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Executive Summary

Purpose
A recent study by Teller-Elsber et al. highlights that about 125,000 Vermonters live in “fuel poverty”, spending more than 10% of their income on energy (heat, electricity, and transportation). As a result, these families often experience long-term negative effects on their health and well-being. As Vermont aims to meet 90% of the state’s energy needs from efficiency and renewable sources by 2050, the issue of affordable and accessible energy—especially for lower income residents—is of primary importance. Lower income communities often face unique challenges accessing energy equity programs, including high upfront capital costs, old housing stocks, and related health and safety issues. As Vermont begins to build a low-carbon economy, it is important to consider how the low-carbon energy transition can benefit lower income populations. This report aims to contribute to the pressing issue of energy inequity in Vermont.

Energy Action Network (EAN)
During the spring of 2017, our Environmental Studies Seminar group partnered with the Energy Action Network (EAN) to explore innovative approaches to address the challenges of energy equity in Vermont. EAN is a network of nonprofits, businesses and government leaders that actively collaborate to “end Vermont’s reliance on fossil fuels and to create clean, affordable and secure electric, heating, and transportation systems for the 21st Century.” The focal points of the Network’s activities include capital mobilization, technology innovation, regulatory reform and public engagement. A key priority for EAN members is to ensure that lower-income Vermonters benefit fully from the 90% by 2050 energy transition. In this context, EAN tasked our group with developing case studies of a sample of “good practice” programs in Vermont and other states in order to identify some of the most effective strategies at providing lower-income Vermonters with the same energy efficiency and renewable opportunities as higher-income Vermonters.

Defining Lower-Income Communities in Vermont
The U.S. Department of Housing and Urban Development defines low-income families as households whose income does not exceed 80% of the median income for the area. Both the Heat Saver Loan and the NeighborWorks of Western Vermont use this definition to identify lower income communities in Vermont. Nonetheless, it is important to note that there are multiple ways of defining lower income communities—there is no single, standard definition across the energy equity program landscape.

Report Outline

Chapter 1 of this report provides an overview of the various structural and program barriers relating to energy efficiency programs. Chapter 2 focuses on in-depth analyses of four energy equity programs in Vermont that have aspects geared towards low-income communities. These programs range from large-scale state programs to small scale initiatives supported by local NGOs, addressing the needs of specific communities:

- **eVolve Panton**: A community-wide, rapid energy transformation pilot project aiming to bring significant energy improvements to over 80% of homes in Panton, VT and gather data to assess program replication.

- **Vital Communities**: A community-based nonprofit in the Upper Connecticut River Valley, involved in two energy programs: i) Solarize: a campaign, which aimed to double the amount of residential solar in the target region and ii) Weatherize: a campaign targeted at weatherizing homes in 14 Vermont towns.

- **NeighborWorks of Western Vermont (NWWV)**: A nonprofit organization dedicated to providing three major counties, as well as certain parts of others such as Orange and Chittenden counties, in southwestern Vermont with energy efficiency services.

- **Heat Saver Loan**: A state program providing loans at affordable terms to help Vermonters install renewable energy technologies and make energy efficiency upgrades in their homes.\(^5\)

Chapter 3 evaluates the success of these energy equity initiatives in Vermont, highlighting the programs’ strengths and challenges. Chapter 4 focuses on six out-of-state case studies that align with the focus of the four Vermont case studies for comparative analysis. In order to facilitate the comparison, a Program Summary was developed for all the programs.

**Key findings**

The key strengths of the four energy equity program in Vermont are: i) simple eligibility processes; ii) leveraging partnerships; iii) integrated energy efficiency education; iv) successful community-based strategies; and v) coordinating program delivery with other services. Some of the key challenges are: i) the lack of strategies geared towards renter and multifamily households; ii) underdeveloped transportation programs; iii) insufficient emphasis on health and safety issues; iv) securing permanent sources of funding; v) insufficient program participant data collection; vi) distrust factor; vii) lack of awareness and limited outreach programs; and viii) reaching fuel-poor households that don’t qualify for energy equity programs. In order to address these challenges and reinforce the strengths of the four Vermont programs, we propose several lessons to draw from the six out-of-state case studies: i) increasing community involvement in program design; ii) adopting holistic approaches; iii) addressing renters and multi-family units; iv) reevaluating programs; v) securing stable sources of funding; and vi) creating mechanisms to ensure consistent data collection.

# Cross-Program Comparison

<table>
<thead>
<tr>
<th></th>
<th>eVolve Panton</th>
<th>Weatherize Upper Valley</th>
<th>Solarize Upper Valley</th>
<th>Heat Saver Loan</th>
<th>NeighborWorks of Western Vermont</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Community-wide rapid energy transformation pilot focused in the community of Panton, VT and supported by Green Mountain Power &amp; Efficiency Vermont.</td>
<td>Non-profit program that uses partnerships with local contractors to provide weatherization services to lower income residents in the Upper Valley.</td>
<td>Non-profit effort that aims to double the amount of residential solar in the Upper Valley through community outreach and partnerships</td>
<td>State-wide program that provides loans at affordable terms to help Vermonters install renewable energy technologies and make energy efficiency upgrades in their homes.</td>
<td>A nonprofit conglomerate of services for middle to lower incomes customers offering energy audits, repairs, loans, and energy efficiency education.</td>
</tr>
</tbody>
</table>
| **Energy Sector**    | • Residential heating  
• Electricity  
• Renewable energy  
• Transportation | • Residential heating  
• Renewable energy  
• Electricity | • Residential heating  
• Renewable energy  
• Electricity | • Residential heating  
• Renewable energy  
• Electricity | • Residential heating  
• Renewable energy  
• Electricity |
| **Target Population**| Residents of Panton, VT (no income targeting) | Lower income residents of the Upper Valley  
Upper Valley Residents (no income targeting) | Lower and middle income customers across Vermont  
Upper Valley Residents (no income targeting) | Low to middle income Vermonters across three counties | Low to middle income Vermonters across three counties |
| **Eligibility**       | Homeowners in Panton, VT | Homeowner that resides within the program service area | Homeowner that resides within the program service area | Owner-occupied properties | Open to middle to low income to three service counties |
### Outreach Strategies
- August 2016 kick-off event with whole town
- “Early adopters” pool meant to encourage more participation
- Utilizing pre-established community channels
- Volunteer participation
- Community channels of trust
- Volunteer teams
- Direct marketing by participating vendors,
- Print materials
- Website
- Employers
- Flyers
- Open Forums
- Town Clerks
- Energy Meetings

