the electric grid. Thus, in order to develop an appropriate interconnection framework and fair treatment, EGPNA would generally propose that RTOs/ISOs (1) specify their own duration limitations and create comparable market products, (2) allow interconnecting customers to specify maximum durations of charge and maximum durations of discharge to allow for appropriate impact studies, or (3) adopt both practices.

Updates to the interconnection methodology will directly aid energy storage qualification criteria and performance requirements. Accordingly, EGPNA encourages RTOs/ISOs to actively assist in the elimination of interconnection barriers for energy storage to become grid resources.

**3. RTOs/ISOs need to conduct studies on the economic value of energy storage electricity, particularly downstream capacity.**

Specifically, the Commission's Office of Energy Policy and Innovation requested information from the general public with regards to Distribution-Connected and Aggregated Electric Storage Resources. In general, RTOs/ISOs have provided information to this Commission that demonstrates in broad terms how distributed or behind-the-meter resources can access the wholesale marketplace within the RTOs/ISOs. In some cases, the RTOs/ISOs have even provided the Commission with information regarding the applicability of bilateral sales for distribution-connected and aggregated electric storage resources. Overall, the RTOs/ISOs have demonstrated that there are both significant opportunities and barriers to distributed storage, on both sides of the meter. But, on the whole, RTOs/ISOs have not fully defined the full economic value that distribution-connected and aggregated electric storage resources provide. For example,

RTOs/ISOs need to account for these forms of energy storage resources' ability to connect directly to distribution substations eliminating line loss, increasing transmission capacity, and enhancements to reliability and security. Thus, the Commission should encourage RTOs/ISOs who have not already done so, to conduct studies of the economic value of these resources, specifically for downstream resources such as distribution-connected and aggregated electric storage resources.

In addition, these types of economic value studies would also have implications for Order 1000, which dictates the need to have real assessments of Transmission Alternatives. Thus, these types of economic studies could be provided to the Commission, as Order 1000 Transmission Alternatives that might (1) lower congestion, (2) lower Local Marginal Prices, and (3) increase localized grid reliability.

**Attachment 1**

$$\begin{array}{l} \text{Regulation Service} \\ \text{Formula Rate} \end{array} = \frac{\text{Total Annual Revenue Requirement for Regulation Service}}{\begin{array}{l} \text{Load inside WALC Requiring Regulation Service (kW)} \\ + \\ \text{(Installed Nameplate Capacity of Wind Generators Serving Load inside WALC} \\ \text{X} \\ \text{Wind Capacity Multiplier) (kW)} \\ + \\ \text{(Installed Nameplate Capacity of Solar Generators Serving Load inside WALC} \\ \text{X} \\ \text{Solar Capacity Multiplier) (kW)} \end{array}}$$

**CERTIFICATE OF SERVICE**

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, District of Columbia, this 6<sup>th</sup> day of June, 2016.

**/s/ Jeff Riles, Jr.**

Jeff Riles, Jr.



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