



# Resilience Project Implementation Memo for the Town of Stowe, Vermont

Chrissy Scarpitti

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**Management Report**  
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Contributors: Michael Lazorchak, Town of Stowe Electric, Regulatory and Legal Department

## Town of Stowe Resilience Project Overview

This Resilience Project Implementation Process Memo was developed with and for the Town of Stowe Electric Department (SED) under the DOE C2C Expert Match Program. It is intended to outline the steps of a process, albeit nonlinear and iterative, to plan, design, and implement community resilience hubs.

The Town of Stowe, Vermont, is a small, tourism-centered community that faces harsh winter storms.<sup>1</sup> These storms often bring high winds that leave portions of the population without electricity to maintain safe indoor conditions and provide critical services such as powering medical devices, heating/cooling, providing water, and refrigerating food and medicine.<sup>1</sup> About 28% of Stowe’s population is over 65 years of age,<sup>2</sup> the median household income is \$83,167,<sup>2</sup> and 50% of vacant housing units are “seasonal” vacation rentals.<sup>3</sup> Meanwhile, 20% of the population in Lamoille county is over the age of 65,<sup>2</sup> the median household income is \$69,886,<sup>2</sup> and 68% of vacant housing units are “seasonal” vacation rentals.<sup>4</sup> The poverty rate in Stowe is 5% while that of Lamoille County is 9%.<sup>2</sup> Town of Stowe Electric Department’s Michael Lazorchak describes the year-round population as “on average older, on fixed incomes, receive some form of governmental assistance, and are thereby more vulnerable to power outages than the majority of property owners in Stowe.”<sup>1</sup>

SED has been working to harden the broader distribution system, upgrading circuits and increasing redundancy to ensure greater resistance to long-duration power outages.<sup>5</sup> Although the Town’s ice arena and high school serve as emergency shelters, 2022’s Winter Storm Elliot revealed that the arena was not a sufficient emergency heating shelter for rural customers who lost power. SED envisions a Community Resilience Hub, comprised of various public buildings at Memorial Park, which could ensure that vital energy-dependent critical services remain available to the broader community in the event of power outages.

Toward this end, SED participated in DOE’s C2C Cohort on solar and storage for resilience in the spring of 2024. The vision for a Resilience Hub at Memorial Park would be anchored by the Town’s elementary school, and supported by Jackson Ice Arena, the high school and the Town Highway Offices. Through the Cohort, SED narrowed priority resilience sites for potential technoeconomic feasibility analysis (one of the steps in the process outlined below). In the summer of 2024, SED participated in DOE’s C2C Expert Match to estimate the photovoltaic, battery energy storage system, and generator system that would be needed to power the Town’s

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<sup>1</sup> According to Michael Lazorchak – Town of Stowe Electric Department, Regulatory and Legal Department.

<sup>2</sup> U.S. Census Bureau Quick Facts Stowe, Vermont, and Lamoille County

<https://www.census.gov/quickfacts/fact/table/lamoillecountyvermont,stowetownlamoillecountyvermont/PST040223>

<sup>3</sup> U.S. Census Bureau Table H5 Vacancy Status– Stowe,

Vermont <https://data.census.gov/table/DECENNIALDHC2020.H5?q=H5&g=160XX00US5070450&d=DEC%20Demographic%20and%20Housing%20Characteristics>

<sup>4</sup> U.S. Census Bureau Table H5 Vacancy Status– Lamoille County, Vermont

<https://data.census.gov/table/DECENNIALDHC2020.H5?q=H5&g=160XX00US5070450&d=DEC%20Demographic%20and%20Housing%20Characteristics>

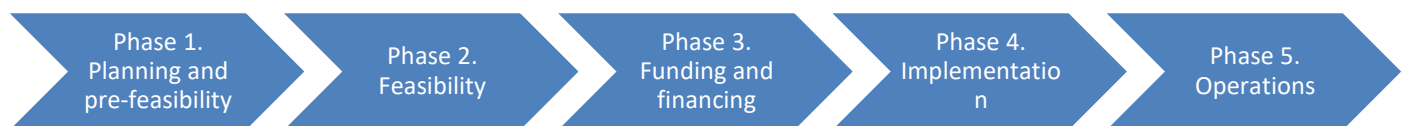
<sup>5</sup> [https://www.stowevt.gov/files/assets/town/v/1/administration/documents/town-reports/town\\_of\\_stowe\\_annual\\_report\\_final\\_2022.pdf](https://www.stowevt.gov/files/assets/town/v/1/administration/documents/town-reports/town_of_stowe_annual_report_final_2022.pdf)

elementary school. The results describe the system size, costs, and resilience benefits of these energy resources. The town of Stowe could collaborate with local organizations such as Efficiency Vermont to further community engagement, determine critical services, confirm building electric load, and finalize resilience technology system sizing.