### Partnerships
- Efficiency VT
- GMP
- Panton Town Select Board
- Local contractors
- Community teams
- Other energy organizations
- Local Contractors
- Community participants
- Energy programs
- DPS
- Efficiency Vermont
- Credit unions
- VEIC
- Efficiency VT
- Department of VT
- DOE

### Participation
- 7 months into the program, 75 home walkthroughs have been completed
- 27 contracts granted over January 2017 to present
- 370 contracts granted over 2 years
- 249 loans granted between November 2014 and September 2016
- 600 to 650 contracts over one year (2016)

### Timeline
- Three phased approach starting Aug 2016, with proposed finish time in Dec 2017
- Pilot program running from January to May, 2017
- Three round process completed over the period of 2 years (2014-2016)
- Pilot started in 2014, currently in post-pilot phase
- Started in 1986 in Rutland, has grown to three counties for full service.

### Savings
- No data at this time
- 26% energy savings
- 1,897 tons of CO₂
- No data
- No data at this time

### Challenges
- Passing by timeline benchmarks
- Health concerns
- Sidelining transportation
- Learning on the job
- Lack of customer motivation
- Limited volunteer capacity
- Limited volunteer capacity
- No permanent sources of funding
- Limited resources to conduct reporting activities
- Inconsistent source of funding
- Marketing to customers outside of Rutland county
- Outreach relies on customer enthusiasm
<table>
<thead>
<tr>
<th>Strengths &amp; Limitations</th>
<th>eVolve Panton</th>
<th>Weatherize Upper Valley</th>
<th>Solarize Upper Valley</th>
<th>HSL</th>
<th>NWWV</th>
<th>Out of state programs that address identified limitations</th>
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<td>✓</td>
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<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>• Clean Vehicle Rebate Project &lt;br&gt;iCanConserve</td>
</tr>
</tbody>
</table>
Chapter 1: Barriers to Lower Income Vermonters

Lower income Vermonters face a series of barriers to participating in energy programs, which further exacerbates energy inequality throughout the state. These barriers fall broadly into two categories: structural barriers and program barriers. Structural barriers are a result of the current circumstance of the participant that increases the difficulty of participation, while program barriers are characteristics of the energy programs that deter enrollment.

1.1 Structural Barriers

Lack of Capital
The lack of capital and/or credit is a significant barrier for lower income residents. Energy programs often involve large upfront costs, which lower income Vermonters either cannot afford or cannot justify. Money spent on the costs of these energy programs results in a tradeoff with other household needs, such as childcare, medical expenses, or groceries. Many lower income Vermonters are not willing to sacrifice these necessities to participate in energy programs. In addition, most of the financing options come in the form of low interest loans and other formats that require sufficient credit, which acts as a financial barrier for lower income applicants.

Older Housing Stock
A majority of Vermont’s rural residences are old housing stock and as such they are more likely to have structural or design issues that make them unviable for efficiency or renewable energy retrofits. Remediation cost are an added financial burden on the resident. Efficiency inspections may also reveal health and safety issues—such as asbestos, mold, or lead—that must be addressed before a project can begin. Many low-income Vermonters are risk-averse to beginning energy projects, in fear of discovering more costly work needed that is ineligible for program funding. In addition, since older homes were designed without consideration of modern technology, excessive tree shading or poor roof design may be prohibitive to solar installation. Finally, some roofs may require significant repair or redesign, adding to total costs.

Renter Households: The Split Incentive-Problem
Another type of barrier is the lack of incentives—a key challenge relating to renter households in Vermont. A recent study by Teller–Elsberg et al. (2016) indicates that low-income households in Vermont are more likely to be renters. In fact, 46% of the households in the lowest income decile (below $14,205 in annual household income

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2 California Energy Commission, 34.

in 2012) are renter households—a share that has been increasing since the economic recession. The exclusion of rental properties is especially problematic, given that they are already prone to the split incentive problem. This is a situation in which the property owner declines to make energy efficiency upgrades because the owner will not reap the energy benefits. Similarly, renters lack the incentive to make efficiency upgrades on properties they do not own. Due to the misalignment of interests, efficiency upgrades are less likely to be installed in rented homes. Another related difficulty is that renters might lack the necessary property rights to install energy upgrades or might need the owner’s permission to accept certain subsidized upgrades. Similarly, tenants are often reluctant to ask for energy efficiency improvements, as they fear that their rent might increase.

**Multi-Family Households**

Scavo et al. (2016), emphasizes that, historically, state efficiency programs tended to focus on single-family properties “leaving significant energy savings unrealized” in the multifamily housing sector. Indeed, multifamily households face a number of unique challenges. Firstly, multifamily houses vary greatly in building age, building size, tenant incomes, ownership structures, and financing structures. As a result, it is difficult to develop a one-size-fits-all model for them. In addition, Scavo et al. (2016) highlight that multifamily buildings tend to operate based on an annual budget, making it “difficult to invest in multiyear projects with long payback times.”

**Rural and Underserved Communities**

Rural residents often face problems as part of remote or underserved communities. For instance, they may face certain energy and fuel restrictions based on their service area. They also tend to receive the least amount of marketing attention from energy contractors and businesses due to the low impact nature of rural areas. In fact, Jordan Scavo et al. highlights “the additional effort and investment needed to serve the low-income market has limited the number of... companies recruiting customers from these communities and therefore the education of and opportunities available to those communities.”

