Pitch Submission – 2019 Energy Action Network Summit

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4. Pitch Title:

Zero Energy Now – The Key to Decarbonizing Vermont's Existing Building Stock

5. Pitch Summary:

Vermont's declared goal of becoming ninety percent renewable by 2050 is especially problematic for the state's existing building stock, virtually all of which has been designed and built around fossil fuel heating and mechanical systems. *Zero Energy Now* is a coordinated, comprehensive approach for getting existing buildings off of fossil fuels. A combination of weatherization, heat pumps and/or biomass, and solar photovoltaics is installed to achieve 50% to 100% total fossil fuel energy savings. This strategy was piloted in 35 Vermont homes in 2016 and 2017 with an average total non-renewable energy savings of over 60%. With more careful program design and more robust incentives, we believe we can increase the average of these savings to well over 75% and expand the program focus from just homes to include commercial buildings, as well.

6. What Energy Sector(s) Does this Pitch Apply to?:

- **x Energy Efficiency**
- **x Electricity**
- **x Thermal Heating and/or Cooling**

7. Which Criteria Category(ies) Does it Address? (Check all that apply) :

- **x Significant reductions in fossil fuel use and GHG pollution from energy**
- **x Clean energy jobs**
- **x Energy security and resilience**
- **x A stronger and more just Vermont economy**
- **x Sustainable energy landscape**

8. Which Leverage Areas Would It Attempt to Shift? (Check all that apply) :

- **x Policy & Regulatory Reform**
- **x Public Engagement**
- **x Workforce Development/Workforce Transition**
- **x Technology Innovation**
- **x Capital Mobilization**

9. Scale of Impact on Vermont's Energy and Emissions Goals :

If the program is made financially attractive – it will encourage widespread adoption by building owners, and the impact could be enormous. If thermal energy consumption accounts for 42% of our energy use and 35% of our total emissions, and we are able to reduce those figures by 75%, the thermal energy use drops to 10.5% and the carbon to 8.75%. (See timeline below for specific goals.)

While it is not realistic to assume 100% adoption, the level of uptake is really a matter of cultural priorities. A shift in our cultural priorities will certainly be required to achieve our 2050 energy goals. Zero Energy Now provides a pragmatic, logistically viable, and economically feasible model for decarbonizing existing buildings – a critical component to achieving 90% by 2050. We want the ZEN program to be *up and running and ready* to advance and accommodate that cultural shift WHEN it happens.

10. Benefits/Costs of this Proposal for Vermont and Vermonters:

Beyond the significant energy savings, Zero Energy Now is essentially a reinvestment strategy – both for the building owner and for the Vermont economy. Instead of sending a substantial portion of our personal and business income out of state to fossil energy companies that wreak social and environmental havoc elsewhere in the world, this income is reinvested as added value in our buildings – sound improvements to the structure and indoor air quality, clean and quiet mechanical systems powered by clean, pollution-free renewable energy systems. And as this investment is made in Vermont buildings, local trades do the work and local jobs are created.

Our best performing projects in the pilots reduced the home's energy costs by well over 80%. Homeowners that were paying $3000 - $4000 dollars a year in fuel bills can now put the bulk of that money towards paying off loans that financed the ZEN project. Loan interest paid into Vermont's financial economy becomes available capital to fund more local investment by other building owners in their domestic infrastructure, and by local businesses interested in expanding their equipment and their employee capacity and workforce.

11. Collaboration:

In our 2016 and 2017 pilots, we collaborated with Green Mountain Power and Efficiency Vermont as well as 29 separate contracting businesses – weatherization contractors, and various mechanical and solar contractor-partners. A future program will need to continue to partner very closely with the contractors and businesses which implement and install the program components.

Efficiency Vermont is engaged with us now on an ongoing basis to develop strategies and structures for an effective roll-out of the program. We will need to expand this partnership to other Vermont utilities and the renewables industry, as well.

As financing is critical to widespread uptake of the program, we will look to partner closely with local financial institutions to develop a financing mechanism that is designed and built directly into the program to make financing simple, attractive, and accessible to building owners.

To help encourage and accommodate the "cultural shift" that will need to happen to get beyond our "business as usual" approach to addressing climate change, education and outreach from groups like VECAN, Vital Communities, and local energy committees will become a key part of our marketing strategy.

