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Via Electronic Service

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
400 North St
Harrisburg, PA 17120

Re: Docket No. M-2020-3022877

Dear Secretary Chiavetta,

The U.S. Energy Storage Association respectfully submits the following comments in response to the Pennsylvania Public Utility Commission Policy Proceeding on the utilization of storage resources as electric distribution assets.

Sincerely,

Julian Boggs
State Policy Director
Energy Storage Association

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Policy Proceeding – Utilization of Storage	:	Docket No. M-2020-3022877
Resources as Electric Distribution Assets	:	

COMMENTS OF THE U.S. ENERGY STORAGE ASSOCIATION

I. INTRODUCTION

The U.S. Energy Storage Association ("ESA") thanks the Pennsylvania Public Utility Commission ("Commission") for its interest in energy storage as a distribution asset and for the opportunity to respond to the inquiries identified in its Secretarial Letter on this topic. In these comments, ESA recommends that the Commission take the following actions to facilitate the use of energy storage to improve the reliability and resilience of the distribution system:

- Provide policy guidance clarifying the circumstances under which electric distribution companies may deploy energy storage systems as a distribution asset.
- Issue a guidance for the use of non-wires alternatives in utility distribution planning.

II. ABOUT THE ENERGY STORAGE ASSOCIATION

ESA is the national trade association dedicated to energy storage, working toward a more resilient, efficient, sustainable and affordable electricity grid – as is uniquely enabled by energy storage. With more than 200 members, ESA represents a diverse group of companies, including

independent power producers, electric utilities, energy service companies, financiers, insurers, law firms, installers, manufacturers, component suppliers, and integrators involved in deploying energy storage systems around the globe. Further, our members work with all types of energy storage technologies and chemistries, including lithium-ion, advanced lead-acid, flow batteries, zinc-air, compressed air, liquid air, and pumped hydro among others. Several ESA member companies do business in Pennsylvania.

II. RESPONSES TO COMMISSION INQUIRIES

Q. What applications can electric storage provide as a distribution asset for utilities that would facilitate improved reliability and resiliency?

Fundamentally, energy storage systems ("ESS") provide the flexibility to deliver energy at the precise moment and location it is needed. This flexibility can deliver value at all levels of the electricity system: wholesale services such as resource adequacy, electricity supply, and capacity; distribution services including peak demand reduction, load shifting, and increased system capacity; and customer benefits including back-up power and bill management.

Below are several specific applications of energy storage for improved resilience and reliability:

Support and optimize grid infrastructure of existing systems. ESS can help regulate distribution system voltage. Storage located at a substation can reduce peak demand, maintain power quality, and provide support in the event of an asset failure at the substation.

Integrate new distributed energy resources. As distributed energy resources (DERs) such as rooftop solar and electric vehicles proliferate throughout the grid, utilities must integrate a variety of new resources and load shapes into their systems. Energy storage allows the utility to maintain reliability as it does so by providing services such as grid stability, smoothing of generation from intermittent renewables, voltage support, and peak demand shifting.

Provide back-up power to critical loads. The primary application for energy storage to improve resiliency is to provide back-up power. For short-term outages, energy storage can provide sufficient energy and power for key critical loads (e.g., police stations, emergency shelters, hospitals). For longer-term outages, energy storage can provide a fast-acting, reliable bridge from the event to the operation of back-up generators or an islanded microgrid on the system. The duration of back-up power energy storage can provide will depend on the operational structure, the size of the storage system, the state of charge of the battery at the beginning of the event, and the load requirement. Aggregations of energy storage systems providing back-up power to critical load may be configured to support distribution system or bulk power needs.

Anchor a microgrid. Energy storage can play a fundamental role in a microgrid, a group of interconnected loads that acts as a single controllable entity and can operate in both grid-connected or island-mode. At the onset of an event, energy storage can provide an uninterrupted power source in the shift from grid-connected to islanded mode and enhance microgrid stability. As part of a microgrid, renewable energy coupled with energy storage can provide unique resiliency value with specific advantages over traditional diesel degeneration. Diesel fuel must be maintained on-site and can be challenging to refuel during an event. For longer duration

outages, diesel fuel may run out, while renewables-plus-storage is not vulnerable to fuel supply disruptions and can be leveraged indefinitely.

Q: What are the defining characteristics of electric storage used for distribution asset planning as distinguished from generation resources? What thresholds, if any, would classify electric storage as a generation resource and therefore outside permitted distribution ratemaking and recovery?

Energy storage is neither generation, distribution, nor transmission, but a unique asset class that may function in a variety of applications depending on the use case or operational mode. Like generation, energy storage can supply load to meet resource adequacy needs. As a distribution or transmission asset, energy storage can deliver power generated elsewhere to a specific location on the grid when and where it is needed. This can effectively increase the net capacity of the distribution or transmission system at a given location where the energy storage system is located.

If the Commission finds it necessary to adopt a classification of energy storage into traditional categories of generation, transmission, distribution, or load to determine whether the asset may be considered for ratemaking and recovery, initial classification of energy storage should be made by primary use. That is, if the primary use of the asset is distribution or transmission reliability services, then the asset is within permitted distribution ratemaking and recovery.

However, an ESS should not be restricted from a providing multiple uses even though it has been determined to have a primary use. The value and therefore cost-effectiveness of ESS is

maximized when it is able to provide the full range of services that the asset is capable of providing in a given operational mode, including generation services that may earn revenue from wholesale markets or end users. The level at which ESS may benefit from such dual participation is dependent on the operational mode of the asset, among other factors. For example, some operational modes may require the ESS to maintain a high level of charge in order to be available for the reliability or resilience service, limiting participation in wholesale markets.