**1.2 Program Barriers**

**Transaction Costs and Mobility Issues**

Although energy efficiency programs and services are generally delivered at little to no cost, participation can be limited due to transaction costs. For instance, low-income families are often unable to take time off from work to apply for programs, complete their income verification paperwork, meet contractors, or learn about new systems. Similarly, seniors and people with disabilities might experience transportation-related issues, which might make it difficult for them to supply income qualification paperwork.

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5 Scavo et al., 29.
6 Ibid.
7 Ibid.
9 Scavo et al., 38.
10 Ibid.
11 Ibid.
12 Ibid.
14 Scavo et al., 51.
15 Ibid.
**Insufficient Outreach and Lack of Awareness**

A key program barrier for low-income residents is a lack of awareness about energy equity programs and funding opportunities for energy projects. Programs have a difficult time reaching low-income individuals who are not actively seeking energy information themselves. A lack of general awareness about energy systems and benefits is a serious barrier to motivation for project participation among low-income residents. Central to this problem is that outreach efforts are often poorly framed for a low-income audience. In fact, energy equity programs generally do not focus sufficiently on non-energy benefits, such as improved health, safety and comfort, reduced risk of utility rate increases, and reduced costs associated with shutoff.\(^\text{17}\) In addition, outreach efforts are also frequently hindered by a lack of trust among low-income Vermonters for program marketers and partners. Finally, Scavo et al. (2016) comments that lower income customers often think that adopting “expensive new technologies” (such as solar) is simply beyond their reach, as they are already “strugg[ling] to conserve energy and money.”\(^\text{18}\) As a result, even if they are aware of energy equity programs, they are often reluctant to participate in them.\(^\text{19}\)

**Inadequate Sources of Funding and Capacity**

Sources of funding for energy programs are difficult to secure. Due to the lack of sufficient resources, programs are often unable to reach a larger customer base. In other cases, funding sources are subject to cuts or expirations, which further limit the programs’ ability to function properly. Finally, programs also often lack staff and other resources, resulting in less efficient implementation or long waiting lists.

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17 Drehobl and Ross, 6.
18 Scavo et al., 48.
19 Ibid.
## 2.1 eVolve Panton

### eVolve Panton

<table>
<thead>
<tr>
<th>Description</th>
<th>Community-wide rapid energy transformation pilot focused in the community of Panton, VT and supported by Green Mountain Power and Efficiency Vermont.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Low Income Focus</td>
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### Energy Sector

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<td>Application &amp; Paperwork</td>
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### Target Population

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<th>Residents of Panton, VT (no income targeting)</th>
<th>Community Involvement</th>
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### Eligibility

<table>
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<tr>
<th>Homeowners in Panton, VT</th>
<th>Renters</th>
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### Outreach Strategies

<table>
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<tr>
<th>Aug 2016 kick-off event with Town</th>
<th>Results of “early adopters” pool meant to encourage more participation</th>
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<tbody>
<tr>
<td>Multi family</td>
<td></td>
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### Partnerships

<table>
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<th>Efficiency VT</th>
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<th>Transportation</th>
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### Participation

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<th>7 months into the program, 75 home walkthroughs have been completed</th>
<th>Renewable Energy</th>
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### Timeline

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<th>Health and safety</th>
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### Savings

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### Challenges

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<th>Learning on the job</th>
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2.1.1 Overview of Project

eVolve Panton is a “community-wide rapid energy transformation pilot” focused on the town of Panton, VT and supported by both a utility, Green Mountain Power [hereafter referred to as GMP] and a Vermont nonprofit organization, Efficiency Vermont. The project was introduced to the town in early August of 2016 after GMP sited a new solar array within the community bounds. It is currently in the thick of it’s efforts to bring energy transformation to all 255 homes and municipal buildings in the Panton community.

GMP and Efficiency Vermont share the same concern that Vermont isn’t currently on track to reach a lofty state goal to use 90% renewable energy by 2050. This shared motivation is one of the pilot’s main drivers, as it brought the pilot’s unique collaborative approach. The Panton program is a pilot by which to assess the capabilities and advantages of efficiency improvements using a community-wide model, rather than an individual customer model. The long term hope, is that eVolve becomes a full blown program that is transferable to other communities across the state. The platform of eVolve Panton not only offers a pilot for cooperative project management and a community-wide approach to energy transformation initiatives, but also aims to complete the project within one year. The motivation behind this ambitious time frame is to test whether the pace of adopting and undertaking community energy transformation efforts can accelerate, given the relatively slow going process associated with individual customer engagement strategies to energy transformation.

The primary goals of the pilot is to “reduce energy costs, lower fossil fuel use, and improve comfort” for a large percentage of Panton. This will come in the form of in-home energy audits and subsequent weatherization implementation, retrofitting for several municipal buildings. The second goal is to collect data on residential energy usage so that the town will know its energy use and corresponding costs and for easy tracking of energy and cost-saving improvements. Because eVolve Panton is a pilot program, the hope is that the work done in Panton can be translated to other towns in Vermont. Having extensive data collection will be a big help to determining the effectiveness of eVolve Panton, and give concrete numbers that could be used as a marketing tool when proposing similar projects in other towns. Spurred by the relationship formed between GMP and Panton with the construction of the solar array, eVolve Panton has organized the approach into a three phase project.

5 Efficiency Vermont. “eVolve Panton”. March 8, 2017
7 Efficiency Vermont. “eVolve Panton”. March 8, 2017
9 Interviews with Brian Otley & Paul Markowitz, eVolve Panton NESA Presentation
process: (1) upgrades to town municipal buildings and transportation services, (2) residential transformation work with an initial small group of customers, and (3) outreach to involve and engage residential customers who do not immediately ‘opt-in’ in order to accomplish a truly “community-wide transformation”.10

2.1.2 Program Approach

eVolve Panton is operating with a three-phase approach starting with a focus on municipal improvements and then moving on to a two-part effort to engage a large portion of Panton homeowners.