By aligning the following resilience planning steps with broader community processes (such as Vision 2050), future efforts toward community resilience and climate change adaptation will be community-informed, coordinated, strategic, and data driven. Such a unified approach across residents, organizations, and town departments is critical for justifying resilience fund seeking and investment decision making.

## Resilience Project Implementation Process

The following is an outline of major phases of a resilience project implementation process. This outline draws from principles of NREL’s “[Resilience Roadmap](#),” the Federal Energy Management Program’s “[Microgrid System Project Development Checklist](#),” and the Urban Sustainability Director’s Network “[Guidance to Developing Resilience Hubs](#).”



**Figure 1. Resilience Hub Implementation Process**

- **Phase I – Planning and prefeasibility**
  - Establish a coalition of stakeholders and implementing partners.
  - Assess hazards and community risk factors.
  - Engage stakeholders to establish use case, site selection, and critical load determination—understand the services needed during “regular” and “emergency” scenarios, the load (or percent of load) that is critical. Note that future plans for increasing site load (e.g. electric vehicle charging) will impact system sizing and resilience design.
  - Establish use case—define goals, demonstration of need, and intended services to be provided in emergency events.
  - Select project site and building orientation (Stowe is at this stage but has not completed previous stages).
    - Assess building existing conditions and basic needs, inspect building HVAC systems, electrical panel, and roof.
    - Gain high-level understanding of interconnection points and hosting capacity.
    - Obtain contractor quotes, if relevant.

- **Phase II – Feasibility (focus of NREL work through C2C Expert Match)**
  - Assess technoeconomic feasibility. Assess system sizing, interconnection or upgrade costs, and total project lifecycle cost across various ownership models. Full project feasibility should include costs for microgrid inverters, critical load panels, site upgrades, and 3<sup>rd</sup> party peak prediction/battery dispatch.
  - Determine assumptions around ownership, operations, and maintenance of the energy system.
  - Determine the resilience hub community services needed to remain operational through disaster events and the electricity demands that comprise the building’s critical load.
    - Considerations around continuity of critical services
    - County jobs and family services
  - Engage utility to determine hosting capacity, interconnection feasibility, and initiate interconnection process
  - Understand governance and permitting authority, and establish grant administration point of contact.
  - Letters of commitment, formalization of ownership and operations, and memorandums of understanding MOUs.
  - Requests for Proposals (RFPs) procurement timelines (Gantt chart)
- **Phase III – Funding and Financing**
  - Develop a funding strategy—identify and secure funding/budget/financing.
  - Grant proposal development, submission, and contract negotiation
  - Obtain funding
- **Phase IV – Implementation**
  - Project kickoff
  - RFP, bid review, and contractor selection (the scope may be design; design-build; design, build, maintain; build; or maintain)
  - Project design
  - Permitting and authorization
  - Construction
  - Stakeholder outreach—inform community about services provided.
- **Phase V – Operations**
  - Develop, coordinate, deploy, and continue operations and services plan.
  - Ribbon cutting, celebration
  - Operate and maintain

**Table 1. Example Resilience Planning and Implementation Gantt Chart**

Task #	Description	Year 1: Planning				Year 2: Study				Year 3: Implementation			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Get organized, develop project proposal, obtain soft commitments.	X	X										
2	Assess risks.		X										
3	Engage stakeholders to determine hub service needs and critical loads.		X										
4	Conduct technoeconomic feasibility, determine optimal system size, including lifecycle cost under various ownership models.		X	X	X								
5	Engage stakeholders to finalize system sizing and ownership.				X								
6	Engage utility and permitting authorities to notify the intent of interconnection and permitting.				X								
7	Finalize budget, obtain formal implementing partner commitments, and sign MOU's.				X	X	X						
8	Obtain funding and/or financing.			X	X	X	X						
9	Develop RFP (professional service, design, construction of capital projects, ownership, maintenance, etc.), Issue RFP, review proposals, and award contract.						X	X	X				
10	Apply for interconnection and permitting.									X			
11*	Construct project, administer contract, implement programs and services.									X	X	X	X

Example Gantt chart can help project teams plan and implement process steps. \*Note that task 11 collapses many implementation subtasks into a single step. In reality, many details and unknowns will need to be addressed in this task, including operations, maintenance, and provision of services well beyond the charted time period.