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December 16, 2021

Holly Anderson, Clerk
Vermont Public Utility Commission
112 State Street, 4th Floor
Montpelier, VT 05602

Re: Case No. 21-3883-RULE. Proposed creation of Vermont Public Utility Commission Rule Concerning Energy Storage

Dear Ms. Anderson:

On September 17th, 2021, the Vermont Public Utilities Commission ('Commission') issued an Order initiating a rulemaking proceeding to develop rules governing the installation and operation of energy storage facilities in Vermont ('Energy Storage Rulemaking Order'). Through a subsequent scheduling Order, the Commission asked interested parties to respond with comments to the Energy Storage Rulemaking Order on or before December 16, 2021.

The Town of Stowe Electric Department ('Stowe') thanks the Commission for the opportunity to file comments regarding the Energy Storage Rulemaking Order. Stowe appreciates the Commission's attention to the challenges presented by the growing number of energy storage facilities being interconnected to the grid. Stowe is supportive of interconnecting more energy storage resources and realizes the benefits these resources can provide to customers, Distribution Utilities ('DU'), and the opportunity to reduce the carbon footprint of the interconnecting utility by offsetting fossil generation demand.

Stowe's comments in this docket pertain primarily to the interface of energy storage systems with the DU. The comments below focus on integration with Commission Rules 5.100 and 5.500 regarding interconnection, and the need for standards to be developed for communication purposes between the DU and the interconnection customer that owns and operates the energy storage system.

Stowe notes that it submitted comments in the Commission's Docket No. 19-8551-Rule, "Proposed revisions to Vermont Public Utility Rule 5.100" dated September 24, 2021. These comments suggested improvements regarding the certificate of public good ('CPG') approval process for residential scale DER, primarily photovoltaic ('PV') or PV coupled with battery energy storage systems ('PV +BESS'). Although the CPG approval process for energy storage systems applies only to energy storage systems with a capacity of 100 kW or greater, the modest reforms to the CPG approval process offered in Docket No. 19-8551-Rule are generally applicable in the instant docket.

In those comments Stowe suggested that the Commission update Rule 5.100 to require interconnection Applicants, Installers, and the interconnecting DU to discuss the interconnection requirements for DERs before the application for a CPG is filed with the Commission. Stowe suggests that this requirement be adopted into Commission Rule 5.500 for applicability to all energy storage systems that require issuance of a CPG.

I. Interconnection Process Modifications

Stowe's experience with DER interconnections, and with energy storage system interconnection, has increasingly resulted in objections to interconnection requests due to distribution facility constraints. In a general sense, customers and installers of both DERs and energy storage systems should be directed by Commission interconnection rules to clear the proposed interconnection with the DU prior to starting the CPG process.

From a process perspective, it is most efficient to first resolve any DU system stability and reliability matters regarding an interconnection request (of any size or type). Working through estimates and analysis of utility upgrades in advance of seeking siting approval provides cost clarity for a project developer, even at the residential level. In the case of energy storage systems, where traditional Section 248 criteria are less likely to be at issue, starting the CPG process after consultation with the utility regarding interconnection requirements is not unduly burdensome and would likely have only modest impact on project development timelines. Any detriment of starting the CPG process later will be offset by knowledge of the DU's interconnection related requests, clarifications in the application process, and knowledge of whether further studies are needed.

II. Communications and Operational Control

In addition to interconnection process reforms, energy storage systems whether paired with existing generation capacity, or stand-alone systems, present other challenges for the interconnecting DU. Theoretically some interconnection related issues could be addressed with the adoption of operational protocols and/or protection and control schemes directing storage system operation. However, this appears to Stowe as a future event as the integration of energy storage progresses.

In instances where interconnection studies produce results that limit interconnection capability and upgrades are identified as necessary, energy storage interconnection may be uneconomic in certain locations. However, the ability to control energy storage systems could alleviate the need for certain upgrades in some circumstances. This would allow for more energy storage deployment and related benefits, but begs the question of who is best situated to assume such responsibilities, and whether the technology is yet far enough advanced.

At the present time, oversight of energy storage systems at the DU level to maintain system stability and reliability would be burdensome if not unworkable simply due to staffing limitations. Even where aided by sophisticated software systems, the monitoring or oversight needed to assure system integrity and reliability on a real-time basis is not feasible.

Over time with the maturity of IEEE 1547 Standards relevant to energy storage and the compliance by original equipment manufacturers in production of storage related equipment such that grid integration allows for predictable smart energy systems functional to the point of programable operation to maintain instantaneous stability and reliability, the burden of operational control should lessen. Yet, we are not at that point now.

Stowe is optimistic that over time automated operational controls will offer the ability to assure system stability and flexible operational capacity for energy storage systems. In the near term, however, it is critical that energy storage systems be interconnected under the standards of present interconnection rules to assure DU system stability and reliability requirements.

At this time, it seems appropriate that the only direct control that DU's should have, beyond interconnection requirements, is the right to direct operational parameters of energy storage systems in the event of distribution system emergency reliability or stability events. Communications with owners/operators of large storage capacity units (100 kV or greater) in the event of system emergency is critical to avoid islanding events creating safety risk. It would be beneficial for DUs if a standard communication protocol was adopted for such instances.

III. Interconnection Application Requirements

Applications for energy storage interconnection need to provide the DU with all information applicable to a project that otherwise would be subject to Rules 5.100 or 5.500 as a net metering or generation resource respectively. However, Stowe suggests that for energy storage projects not associated with an existing net metering interconnection, that such projects be subject to Rule 5.500 interconnection obligations. For clarity, this later category is intended to include energy storage projects below 100 kV that are exempt from CPG filing requirements.

Additionally, and not specific only to energy storage interconnection applications, Stowe suggests that the Commission incorporate express language in Rule 5.100 clarifying that costs incurred by DU's from interconnection requests that require Scoping meetings are the responsibility of the interconnection customer. The clarification should include the concept that any reasonable costs for third party support for design, engineering, and related analysis are also included in customer cost responsibility.

IV. Dispute Resolution

The Commission should retain the dispute resolution rules under Rule 5.500 for energy storage system related disputes applicable to interconnection rights and obligations and utility related reliability and stability matters. Although it is foreseeable that disputes in the context of aggregations of energy storage systems may expand into arguments over generation production, limits placed on units by interconnecting utilities, and even accounting matters, a special dispute mechanism seems unwarranted at this time. Furthermore, to the extent disputes arise out of wholesale transactions, these disputes may fall under jurisdiction of the Federal Energy Regulatory Commission.

III. Conclusion

Stowe supports the Commission's effort to integrate energy storage resources into Vermont's mix of distributed energy resources. Stowe also recognizes the benefits of encouraging deployment of energy storage from both environmental and engineering perspectives. Energy storage serves to advance the objectives of developing a smart grid, and micro grids beneficial to owners, customers, the DUs as well as VELCO. However, the technology for integration and control is nascent and needs further time to mature, even though electrical standards continue to advance. Given this scenario, Stowe suggests that the Commission pursue development of specific rules for energy storage in a measured approach, both to allow advancements in the field to inform policy and to prevent implementation of prescriptive rules that inadvertently hamper near term deployment.

Stowe looks forward to continued participation in the rulemaking process for Commission adoption of rules relevant to energy storage.

Sincerely,

_____/s/_____

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