Phase 1: Upgrades to Municipal Buildings and Transportation Services

After completing an energy audit of Panton’s Town Hall and Town Garage, members of the Panton select board are currently deciding the scope of energy improvements the town wishes to move forward on. The initial costs for the subsequent weatherization, heat pump installation, and lighting upgrades will be funded by GMP, Efficiency VT, and Panton, with Panton paying that back over a period of 10 years.11 The intended source of the payback funding will come from the Town’s current spending level on electricity and fossil fuel costs, which is funded by town property tax revenue.12 The town may also use some of the tax revenue from the solar array to fund cosmetic and historical restorations to the Town Hall in conjunction with the energy transformation work, however this funding is purely dependent on the decision-making of Panton town leaders.13 In addition to the municipal buildings the pilot will upgrade the town Park and Ride parking lot with new paving, installation of a solar powered street lamp, and an electric vehicle charging station.14 This work will be funded in the same manner as the municipal building upgrades.

Phase 2: Initial Residential Transformation Work - Utilizing an ‘Early Adopter Pool’

Overview of Residential Work:
The goal of the program is to have all 255 homes in Panton go through initial home-walkthroughs, scheduled energy audits, and finally complete and implement suggested energy transformation improvements. These improvements will focus on “total energy” projects such as, thermal and electricity improvements, installation of more efficient heating and cooling systems (i.e. cold climate heat pumps), transportation, and replacement of inefficient appliances.15 eVolve Panton is adopting a ‘one-stop-shop’ approach to the improvement implementations by “contracting with the contractors” to do the in-home work.16 The financial offer for such improvements will be a ‘pay-through-savings’ model. Broken down, Efficiency VT and GMP will pay for the upfront costs of completing the improvement work and the subsequent energy savings customers experience will then pay that cost back. These savings come in the form of a monthly charge equal to or less than their existing energy bills.17

Early Adopters Pool - GMP and Efficiency VT know that a pilot as ambitious as eVolve Panton will require a lot of learning, which is why initial efforts to improve the efficiency of the community will begin with a group of 20 residential customers who will be fully aware of their role as the pilot’s “early adopters pool”.18 These

10 “Panton eVolve Program.” Green Mountain Power - Initiatives.
14 “Panton eVolve Program.” Green Mountain Power - Initiatives.
15 Efficiency Vermont. “eVolve Panton”. March 8, 2017
16 Efficiency Vermont. “eVolve Panton”. March 8, 2017
17 Efficiency Vermont. “eVolve Panton”. March 8, 2017
customers will help GMP and Efficiency VT to experiment and learn from mistakes in order to define and design a program financial offering that is both viable and attractive to customers. This initial “early adopters pool” will not only hone the pilot’s financial offering, but also hopefully produce success stories that can then be used as a marketing platform by which to reach out to other members of the Panton Community.

**Phase 3: Involve and Engage Residential Customers Who Did Not Immediately ‘Opt-in’**

By using the success stories from the early adopters pool as a marketing tool, the pilot will then move on to encourage a greater percentage of the Panton community to engage in energy transformation projects. Because these marketed experiences would relate specifically to the Panton eVolve pilot and the Panton community, the this strategy aims to normalize the efficiency measures in order to significantly increase program participation. Home energy reform behavior can associate to high status and can inherit a stigma within lower income populations, which reduces program participation. Normalization efforts, such as eVolve Panton’s can help overcome this barrier to participation and generate critical inclusion of a wider variety of income ranges.

### 2.1.3 Target Population

The target population of this pilot is the entire community of Panton, VT. The small 14,272-acre agricultural town is located in Addison county Vermont and borders the southeastern shore of Lake Champlain (Figure 1). Two creeks run through and to the eastern side of the town, Dead Creek and Otter Creek, lending the town abundant fishing, birding, and wildlife. The median household income of the census tract that includes both the towns of Panton and Vergennes, Vergennes being a relatively wealthier area, is $54,000 annually – the same figure attributed to the state median household income. 83.1% of the census tract households are owner occupied and 10.2% of the population is below the poverty line, in comparison to state figures of 71% and 15% respectively.

![Figure 2. Historical map depicting the town of Panton and the proximate town of Vergennes](http://www.mapsofantiquity.com/store/Antique_Maps_-_United_States/Northeast/Vermont/Panton,_Panton_Town_of,_VT_-_Vermont/inventory/pl?id=VER040#.WPZsmxMrJp8)
2.1.4 Eligibility
This pilot does not have any eligibility requirements other than being a resident of Panton, VT. All residents will get home visits regardless of income. However, it is possible that the offer extended to customers may not be financially feasible for all members of the Panton community. All customers of lower socioeconomic status that might not be able to afford any weatherization work or the upfront costs of new technologies will have the opportunity to combine their offer with the Weatherization Assistance Program.

2.1.5 Annual Participation
The population of Panton is 677 people or 255 households. Given the goal of reaching the entire community of Panton within a year from August 2016, the proposed annual number of participants will be 255 households. Currently only 1/3 of homeowners have signed up for the pilot, approximately 75 households. As of November 2016, 27 home visits and 9 energy audits have been completed (Figure 2). However given the phase breakdown of the pilot - involving an initial ‘guinea pig’ group, followed by more expansive participation - this is to be expected.

![eVolve Panton progress](https://www.facebook.com/evolvepanton/)

**Figure 3.** Facebook update graphic on eVolve Panton participation progress, statistics refer to status as of September 27, 2016.

2.1.6 Energy Sector
The pilot’s target energy sector is mainly residential and municipal heating and electricity, however eVolve Panton also includes some smaller efforts focused on transportation and renewable energy.

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28 Efficiency Vermont. “eVolve Panton”. March 8, 2017
29 https://www.facebook.com/evolvepanton/
2.1.7 Savings Generated
The pilot is currently working on generating a financial offer for customers and gathering data about energy usage and cost in order to later calculate savings.

