

Vermont Experience with Storage



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Background

- VELCO is the transmission company in Vermont. It is regulated at FERC and owned by the distribution companies.
- The peak load in VT is 1000MW both in summer and winter.
- All peaks during the day are after dark.
- Renewable Generation
 - 360MW of distributed generation (BTM)
 - 180MW of wind generation
- Storage- 6 utility scale, 12MW
 - Residential, 2300 Tesla Powerwalls

Storage as a T&D Deferral

- Three studies done todate on this.
 - Transmission to defer a reconductoring
 - Economics did not pan out.
 - FERC restrictions on storage as transmission asset hurt the economics.
 - Storage to eliminate renewable curtailments,
 - Not economic due to large amount of storage needed.
 - Deferral of a distribution substation
 - Study done and with storage, a smaller substation will be built and storage will be added for peak times.

Summary

- VT storage is mostly behind the meter on distribution or on sub-transmission systems
- Stacked benefits are important.
- Most benefits from peak load reduction (capacity and monthly regional transmission billings)
- T&D deferrals are difficult economically
 - Better in very low load growth scenarios
 - Difficult when factoring electrification in to load growths.
 - Still fairly expensive.

