

Testimony in Support of S.140 Creating a Legislative Energy Storage Study Committee

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The Benefits of Energy Storage

Energy storage systems provide a wide array of unique grid benefits and services designed to increase grid reliability, including:

- ▶ **Peaking Capacity** - meeting short-term spikes in electric system demand that can otherwise require use of fossil fuels and higher-cost generation resources.
- ▶ **Maximizing Renewable Energy Resources** - reducing curtailment of renewable generation resources and maximizing their contribution to system reliability.
- ▶ **Grid Infrastructure Support** - relieving transmission and distribution infrastructure congestion, enhancing the resilience of wires infrastructure, and creating a more flexible power system.
- ▶ **Increasing Operational Flexibility** - facilitating efficient integration of a diversity of generation resources and improving the ability of the electric grid to adapt rapidly to changes in demand and generation.
- ▶ **Improving Grid Resilience** - serving as back-up power for homes, businesses, communities, and the broader grid system to minimize and prevent power outages and service interruptions from extreme weather.



S.140 Will Help Vermont Meet its GHG Reduction Goals

- ▶ S.140 asks the legislature to bring together stakeholders to determine the ways that Vermont can best utilize energy storage to achieve its renewable energy goals, emissions targets, grid reliability and ratepayer cost savings.
- ▶ S.140 also asks stakeholders to consider the costs and benefits of storage and how to move the energy storage market forward in Vermont to best achieve our goals.
- ▶ The Inflation Reduction Act established the first-ever tax incentive for stand-alone storage projects, enabling Vermont to capture these federal funds to boost electric supply affordability and reliability.
- ▶ As we “electrify everything” and electric demand grows, energy storage will support the back end of our electrified and renewable future. According to the 2022 Clean Energy Plan, demand from heat pumps will grow from 5MW to 91MW by 2030 and electric vehicles will have an even bigger impact.
- ▶ S.140 is a thoughtful step forward to consider the costs/benefits of storage and how Vermont ratepayers can benefit. A stakeholder process would provide the opportunity to review programs being considered in other states, to convene experts in the field, and consider complex issues that come with advanced energy storage. These are all crucial to consider as Vermont moves forward to a clean and advanced energy future.
- ▶ S.140 proposes to start the conversation to create the policy frameworks that can thoughtfully integrate storage and ensure it is available as we reach higher levels of renewables as we electrify our economy.



2017: Act 53 Report to the VT General Assembly on the Issue of Deploying Storage on the Vermont Electric Transmission and Distribution System

- ▶ The report provides a conceptual description of the potential benefits and drawbacks of investing in storage including the pros and cons of different ownership models and policies to encourage storage deployment.
- ▶ It repeatedly states that storage investments should be strategic but does **not** provide any quantification of what strategic storage deployment would look like.
- ▶ The report states, “Consequently, through this report, the Department recommends an approach that acknowledges the potential benefits of storage technologies **without going ‘all in’ before better information is available.**”
- ▶ The report explicitly recommends against setting procurement targets, arguing that the utility IRP planning process includes a requirement for least-cost planning and a requirement to consider storage. **The Legislature has the leeway to consider different time horizons and a broader geographic scope than an individual utility when looking at optimal system.**



2019: Act 31 Storage Regulation- Final Recommendations

- ▶ The report primarily addresses mitigating the risks of storage such as:
 - Providing a clear path to permitting storage projects
 - Ensuring storage projects and their operations do not adversely impact the grid or ratepayers
 - Protecting public and environmental safety
- ▶ The report acknowledges the benefits of storage but does not seek to quantify them or provide a road map for how to get to an appropriate level of storage.
- ▶ While the 2019 report helpfully creates a pathway to allow for energy storage in the state in terms of permitting and regulation, **it wasn't required to explore recommendations for how to encourage storage adoption throughout the state.**
- ▶ S.140 intends to ask the question: how can storage benefit Vermonters and help us reach our climate goals? And how do we encourage the buildout of storage so that we can reap these benefits?
- ▶ Much has changed since 2019 and because of the IRA and other advances in storage technology- now is the time to encourage storage.