2.1.8 Outreach Strategies
Once details and financial offerings have been finalized from the early-adopters pool of customers, and data have been collected from their first few months of implementation these test runs will be used and circulated throughout the community as a way to encourage other community members to sign up. Additionally, the main messaging standpoint of the pilot is focused on efficiency as a savings generator with the hope that customers can receive positive cash flow, in the form of lower energy bills, within the first month.\textsuperscript{30}

2.1.9 Unique Factor
eVolve Panton is unique in its community scale approach to energy transformation, rather than on an individual customer level; its collaborative multiple-stakeholder management; and it’s incredibly fast paced time frame - one year - for both adoption and implementation.

2.1.10 Strengths
The strengths of this program center around the pilot program approach, which allows for a lot of learning and flexibility in order to achieve the most success. The core advantages inherent to eVolve Panton are as follows:

   Community-wide Approach
   This is the first pilot of its kind in Vermont to address the energy transformation needs of an entire community, and at a pace ten times as fast as what’s been observed in other Vermont programs.\textsuperscript{31}

   Cross-industry Collaboration\textsuperscript{32}
   This pilot offers a lot of insight into the effectiveness of cross-field cooperation. eVolve combines multiple stakeholders in the realm of energy transformation – GMP, a utility; Efficiency Vermont, a non-profit organization; and community members of Panton VT (Figure 4). Seeing how this dynamic could improve or hinder an efficiency project as ambitious as eVolve Panton will be valuable experience for future collaborative endeavors and for future iterations of the pilot.

   Data Collection
   This pilot will be an important source of energy usage and savings data – specifically on the scale of an entire community. Collecting data before and after the efficiency improvements provides a simple and concrete way to quantify the benefits of such efforts.

2.1.11 Challenges
Current challenges of the pilot revolve around its incredibly fast time frame as well as the need to first generate success stories and customer data in order to reach a greater portion of the Panton community.

\textsuperscript{30} Otley, Brian. March 15, 2017.
\textsuperscript{31} Otley, Brian. March 15, 2017.
\textsuperscript{32} http://www.suncommunitynews.com/articles/the-vermont-eagle/evolve-project-should-reduce-energy-costs-for-panton-residen/
Passing-by Timeline Benchmarks
The pilot launched in August of 2016, and the current goal is to establish an early-adopter pool by late April. This slow progress points to challenges in scheduling and meeting deadlines.\textsuperscript{33} The most time consuming aspect has been the tedious process of generating the program financial offering. Generating an offer that will be attractive to Panton community members as well as viable for Efficiency Vermont is not an easy or quick task. Nonetheless, the program managers are hopeful the eventual offer will be accessible to all members of the Panton community regardless of income, although the backlog associated with the Weatherization Assistance Program poses a new question of what eVolve Panton can offer lower-income residents in the near term.\textsuperscript{34}

Health Concerns Lead to a Program Dead End
A more specific challenge relates to health issues found during home visit walkthroughs. Currently there have been instances of vermiculite in the attics of Panton residents and issues with foundation walls.\textsuperscript{35} The challenge in this instance is that remediation work needs to be done before any efficiency work can be completed and such work can’t be financed through the eVolve pilot, so the customer must incur that cost.\textsuperscript{36} However, many customers do not have the necessary funds for such work.

Sidelining of Transportation Initiatives
The energy aspects associated with transportation are mostly sidelined in the efforts of this pilot. Other than collecting data for more information about town energy usage, and the renovations to the town Park & Ride, there is little effort towards improving transportation in Panton. Given that lower income residents are often spending the largest proportion of their energy budget on gasoline and transportation fuel, de-prioritizing transportation energy efforts appears as a mismatched strategy in relation to energy equity.

Learning on the Job
eVolve Panton is relying heavily on its “early adopters pool” to help tease out an effective and attractive program offering. While this “learning on the job” approach means that the pilot will probably have an offer that is incredibly specific and tailored to the Panton community, in the context of eVolve’s other goals this approach can

\textsuperscript{33} Otley, Brian. March 15, 2017.
\textsuperscript{34} Markowitz, Paul. March, 11, 2017.
\textsuperscript{35} Markowitz, Paul. March, 11, 2017.
\textsuperscript{36} Markowitz, Paul. March, 11, 2017.
be challenging. First, learning on the job requires an immense amount of focus and resources. One such resource is time - something that eVolve Panton does not have much of. With the goal of surveying, assessing, and implementing energy changes in 255 homes as well as several municipal buildings, eVolve Panton will always be crunched for time and the approach of learning with an initial test group does not help this cause. Secondly, eVolve Panton is meant to be a pilot program for community-wide energy transformation, meaning that the work done in Panton should be able to translate to other communities or towns in Vermont. If the eventual program offering is too tailored to the community of Panton, when and if eVolve is translated to another town, the program may have to start again from scratch.

### 2.1.12 Program Limitations

The limitations of eVolve Panton seem to stem from the community’s demographics that include a low percentage of renters as well as a small percentage of low-income residents.

**Lack of Renter Focus**

In a town with very few renters, it would be a waste of time and resources to focus efforts towards finding a solution to the split incentive issue between landlords and tenants. Therefore, translating eVolve’s no-renter model to a more renter-heavy community would require a lot of tweaking.

**Small Proportion of Lower Income Residents**

eVolve Panton also lacks focus towards serving lower-income residents. Only 10% of Panton lives below the poverty line, therefore the focus of the pilot’s financial offerings will be centralized around a higher median income majority. Although, with a goal of getting 100% participation from the Panton community, it could be possible that GMP and Efficiency Vermont will siphon off resources to ensure that these lower-income members can experience the same efficiency gains as their peers.

