



31 October 2017

Ms. June E. Tierney, Commissioner
Vermont Department of Public Service
112 State Street
Montpelier, VT 05620

Via e-mail: PSD.EnergyStorage@vermont.gov

Dear Commissioner Tierney,

Northern Reliability appreciates the opportunity to provide comment on the Act 53 Draft Report entitled, A Report to the Vermont General Assembly on the issue of deploying Storage on the Vermont Electric Transmission and Distribution System. As an early developer of off grid and micro-grid solutions for our clients, energy storage has been a cornerstone of our firms offering throughout our history. We acknowledge the level of effort required to research, consolidate and summarize into laymen's terms, the multifaceted aspect of energy storage and choose to focus our input to this document on recommendations. We hereby offer the following recommendations:

- The grid was built to accommodate the peak demand and the wholesale electricity markets have evolved to support delivery of the peak, both physically and financially. The forward capacity market (FCM) in ISO New England is the medium where a distribution utility's bid to purchase electricity and the ISO's mechanism to capture costs associated with the delivery of that electricity. Monetization of storage on a utility scale basis in the current market structure is limited to cost avoidance by the wholesale electricity purchaser. As more utilities integrate storage into their energy acquisition strategy, those that do not will be left supporting a larger share of the infrastructure development and maintenance costs. Unfortunately smaller distribution utilities may not have the rate base to develop storage initiatives on their own accord. We would like to see a recommendation to allow for aggregation of storage projects across multiple distribution utilities, and in particular allowing third party vendors to build own operate and manage storage projects to benefit smaller (or larger) utilities on an aggregate basis. While not specifically prohibited, a distributed storage project has the capability to affect the public good on a localized or regionalized basis, and said projects may be better reviewed at the public utility commission level. We recognize that recent developments on the FERC level as outlined in a summary document¹ in the

¹ Reference report by Smart Electric Power Alliance, Edison Electric Institute, entitled "DER Aggregations in Wholesale Markets, A review of technical and operational comments made in response to FERC's Notice of Proposed Rulemaking" September 2017.



notice of proposed rulemaking are suggesting removal of barriers to distributed energy resource aggregations. We only ask that Vermont promote this aggregation in energy storage, and not inhibit, but encourage market development.

- Under current models, a renewable developer's only incentive is to generate as much electricity as they possibly can, when they can, in order to get the most out of a resource when it is available, (i.e. when the sun is shining, the wind is blowing or the water is flowing). The ability of the grid to absorb the energy output from these generation assets is a function of the overall load. As distributed energy resources continue to develop, the grid operator's management of the generation assets serving a sector of the grid is to serve a localized demand, shift the power elsewhere, or curtailment. As noted in the report, lack of demand and the capacity constraint of the Sheffield–Highgate Exchange Interface (SHEI) transmission forces generation curtailment in northern Vermont, when the resource is plentiful. If Vermont is to achieve its renewable energy goals, rather than stopping development of renewable generation resources in transmission constrained areas, we would look for a recommendation to allow new generation assets proposed to be deployed if a storage aspect accompanied the development proposal. This may be one of the compromise options to continue renewable development in the SHEI transmission area. To facilitate development in other areas, an incentive structure could be crafted to allow for a kWh reimbursement mechanism similar to the reimbursement a renewable developer receives for utilizing a preferred location for siting their project. A renewable developer could receive a kWh incentive for incorporating storage into his project, perhaps even a higher incentive if the storage asset was controlled by the utility.
- The commercial and industrial markets have long been accustomed to a variable rate structure, whether it is time of use, demand charge or some other aspect that regulates electrical consumption. Based on a utilities history of rate design, it would appear the most straightforward way of developing a storage market is to allow for the creation of additional rate incentives. These incentives should not only regulate consumption but also allow for a generation asset to contribute when needed, either in the form of load reduction, demand side management or net metering contribution during peak hours. Green Mountain Power has several residential rate structures in place that allow for time of use consumption pricing models being applied towards customers monthly bills, but the differences in cost to the consumer at the end of a billing period are not enough to generate an effective rate of return towards any capital expenditure. Net metering customers have enjoyed the ability to receive monetary compensation whenever their usage is below the generation output. What if that rate structure were revised slightly in order to encourage storage deployment, such as:
 - A first level proposal would be a rate structure design where a utility customer incorporates a storage asset into an existing net metered system and gets



compensated on a retail kWh basis plus round trip efficiency losses for energy going into and out of a storage vehicle.

- The second level would be a rate structure design that is more indicative of market conditions. Meaning a generator contributing during periods of low demand would be compensated at a rate lower than if that contribution were to occur during high demand periods.
 - The development of a renewable self-supply system in which a consumer of electricity is incentivized to generate and consume their own electricity, utilizing the grid for back up purposes.
- A scenario to hasten the integration of renewables and energy storage would be development of a model similar to the California self-generation incentive program (SGIP). This program incentivizes developers of renewable and energy storage projects that are aimed to reduce the state's carbon emissions with monetary compensation. The incentives under California law are allocated to renewable and energy storage projects across the state through an in depth application process.

If implemented in VT the program would help reduce the state's greenhouse gas emissions, in addition assist in developing the Vermont economy. In the case of the California scenario, companies located in Vermont are given favor in the application process for incentivized proceeds. Several companies in Vermont — including Dynapower, Northern Reliability and Northern Power, currently design, build and install commercial and industrial as well as utility scale energy storage systems throughout the globe. There are numerous solar developers, designers and manufacturers throughout the state who would benefit from such an incented program for the deployment of renewable energies and energy storage in the state².

- Energy Efficiency Utilities (EEU) have made great strides in overall consumption demand reduction, but after many years spent encouraging energy conservation they may have hit the point of diminishing marginal returns. It appears programmatic efforts to gain additional efficiencies may be spending more dollars on marketing and advertising than actual efficiency implementation. It may be time to revise their legislative authority, or redirect the utility surcharge in favor of grid stabilization efforts or advancement of programs similar to the California SGIP outlined above.
- Acknowledged in the report is a statement indicating that pumped hydro is the most mature form of energy storage, yet most state strategies focus on electro chemical, compressed air, thermal or rotating mass (flywheel) technologies. A derivative of pumped hydro and likely a precursor technology would be the hydroelectric dam.

² Dynapower Pitch – Incenting solar plus storage, prepared for the Vermont Energy & Climate Summit, Climate pledge coalition, and the Energy Action Network, 8 November 2017



Vermont can trace our industrial roots back to the days when the kinetic energy from our rivers and tributaries was harnessed first to create a mechanical advantage and then to generate electricity. We must be cautious not to abandon mature technologies in favor of newer leading edge ones. Recent revelations in dam relicensing proceedings and evolving minimum flow criteria established by other state regulatory agencies are diminishing energy generated by this existing renewable resource. Gradually these generation assets will be over regulated to the point of unaffordability. We must be careful to preserve existing mature technologies and not to place additional barriers on them which will hasten obsolescence.

Again we appreciate the opportunity to provide feedback to the commission in the generation of this report and look forward to reviewing the final version when issued.

Sincerely,

Charles Van Winkle
COO, Northern Reliability