Therefore, ESS should be enabled to provide both cost-recoverable transmission and distribution services and revenue-based generator market services, provided that doing so does not unduly interfere with market price formation, grid operator independence, or the ability of the energy storage asset to meet service obligations reliably.

New York is currently exploring models for multiple use for utility-owned and utility-contracted ESS. In its 2018 Energy Storage Deployment Order, the New York Public Service Commission (NY PSC) created a revenue sharing mechanism between the utility and ratepayers for contracted energy storage to maximize the value of ESS. Utilities are allowed to earn 30 percent of revenues that exceed the cost of contracted ESS services, while 70 percent is returned to ratepayers.[1] National Grid recently filed a petition with NY PSC to allow a 2 MW utility-owned ESS to participate in wholesale markets.[2] The petition proposes that all revenue from wholesale market is refunded to ratepayers. The New York experience with multiple use may be

[1] Order Establishing Energy Storage Goal and Deployment Policy, pg. 55, New York Public Service Commission, Case No. 18-E-0130, available at http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={FDE2C318-277F-4701-B7D6-C70FCE0C6266}

[2] Petition of Niagara Mohawk Power Corporation d/b/a National Grid for Approval to Dispatch and Wholesale Market the Output from a Utility-Owned Energy Storage System Product, New York Public Service Commission Case Nos. 18-E-0130 and 16-M-0411, available at http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={82C67D55-F7B8-4E0D-B5E8-97543A877BAD}

instructive for the Commission as it seeks to maximize the value of energy storage as a reliability and resilience distribution asset.

Q: Is it prudent for utilities to include electric storage in their distribution resource planning and if so, where and under what circumstances? Further, is it appropriate for utilities to include such investments in rate base?

Energy storage resources should always be considered an option for meeting electric system needs alongside investments in generation, transmission, distribution, and/or demand response resources. Energy storage should be evaluated both as a substitute and as a complement to such investments.

Distribution utilities across the country are currently making investments in energy storage as distribution and transmission assets. For example:

- Arizona Public Service purchased a 2 MW/8 MWh battery-based energy storage system for less than half the cost of the traditional investment of a wires alternative in August 2017.[3]
- PSEG Long Island has made similar solicitations to reduce peak demand as a means of avoiding network upgrades and has deployed two storage systems with a total capacity of 10 MW/80 2MWh in South Fork in 2018 for this purpose as well.[4]

[3] "APS Buys Energy Storage from AES for Less Than Half the Cost of a Transmission Upgrade," *Greentech Media*, August 9, 2017, available at https://www.greentechmedia.com/articles/read/aes-buys-energy-storage-for-less-than-half-the-cost-of-a-wires-upgrade

[4] PSEG Long Island Utility 2.0 Long Range Plan, 2017 Annual Update, available at http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={1F5A82D2-3C5B-4D48-806A-D870DA46BC7B}

- National Grid deployed a 6 MW/48 MWh (8-hour duration) energy storage system on the island of Nantucket that is expected to delay adding a third submarine transmission line by at least a decade.[5]

In order to determine whether or not it is appropriate for utilities to own and include specific ESS investments in the rate base, the Commission should identify in advance the criteria or circumstances under which the reliability obligations of a utility necessitate ownership and/or operation of the ESS by the utility.

Conversely, when the reliability obligations of the utility do not necessitate ownership, ESS may be excellent candidates for competitive procurement, leveraging third party investment and increasing competition in order to reduce costs for ratepayers. In particular, ESS may be combined with other DERs including demand-side management into "non-wires alternatives" ("NWAs") that are solicited through competitive procurements to meet specific system needs. In New York, for example, Con Edison recently avoided a $1.2 billion substation upgrade through NWA procurements including a 2 MW ESS.[6]

In order to maximize the value of energy storage in distribution planning, ESA recommends that the Commission develop guidance for utilities to consider NWAs in long-term infrastructure improvement plans. For example, other states have implemented screening criteria to determine whether consideration of NWAs is prudent for a given infrastructure investment.[7] If the

[5] "Nantucket gets new backup energy supply," *Cape Cod Times*, October 9, 2019, available at https://www.capecodtimes.com/news/20191008/nantucket-gets-new-backup-energy-supply

[6] Brooklyn Queens Demand Management Program, Implementation and Outreach Plan, Consolidated Edison Company of New York, September 11, 2017, available at http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={1F6A145E-E4AF-49AB-9E27-4DC1D5A0F8B0}

[7] Distribution System Planning – State Examples by Topic, Section 9.0, Pacific Northwest National Laboratory, May 2018, available at https://epe.pnnl.gov/pdfs/DSP_State_Examples-PNNL-27366.pdf

screening criteria is met, utilities could further investigate whether an NWA would provide net benefits to ratepayers, including by offering a competitive solicitation.

III. CONCLUSION

As the Commission notes in its Secretarial Letter, the changing landscape of increased adoption of electric vehicles, integration of distributed energy resources, and increased extreme weather events will put require significant accommodation from the distribution system. Energy storage offers significant advantages when meeting a number of existing and emerging distribution system needs, and the Commission's investigation into the use of energy storage as distribution infrastructure is both prudent and timely. ESA thanks the Commission for the opportunity to offer these comments.

Sincerely,

Julian Boggs

State Policy Director

Energy Storage Association