### 2.1.13 Suggestions to Improve the Program

Given that the pilot in still in the midst of getting started, it is difficult to provide concrete suggestions on how the pilot could improve. However, an article published in the *Addison County Independent* notes that town members were disappointed with the initial rollouts of the pilot as both GMP and Efficiency VT began to feel the toll of such an ambitious undertaking. With so many collaborative stakeholders and an approach that involves multiple phases, the pilot may benefit from a timeline that is more lenient in the learning process - the first ‘early adopter’ phase - and then ramps up speed once the financial offer is established and more members of the community become involved.

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2.2 Vital Communities Campaigns

Vital Communities is a nonprofit organization in White River Junction. Its main purpose is to organize collaboration between citizens, organizations, and municipalities in the Upper Connecticut River Valley on a variety of community issues. The group has six major divisions, including an energy program. Vital Communities’ Energy branch provided program organization, as well as outreach and marketing support to community volunteer groups, which conducted Solarize and Weatherize projects in the Upper Connecticut River Valley.

<table>
<thead>
<tr>
<th><strong>Solarize Upper Valley</strong></th>
<th><strong>Strengths &amp; Limitations</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Aims to double the amount of residential solar in the Upper Valley through community outreach and partnerships</td>
</tr>
<tr>
<td><strong>Energy Sector</strong></td>
<td>Renewable energy &amp; electricity</td>
</tr>
<tr>
<td><strong>Target Population</strong></td>
<td>Upper Valley Residents (no income targeting)</td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td>Homeowner that resides within the program service area</td>
</tr>
<tr>
<td><strong>Outreach Strategies</strong></td>
<td>Community channels of trust, Volunteer teams</td>
</tr>
<tr>
<td><strong>Partnerships</strong></td>
<td>Local contractors, Community participants, Other energy organizations</td>
</tr>
<tr>
<td><strong>Participation</strong></td>
<td>370 contracts granted over 2 years</td>
</tr>
<tr>
<td><strong>Timeline</strong></td>
<td>Three round process completed over the period of 2 years (2014-2016)</td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td>1,897 tons of CO2</td>
</tr>
<tr>
<td><strong>Challenges</strong></td>
<td>Limited volunteer capacity</td>
</tr>
<tr>
<td><strong>Strengths</strong></td>
<td>Low Income Focus</td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td>Renters</td>
</tr>
<tr>
<td><strong>Participations</strong></td>
<td>Multi family</td>
</tr>
<tr>
<td><strong>Partnerships</strong></td>
<td>Transportation</td>
</tr>
<tr>
<td><strong>Timeline</strong></td>
<td>Renewable Energy</td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td>Health and safety</td>
</tr>
<tr>
<td><strong>Challenges</strong></td>
<td>Leveraging Partnerships</td>
</tr>
<tr>
<td><strong>Strengths</strong></td>
<td>Education</td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td>Permanent Funding</td>
</tr>
<tr>
<td><strong>Participations</strong></td>
<td>Data Collection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Weatherize Upper Valley</strong></th>
<th><strong>Strengths &amp; Limitations</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Uses partnerships with local contractors to provide a weatherization service to low-income residents in the Upper Valley, facilitated by local volunteer teams.</td>
</tr>
<tr>
<td><strong>Energy Sector</strong></td>
<td>Residential heating</td>
</tr>
<tr>
<td><strong>Target Population</strong></td>
<td>Lower income residents of the Upper Valley</td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td>Homeowner that resides within the program service area</td>
</tr>
<tr>
<td><strong>Outreach Strategies</strong></td>
<td>Utilizing pre-established community channels, Volunteer participation</td>
</tr>
<tr>
<td><strong>Partnerships</strong></td>
<td>Local contractors, Community teams, Other energy organizations</td>
</tr>
<tr>
<td><strong>Participation</strong></td>
<td>27 contracts granted over January 2017 to present</td>
</tr>
<tr>
<td><strong>Timeline</strong></td>
<td>Pilot program running from January to May, 2017</td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td>26% energy savings</td>
</tr>
<tr>
<td><strong>Challenges</strong></td>
<td>Lack of customer motivation, Limited volunteer capacity</td>
</tr>
<tr>
<td><strong>Strengths</strong></td>
<td>Low Income Focus</td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td>Renters</td>
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<td><strong>Participations</strong></td>
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<td><strong>Participations</strong></td>
<td>Data Collection</td>
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</tbody>
</table>
2.2a. Solarize Upper Valley

2.2a.1 Project Overview

Vital Communities’ Solarize is a project dedicated to incentivizing small-scale residential solar projects. The campaign lasted two years and covered 24 towns. The campaign was based on a model created in Portland, Oregon in 2007. Vital Communities partnered with SmartPower, a national nonprofit marketing firm that aided in the 2012 Solarize Connecticut project. SmartPower provided templates and lessons learned from other states’ solarize campaigns in the first stages of the project development.¹

The Solarize Upper Valley project utilized volunteer groups and the involvement of local businesses to achieve their goal. The program took place in three rounds. Each round focused on a different geographic area, and was composed of three phases. The goals of the program were to prove that solar could be effective even in rural areas, and to double the amount of solar in each of the partner communities.²

By the end of the three rounds, the project created 370 new solar homes, generating 2.2 MW of renewable energy.

2.2a.2 Program Approach

The program was conducted in three consecutive “rounds” of solar installation. Each round focused on a different collection of towns, which grouped into various separate solar campaigns. At the beginning of each round, Vital Communities (VC) looked at applications in response to a Request for Proposals from any of the 69 towns in VC’s service region. The applications required a signed letter from a high-ranking local official (most often a selectboard member) indicating community support for the project and volunteer outreach capacity. Applications were evaluated based on commitment to clean energy and sustainability, experience with community outreach, capacity for a volunteer team, and creative thinking.³

The community selection process was an important factor in ensuring the efficiency and productivity of the Solarize Campaign. VC also undertook a rigorous selection of partner installers. Installers were able to bid on any or all of the established Solarize communities. Proposals included three sections: core proposal and general information about company experience and implementation plan, customized proposal specific to the Solarize community, and equipment and pricing proposals.⁴

The Solarize communities were responsible for choosing their respective partner installers. The first phase, or pre-campaign, included organizing the volunteer teams, selecting the partner installers and planning the outreach campaign. The local partner installers were an important part of the campaign, because

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³ Solarize Upper Valley, 2014.
⁴ Solarize Upper Valley, 2014.
they provided discounts on installations, and helped build community trust in the project. The second phase included on-site visits and contract signing, as well as the start of installations. The second phase ended with the deadline for contract signing. The deadline was an important motivator for people to go solar with the help of the program, rather than without it. The final phase included completion of the remainder of the installations.