2022 Comprehensive Energy Plan

- ▶ **The CEP does not provide any quantification of storage needs.** It states “Vermont doesn’t have a clear direction on how to assess grid-modernization costs, or for that matter a clear grid-modernization plan. Nevertheless, utilities, DER developers, and other stakeholder are managing to forge ahead toward some version of a secure and affordable grid that can efficiently integrate, use, and optimize high penetrations of distributed energy resources to enhance resilience and reduce greenhouse gas emissions. **Continued conversation among these entities – perhaps informed by this CEP – hold promise to help bring into focus the grid modernization path ahead.**”
- ▶ “Storage technologies and markets are evolving rapidly. To both keep pace and ensure that storage deployment benefits Vermonters, nimble and flexible regulatory and policy frameworks will need to be embraced.”
- ▶ Postcards From the Future:
 - “Thinking must start today about ways to orchestrate and optimize resources such as solar, storage, and flexible loads”
 - “A significant amount of strategic storage and load management will likely be needed to manage grid impacts”
- ▶ “In the Commonwealth’s State of Charge study, an economic development impact study using the IMPLAN model was performed and found that up to 1,766 MW of energy storage through 2020 would yield a value of \$3.4 billion to the state (\$2.3 billion in system benefits, or cost savings to ratepayers, and \$1.1 billion in market revenue to system owners).”



Maine: Legislation Creating Energy Storage Stakeholder Discussion Leads to Procurement Goals

- ▶ In 2019 Maine passed a law creating a Legislative Energy Storage Study Commission to convene a stakeholder discussion on the future of energy storage which issued the following recommendations:
 - Establish state targets for energy storage development
 - Encourage energy storage paired with renewable and distributed generation resources
 - Advance energy storage as an energy efficiency resource
 - Address electricity rate design issues relating to time variation in costs
 - Clarify utility ownership of energy storage
 - Advocate for energy storage consideration in regional wholesale markets
 - Conduct an in-depth Maine-specific analysis of energy storage costs, benefits and opportunities
- ▶ In 2021 Maine passed the legislation that came out of their stakeholder discussion setting an energy storage goal of 300MW of installed capacity in state by the end of 2025 and 400MW by the end of 2030 representing nearly 20% of Maine's 2021 peak electricity demand. At the beginning of 2022, Maine had 50MW of storage in operation.
- ▶ By comparison Vermont currently has about 60MW of storage. Vermont's 2022 peak energy load was 761MW, 20% of which equals 152MW of storage by 2030.



Massachusetts: State Agency Study Leading to Procurement Targets and Direct Incentives

- ▶ Launched by Republican Gov. Charlie Baker, the Energy Storage Initiative required the Department of Energy Resources to launch a stakeholder and storage study process that resulted in the State of Charge study.
- ▶ State of Charge recognized the immense value of storage and led to the passage of an initial storage target in 2016 that was increased in 2018 requiring 1,000 MWh of storage by the end of 2025.
- ▶ State of Charge stated that putting 600 MWs of energy storage online by 2025 would result in \$800 million in system benefits.



Connecticut: Energy Storage Legislation Setting Procurement Targets Leading to Direct Incentives

- ▶ In 2021, the CT Department of Energy and Environmental Protection (DEEP) laid out a draft plan to get to 100% zero-carbon energy by 2040.
- ▶ The DEEP plan said meeting that goal requires storage targets and incentives at the state level to address the intermittency of wind and solar production.
- ▶ In 2021, bi-partisan legislation was passed unanimously establishing a goal of deploying 1,000 MW of energy storage by the end of 2030.
- ▶ In 2022, CT's Public Utilities Regulatory Authority created the Energy Storage Solutions program to provide direct incentives for BTM storage.
- ▶ PURA is currently considering direct incentives for utility-scale storage as well.



New York: Procurement Targets Leading to Agency-Directed Study and Direct Incentives

- ▶ In 2019 New York passed the Climate Leadership and Community Protection Act establishing a 3,000MW storage target by 2030; Governor Hochul is proposing increasing this to 6,000MW by 2030.
- ▶ Includes direct incentives created for behind the meter storage. The proposed Index Storage Credit would incentivize bulk storage.

