



October 31, 2017

Re: Energy Storage Report

Key Capture Energy (KCE) is an Albany NY-based energy storage development company with a focus on utility-scale battery storage projects in the northeastern United States. We select project sites, secure all necessary permits, procure full battery systems and oversee construction to move battery storage projects into operation. With founders who have spent over a decade advancing utility-scale renewable energy projects across this region, KCE has assembled a unique team with a deep understanding of the New England clean energy market and a history of development achievements that have been a crucial part of the northeast's transformation into a clean energy leader.

Vermont has been a leader in the Northeast in a transformation to a cleaner energy foundation. As one of the first two states without coal generation, the first state to ban hydraulic fracturing, the state with the lowest CO2 emissions, and where the majority of load is met by renewable sources, it serves as an example to other states in taking action to transition their energy paradigm. However, Vermont also ranks in the top 10 states for electricity pricing and energy expenditures per capita¹. Vermont has both the need and the opportunity to examine market structures that would allow for economic, resilient, and reliable continued growth of clean energy development.

Energy storage projects are a necessary part of the electric grid of the future. Storage systems are fuel neutral, capturing energy from all generation sources to optimize for use during outages, peak hours, or grid management purposes. They serve as an essential integrator for renewable sources, such as wind and solar, and will be an important component of Vermont's ambitious, yet attainable RES. As more renewables are integrated and efficiently allocated to perform peak shaving, the necessity for inefficient, fossil-fueled peaker plants will be relieved. While battery storage has seen a reduction in costs great enough to now construct profitable, utility-scale projects in New England, independent developers at large have veered towards markets with contracted revenues (California, Hawaii) or high merchant revenue streams (PJM).

KCE appreciates the Department of Public Service facilitating stakeholder feedback, and submits these comments to discuss our views on Energy Storage Report.

Recommendations

The National Renewable Energy Laboratory coined a strategy called "policy stacking" in 2008, which was effective analyzing how strategic policy implementations were and continue to be successful in the progression of the solar market². A similar chronology in policy making could be taken in the development of an energy storage market in Vermont³:

1. **Market preparation policies** – overcoming technical, legal, regulatory and infrastructural barriers to the technology's adoption
2. **Market creation policies** – developing state support through active learning and action
3. **Market expansion policies** – creating incentives to encourage investment and deployment

¹ <https://www.eia.gov/state/rankings/?sid=VT#series/226>

² <https://www.nrel.gov/docs/fy13osti/56428.pdf>

³ http://cnee.colostate.edu/wp-content/uploads/2017/07/State-Brief_VT_Sept_update.pdf

While Vermont has seen some action in energy storage development, particularly from Green Mountain Power, they have been predominantly experimental. While these types of projects are essential, per the “policy stacking” chronology, there could be a concurrent focus on developing market mechanisms to explore obstacles encountered and act to remediate the failures, or validate their success and deploy market signals in a broader context to incent further investment and deployment. Otherwise, there is a pending risk of remaining in a pilot-project limbo, where development remains inaccessible to most. KCE believes that this integral approach of developing policies, testing their validity through pilot programs, and translating lessons learned into greater-market signals is crucial for a fluid market development process.

Potential Implementation Strategies

- Time-variable, locational-based, cost-reflective rate structures:

Develop an opt-in program for customers where pilot projects are being developed. Study benefits in customer electricity rates as well as in relieving local network congestion and develop mechanisms to justly compensate the benefits provided.

- Require utilities to issue RFPs for Non Wires Alternatives solutions before making major grid upgrades:

It is difficult for utilities or developers who have not deployed a storage project in an area to have accurate pricing information on storage implementation (especially as the price is dropping significantly). This was recently encountered in CAISO when energy storage was determined to be non-competitive economically to meet capacity requirements versus the Puente gas plant. However, through issuance of an RFP, pricing data was lower than expected. Having the most up to date and competitive pricing information is essential to choosing the most systematically economic and efficient solution. Strategic energy storage deployment has been an effective alternative to large generation investments or traditional transmission repairs and upgrades (displayed through projects in CA, NY, and OR). This would also facilitate efforts in House Bill 501 to develop policy recommendations and targets for the installation and increase of storage capacity in the transmission and distribution (T&D) system.

- Complete studies to evaluate life-cycle effect of storage implementations:

Tier III of Vermont’s Renewable Energy Standard (RES) claims that energy storage is eligible to help meet required installed capacity; however, no utilities are actively progressing storage solutions in this capacity as pollution reduction and fossil fuel displacement is more easily quantified through implementations of weatherization and electric vehicle infrastructure. A quantifiable comparison is warranted for the more effective solution to be chosen. For instance, Beacon Power in a 2015 report found CO2 reductions of 214,129 tons/year for their 20 MW frequency regulation project in PJM, as the energy storage project displaced natural gas in the ancillary service market⁴.

- Review of wholesale market rules for energy storage participation to its greatest capacity:

It is important to determine whether market rules are in place for the unique attributes of energy storage in the capacity market (ie. pay-for-performance rules that unjustly penalize energy storage), the

⁴ Beacon Power. 2015 Final Technology Performance Report. Contract ID DE-OE-0000200



ancillary services market (ie. monetization of all energy storage products, such as reactive power, blackstart, etc.), value stacking (ie. stacking of all front-of-the-meter applications, similar to the Alternative Technology Regulating Resource for behind-the-meter facilities), and environmental benefits that it provides (ie. receiving payments from state governments similar to Renewable Energy Credits).

Avenues for continued development

- Targeting the Standard Offer Program for 2019-2020 pilot projects

Having already been successful in its deployment of clean-energy projects, renewables + storage projects should be considered for the 2019-2020 pilot. It would both help utilities reduce their demand charges by consuming less of the ISO power pool at peak hours. Collocation storage at existing points of interconnection will also help to develop strategies for expedited review procedures.

- Provide incentives for utilities to integrate storage into networks up to 20% of annual peak power:

Due to the argument that storage should be deployed where it makes sense to displace an alternative rather than procuring a certain amount over a specific timeframe, utilities should be given the autonomy to most effectively determine how to shave their peak loads. Through the resulting RFPs, private investment and third party developers can be drawn to Vermont for development opportunities.

Conclusion

Key Capture Energy appreciates the efforts and open process through which the Department of Public Service is establishing the foundation for a vibrant energy storage market.

Energy storage will play a crucial role in helping Vermont meet its clean energy goals while enhancing the overall reliability and resilience of the electric grid. KCE looks for strong state support as it begins to prospect potential projects in Vermont in overcoming barriers to realizing value through energy storage deployments, and consequently, for the grid itself.

Thank you for the ability to submit these comments and I look forward to more discussions.

Jeff Bishop