Outreach was a large focus for the project. Volunteer teams were responsible for educating the local population about solar energy and providing information about the program. In order to most efficiently reach the target population, project teams utilized local channels of trust that were already in place. Key components of outreach included launch events, open houses, community email discussions and newsletters, tabling at community events, and direct outreach to community members who signed up for updates. Other initiatives included posters, a school competition for yard sign design, targeted mailing to residents with promising solar sites, and progress meters. Media outreach was also conducted directly by VC, including stories on state public radio and television stations. SmartPower also helped VC create a Solarize Upper Valley brand and logo. The Vital Communities website included pages specific to each Solarize community. The costs of installation were borne by residents, and the local campaigns were organized by volunteers. Vital Communities acquired generous funding to support staff time from the John Merck Fund—an organization based in Boston, Massachusetts, that is devoted to supporting clean energy initiatives in New England.

**2.2a.3 Target Population**
This program was designed to target the people lacking significant barriers to going solar. This included “fence-sitters” and skeptics of solar technology, those who had not considered solar themselves, and others, who would not face a major financial burden. For this reason, the project targeted mostly middle to high-income residents. The campaign was able to reach a sizable group of people who did not believe solar was a possibility. The results of a survey conducted after the first round show the views of residents that requested site visits, and those that signed contracts.

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7 Solarize, 2014.


9 Sarah Brock, 2017.
2.2a.4 Eligibility
Home ownership, and residence within the target towns were the only requirements for participation. The application process for the program itself was simple. Interested parties needed only sign up for a site visit and decide whether or not to go solar. While installation was completed in a few days, securing state incentives and utility approval took about two weeks. The brunt of the application and approval process was outside of the purview of Vital Communities, and instead relied on approval from state financing and incentive programs.

2.2a.5 Annual Participation
370 solar contracts were signed across the three rounds over two years.

2.2a.6 Energy Sector
Electricity through the form of renewable energy generation.

2.2a.7 Savings Generated
Solar energy generated from all three rounds totaled 2.2 MW, which is equivalent to an annual decrease of 1897 metric Tons of CO₂ emissions. By going solar through the Solarize Upper Valley campaign, homeowners saved 15 to 40 cents per watt off the base price of installation thanks to the tiered pricing incentive.

2.2a.8 Outreach Strategy
Each volunteer group was able to design an outreach approach during the first phase of the project that worked best for their specific community. They focused on pre-established channels of trust and identified where community members gathered, shopped or got their news, in order to be efficient and highly visible. Outreach efforts included event hosting, the use of community partners, news media, e-outreach, direct/targeted outreach, posters, and signs.

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12 Vital Communities, 2017.
13 This is the only savings metric recorded by Vital Communities.
**2.2a.9 Unique Factor**
The campaign was organized in a series of rounds, allowing Vital Communities to address challenges that may not have been anticipated by the volunteer groups and increase efficiency in subsequent rounds. The team structure of the organization allowed for a more targeted approach that also helped increase project efficiency.

**2.2a.10 Strengths**

*Program Structure*
By organizing the program into three rounds, VC was able to evaluate challenges as they arose, and address them in the following rounds.

*Use of Local Entities*
A combination of volunteer groups, local partners, and pre-established channels of trust, allowed for efficient outreach and implementation on a case-by-case approach. Each round and each regional group used different strategies and approaches based on the specific needs of its location. A combination of volunteer groups, local partners, and pre-established channels of trust, allowed for efficient outreach and implementation on a case-by-case approach. Each round and each regional group used different strategies and approaches based on the targeted communities’ specific needs locations. One of the program’s key goals was to increase consumer confidence, and this contributed to the program’s overall success. Community engagement was another important part of the program’s outreach strategies. For example, communication among neighbors who were considering going solar at local events helped generate further trust and “buzz” about the program. Finally, the VC website was an invaluable resource, offering information and advice on the solarizing process and financing, as well as tools to begin independent solarize projects.

*Decreasing Process Complexity*
The free site visits offered by local installers were an excellent way of simplifying the solarization process for residents, as well as providing valuable education on renewable energy technologies. Partner installers also simplified their own processes and documents for Solarize customers to increase project efficiency.

*Mitigating Costs*
Because of the efficient volunteer outreach, Solarize partner installers were able to save on marketing cost, and they passed these savings on to customers through a tiered pricing structure. As more community members signed onto the project, the price of installations fell. VC compiled and distributed information about financing options, which was also readily available on their website. Fortunately, the program was able to take advantage of the federal tax credit for solar projects, which expired in 2016.

*Maintaining Momentum*
Since the target population was those people who were able to but had not yet gone solar, motivating this group was a key part of the process. The project deadlines were thus important, as they required residents to sign solarize contracts by a specific date to receive the offered discounts.
2.2a.11 Challenges
A major challenge to this program was volunteer capacity. Because the individual community campaigns were run almost completely by volunteers, their active participation was key. Since round two spanned the holiday season, many volunteers were unable to dedicate enough time to the project. However, the initial community selection process helped to ensure adequate capacity overall. Another challenge of a campaign like this is the limited resources in small rural towns. VC found significant benefits to towns partnering with each other to form unified Solarize campaigns to help overcome this challenge.