Groups like REV and the Biomass Center, and organizations like Vermont Technical College, and local vocational tech schools will be enlisted to assist with workforce development.

12. Decision-Makers :

Zero Energy Now will require leadership to grow and succeed. It will be imperative to identify prominent champions to carry the torch and encourage others to follow. Certainly, having someone like the Governor on board could really help, but beyond that, legislative and business leaders will be key. Beyond the prominent champions, Zero Energy Now program will need existing organizations in Vermont – businesses, financial institutions, utilities, and regulatory agencies, energy committees, and environmental groups – to see the potential for success and then work together to make projects happen.

If Zero Energy Now is going to succeed, leaders need to understand the significant potential savings and opportunities for Vermont businesses and building owners, and then support the effort with funding commitments for incentives that will get building owners' attention and create demand.

Keeping a sharp focus on the 2050 goal and on a realistic threshold of building owner affordability must guide the development of collaborative opportunities, regulatory structures, and legislative efforts.

13. Strategy and Key Considerations:

Zero Energy Now offers a simple, pragmatic approach to getting existing buildings off of fossil fuels. The 90% renewable by 2050 goal, however, is an enormous challenge.

Our immediate focus is to secure program funding to launch a statewide initiative to make the program financially viable, and then expand it as rapidly as we reasonably can to meet the demand and the climate-driven need.

Essential steps are as follows:

- **Partner with key organizations to secure program funding and support.**
- **Develop an effective management and administrative structure. This will include program staff along with individual Zero Energy Now project coordinators and general contractors to manage the jobs, coordinate financing, and keep the homeowner on track.**
- **Develop a modeling tool to determine project cost-effectiveness and sell project viability to customers.**
- **Recruit and train partner businesses and associations in weatherization, renewable energy, and heat pump and biomass technologies that will help implement the program.**
- **Develop a marketing plan that will build awareness of the program, and sell it effectively to building owners on a broad scale.**

- **Mobilize a range of specific incentive strategies to encourage early adopters to take the plunge and go "all in" on decarbonizing their homes;**
- **Develop longer term incentives in the form of interest rate buy-downs, tax rebates, and/or straight cash disbursements, which are critical both to overall affordability and to the encouragement to act that many people need to take on a project of this scale. Ongoing resources will be needed to fund these incentives.**

Recognizing that the technological, economic, political, and cultural landscape is shifting constantly, our focus, will always be on meeting the thermal mandates in Vermont's Comprehensive Energy Plan by whatever combination of strategies and available resources can be made to work at a given time. It will be important to be flexible and forward-thinking, and to look for potential partnering opportunities to help us achieve our goals as pragmatically as possible – within this shifting landscape.

14. Timeline:

Zero Energy Now has been piloted and proven to work. With a commitment to funding, we are prepared to ramp up and build out an infrastructure that can support the program's growth.

We have developed a timeline that will get the program fully functioning in the next three years, and complete 1,500 Zero Energy Now projects by 2025. With infrastructure built out to complete 12,000 projects a year by 2029, we will have the capacity to address 280,000 buildings by 2049.

15. Budget (includes $5000 average incentive per project):

	Year 1	Year 2	Year 3	Year 4	Each Year Years 5 - 9	Each Year Year 10 On
Program Design	130,000	10,000	10,000	10,000		15,000
Program Staff	180,000	265,000	300,000	400,000	**See**	5,265,000
Software	100,000	30,000	15,000	15,000		428,000
Training	30,000	30,000	50,000	60,000	**Attached**	90,000
Incentives/Svgs Guar.	70,000	155,000	510,000	1,010,000		64,000,000
Marketing/Outreach	70,000	80,000	115,000	115,000	**Budget**	210,000
Office	24,000	24,000	24,000	34,200		80,000
Total	**654,000**	**594,000**	**1,024,000**	**1,644,200**		**70,088,000**
Projects per year	10	25	100	200	x2 ea yr	12,800
Cost per Job per Year	**57,400**	**21,960**	**9,590**	**7,646**	**6,348**	**5,576**
Annual Energy $ Saved	20,000	70,000	270,000	670,000	1.47M+(x2)	50.94M+25.6M