

Vermont Energy & Climate Summit

Pitch Submission Form

Guiding Criteria: EAN’s mission is to end Vermont’s reliance on fossil fuels *and* to create efficient, clean, affordable, and secure electric, heating, and transportation systems for the 21st Century. The VT Climate Pledge Coalition is seeking pledges to reduce GHG reductions that will help Vermont meet Paris climate commitments. Together, we support the criteria outlined in Gov. Scott’s Executive Order creating the **Vermont Climate Action Commission**, specifically that solutions must:

- Spur economic activity, inspire and grow Vermont businesses, and put Vermonters on a path to affordability;
- Engage all Vermonters, so no individual or group of Vermonters is unduly burdened; and
- Collectively provide solutions for all Vermonters to reduce their carbon impact and save money.

With these goals and criteria in mind, please answer the questions below. Questions 8-12 can be answered individually or in one comprehensive narrative. (Total pitch submission **no more than 3 pages**).

1. Pitch Submitted By (Your Name or Organization):

Nathan Wyeth, Director, Grid Solutions, Sunrun

2. Contact Email Address:

nathan.wyeth@sunrun.com

3. Contact Phone Number:

301-221-5675

4. Pitch Title: (one line)

Residential Solar+Storage: Platform for Local Clean Energy Transition

5. Pitch Summary: (one paragraph)

Distributed energy enables Vermonters to generate local clean power from their own rooftops. Increasingly affordable home batteries offer backup power. Given the option to go nearly or all the way off grid and have backup power, many may choose to do so. But we can’t afford to

build both centralized and distributed renewable infrastructure - we need smart coordination. Sunrun proposes to bring BrightBox residential solar+storage to Vermont to create a local clean energy platform to support Vermont's utilities. This platform will help balance the grid to maximize integration of clean energy. It will make room for and can eventually incorporate other distributed energy like connected water heaters and EVs. Balancing the grid with local clean energy will unlock the ability to convert dirty fuels to electricity - such as converting heating from heating oil to efficient heat pumps and adding electric vehicles - while minimizing spikes in electricity demand that create the need for importing power from polluting peaker plants or building new transmission lines crossing Vermont. This localized clean energy platform will create community energy resiliency in the event of storms or extended grid outage, and utilize private investment to bring down costs for all.

6. What energy sector(s) does this Pitch apply to? (Check all that apply):

- **Electricity**
- **Thermal Heating &/or Cooling**

7. Which criteria category(ies) does it address? (Check all that apply):

- **Economic Activity**
- **Affordability**
- **Vulnerable Vermonters**

8. Scale of impact on Vermont's energy and climate goals: If this proposal came to fruition, how might it move the needle in helping to meet Vermont's energy and climate goals by 2025 and/or 2050? Please outline assumptions and, if available, provide calculations.

- Sunrun endorses Green Mountain Power's assertion that in the future every home will have a form of energy storage, and we believe that a large percentage will also have solar generation.
- We estimate there are 150,000 solar-ready single family homes in Vermont. We believe that in 2018-2020, 10,000 homes can adopt solar+storage as costs drop and utilities learn how to draw on local solar stored in batteries instead of distant power plants. This will set the stage for 40,000 homes to adopt solar+storage in 2021-2025, or 33% of potential homes. This is approximately the same solar penetration that Hawaii has already achieved, demonstrating it is possible.
- This would represent 350 MW of local solar and up to 800 MWh of storage. Annual clean electricity production would be approximately 372,000 MWh, or 7% of Vermont's total electricity consumption. Storage enables local renewable power to be stored until it is needed locally, meaning that this could be drawn on strategically by utilities to offset the 7% most polluting electricity that Vermont would otherwise import from the NE-ISO grid.

9. Benefits/costs of this proposal for Vermont and Vermonters: Including, where possible, economic, financial, social, and environmental.

- Because the availability of solar power stored in batteries across Vermont in the above example would be certain, utilities would not need to reserve as much out-of-state power plant capacity in NE-ISO's auctions - bringing the cost down for all users in New England.
- Because stored power could be used flexibly to cover peak load no matter when it occurs, space and water heating can be converted from heating oil and gas over to efficient heat pumps, creating large customer savings, without worrying that it will just cause more imports of fossil fuel electricity from out of state or utilities will need to upgrade power lines.
- Smart solar+storage shaping residential load lays the groundwork for adding EVs without causing the need for new power plant and transmission line capacity, preserving Vermont's rural character.
- By passing along this value to customers, Sunrun can bring down the cost of batteries to the point that Vermonters could access solar+storage including backup power in the event of grid outages for less than the current cost of their electricity bill - meaning that even the most remote Vermonters could be assured of lifeline electricity in storms.
- Further dialogue is needed to quantify the multi-sector benefits of flexible, dispatchable local clean energy.

10. Decision-makers necessary for this proposal to be adopted or move forward (e.g., Legislature, Governor, a regulatory agency, a business, organization, media outlet, or financing institution, etc.)

- Energy sector regulators
- Utility leaders

11. Strategy and key considerations: Outline the overall strategy, including gaps, barriers and opportunities for moving this proposal forward.

- Vermont can leapfrog to a local clean energy system with the right mix of new technology, private investment and holistic thinking that enables Vermont to maximize local clean energy production and consumption.
- Two things are needed:
 - Regulatory environment enabling customer choice to adopt and interconnect solar+storage and create an open platform to bring solar+storage value to utilities where it offers lower costs to ratepayers than centralized solutions.
 - Utilities partnering with their customers and third parties to enable distributed resources to be brought to the table as an aggregated resource / platform to help solve the utilities' challenges.
- The technology is ready, but is too expensive to be rolled out affordably for a large number of Vermonters unless there are efficient structures to send price signals and

pass revenue from the utility to the homeowners on the local clean energy platform for the services it provides.

12. Timeline: To meet our 2025 goals, we need some proposals that can be implemented in the next couple of years as well as some “game changers” that will bend the curve even further out. What timeline do you foresee for your proposal to be developed and implemented?

- Part 1 - 10,000 deployments 2018-2020 * 7 kW solar + 10-12 kWh storage
- Part 2 - 40,000 deployments 2021-2025 * 7 kW solar + 15-20 kWh storage

Suggested Reference Documents:

[Vermont’s Comprehensive Energy Plan, 2016](#)

[Vermont’s Total Energy Study, 2014](#)

[Vermont Agency of Natural Resources Climate Dashboard](#)

[EAN Annual Report, 2016](#)

[90% Renewable by 2050: Exploring Vermont’s Efficiency & Renewable Energy Pathways, 2013](#)