To: The Department of Public Service

From: David Westman and Abby White, Vermont Energy Investment Corporation

Re: Comments related to Act 53, Energy Storage Study Report Outline

Date: August 18, 2017

Please accept our comments on the structure and content of the Energy Storage Report enacted in Act 53. VEIC sees storage as an integral part of our energy system and as a strategic resource to help achieve the goals set forth in the Comprehensive Energy Plan. Efficient and beneficial energy storage, if deployed equitably and strategically, has the potential to yield substantial cost savings and boost the resilience of our energy system. It will help business customers avoid expensive demand charges, help utilities manage and reduce peak demand, and help the state optimize the use of its current energy infrastructure.

In addition to what's included in the outline, we encourage the Department of Public Service to explore the following:

- Under Section 2, Subsection C, a review of customer-sited applications of storage for residential and commercial customers;
- Under Section 2, Subsection F, consideration of economic growth and expansion of jobs for energy storage manufacturers, developers, and installers in Vermont;
- Under Section 4, use-cases, benefits, costs, and methods of deployment for residential and commercial customers, and for clusters of customers (either in a discrete community or industrial park.) Also under Section 4, exploration of costs and benefits based on rate structures across different utilities, and of applications that are behind the meter and grid connected;
- Under Section 5, ownership options for customers, through purchase or lease, and how we might spur market adoption. Also under Section 5, consideration of heavy duty electric vehicles such as school buses, and benefits to public agencies.

Here are our responses to some of the additional questions posed:

- *What are the most compelling reasons for deploying energy storage in Vermont?*

  Costs savings for customers, utilities, and the state is the primary reason Vermont ought to increase access to storage. Savings associated with energy storage accrue in many ways: for the residential customer who can control their own energy use and balance demand with on-site generation; for the commercial customer who can smooth daily peaks and avoid demand charges; for the utilities that can manage system constraints in areas where production surpasses demand; and for the transmission

utility and grid operator that can optimize the transmission system we have today. Throughout the system, energy storage presents a unique opportunity to boost resilience and increase deployment of distributed renewable energy resources.

- *What are the biggest barriers to deploying energy storage in Vermont?*

  For customers there are financial, educational, and supply barriers to purchasing and integrating energy storage. The supply chain in Vermont is still nascent and in need of cultivation to ensure that a range of proven, high-performing, affordable products are available for purchase. The same gap exists for contractors who are needed to sell and install storage systems.

  Additionally, customers would need a retail electric rate structure that would allow them to reduce energy costs through use of batteries, vehicles, and other technologies. Customers should be enabled to change their demand characteristics to smooth out their peak load and see a commensurate reduction in demand charges. Customers should also have the opportunity to respond to day-ahead market signals through rates and incentives that are structured to share the value of system benefits with participating customers.

  Finally, we must understand the environmental impact of energy storage, both from a siting and disposal standpoint. End-of-life disposal ought to be considered and integrated into the strategy for market adoption from the beginning.

- *How can Vermont policies, programs, and regulations best be used or modified to better accommodate or encourage storage?*

  The State should leverage the entities already in place to effectively and efficiency deploy energy storage to end-use customers. The expertise of the EEUs in developing supply chains, vetting and screening technologies, designing incentives to reduce financial barriers, and driving customer adoption ought to be applied to this new technology, such that storage can be effectively integrated with deep efficiency, demand response, and distributed generation to decarbonize our energy system.

  The electric utilities' rates and demand reduction programs should be evaluated for whether they convey market signals to effectively drive customer behavior. Customers should receive a fair portion of the value of the system benefits they are creating through use of storage. If the existing rates are found to be deficient for passing along this value, the State could provide a straw proposal for changes to rates and demand charges.