2.2a.12 Programs Limitations
The most important limitation of this project was the lack of focus on lower-income residents. Despite the possibility to access financial support, the upfront costs are still high, leaving solar installation a low priority for lower income residents, as the financial benefits of installation are not immediate. For these reasons, Vital Communities developed its next program, Weatherize Upper Valley (Section 2.2b).

2.2a.13 Suggestions to Improve the Program
Future communities looking to start solarize projects should make outreach a large part of their plan. For programs like this, a deep understanding of the community and serious community involvement are necessary factors to gain traction. Without considerable effort put into these areas before the start of the project, it will fall short of its goals. The use of local contractors also goes a long way to improve community trust and these types of partnerships are extremely desirable.

2.2b Weatherize Upper Valley

2.2b.1 Overview
This year, Vital Communities began a weatherization program targeted at low-income residents of the Upper Valley. Weatherization projects range in size and intensity, depending on the needs of the residents and the current state of the home. The most common projects are air sealing and insulation. Vital Communities used the design of their Solarize program to develop Weatherize Upper Valley. VC used three key ideas to form the project. First, they partnered with local contractors. This was the most important piece of the weatherize program. The contractors were the face and the trust of the program on the ground. They also provided free consultations and helped design every step of the process. Second, VC focused on the use of a large volunteer group to coordinate the program. Third, VC made use of deadlines and prizes to help encourage participation. Weatherize is a pilot program currently completing its first round. Depending on the program’s success, it may be expanded in the future.

2.2b.2 Program Approach
Just like Solarize, Weatherize began by selecting community participants that were prepared for and enthusiastic about the campaign. The project is split into four regional teams, covering 14 Vermont towns. Each team in organized by a group of volunteers, which receive guidance and resources from VC just like with Solarize. Once
selected, the teams were able to select and secure at least two community contractors (sometimes as many as four). Each team has created and personalized a webpage on the VC site that provides information and resources to residents that fall within their purview.

The first step to weatherization is to sign up to receive information and aid from the volunteer teams. Next, residents must complete an online home energy profile. The profile includes the square footage of the home, fuel delivery records for the past three years (with specific dates and numbers), the nature of the home’s heating system (i.e. water or electric), monthly electric usage for the past year, and choice of contractor. The next step is scheduling a free consultation and home visit. Within about a week after the home visit, contractors send a proposal, which includes an itemized list of recommended projects. The resident is able to choose whether to sign a contract, and may select any or all of the project recommendations.

All projects are eligible for Efficiency Vermont’s Home Performance with ENERGY STAR program, a national program that identifies and promotes efficient products. Weatherize Upper Valley offers rebates on efficiency projects in Vermont. The average rebate from Efficiency Vermont for Weatherize Upper Valley projects is $1,500, but can reach up to $2000 and an additional $500 can be received for new heating systems. Additional financing options are available on the VC website and common options are the Heat Saver Loan and Neighborworks of Western Vermont Energy Loan. Both of these loans are designed with low interest rates (as low as 0% and 2.99%) for lower income Vermonters. Both of these programs offer a speedy two-day turnaround approval. The total average cost of weatherization (before rebates) is $7,800, but can range from less that $5,000 to more than $12,000. As an added incentive, VC is offering cash prizes toward the cost of weatherization. Residents who commit to a project by May 31, 2017 are entered to win. The grand prize of $2500 will be given to one winner from among the 14 towns. One winner from each team will also be selected to win $1,000. Finally, there is an early bird prize of $500 for one winner from each of the teams’ first ten contract signers. Weatherize can offer these prizes thanks to grant funding.

2.2b.3 Target Population
The target population is the residents of the 14 target towns, and the program is open to any residents who could benefit from weatherization. A majority of rural Vermont homes are of old housing stock and operate below modern efficiency capability. The Weatherization program is accessible to a broad audience thanks to the affordability of home energy improvements and the availability of financing options.

2.2b.4 Eligibility
All residents living in the 14 towns covered by the four “teams” are eligible to participate. However, there are some restrictions. Building codes are poorly enforced in rural Vermont, and unless buildings are up to code, the contractors cannot perform the weatherization until safety issues are addressed. Additionally, VC offers instruction on DIY projects that can be easily completed without the help of contractors. If renters would like to participate, they must do so with the full collaboration of their landlord.

2.2b.5 Annual Participation
Since the program just started this year, there are no complete numbers on participation. However, each team has a goal participation number generated by averaging the weatherizations over the past three years and then doubling them (150 contracts). Current numbers show that 260 people have shown interest, 65 have started talking to contractors, and of those, 27 have already signed contracts. A team progress graph is displayed on the website for up to date monitoring.

2.2b.6 Energy Sector
The energy sector of this program focuses on residential heating.

2.2b.7 Savings Generated
The savings depend on the size of the project, but on average energy savings total 26% or about $500-$600 annually.

2.2b.8 Outreach Strategies
The outreach strategy for Weatherize is strongly based on the successes of the Solarize outreach program. Just like the previous campaign, Vital Communities employed the use of teams in order to design effective localized outreach approaches. Outreach will be an especially important part of this program because of the barriers specific to lower income participation in energy equity programs.

2.2b.9 Unique Factor
In order to increase motivation, the Weatherize campaign is utilizing prizes. These cash bonuses are rewarded lottery style to contract signers and are applied to the total cost of individual projects.

2.2b.10 Strengths

Community Involvement
The close connections with contractors and local volunteers is what will allow the project to achieve success. Vital Communities puts a lot of effort into utilizing local channels of communication and trust to make connections with residents. Outreach is always a challenge for programs facing lower income residents and VC has used the lessons learned from their previous endeavors to design strategies for Weatherize.

Mitigating Cost
Vital Communities has made financing a huge priority of the project, utilizing loans like the Heat Saver Loan, which targets these types of projects for low income residents, as well as state rebates.

Decreasing Process Complexity
Simplicity of the weatherization process is a major goal in order to reach a population with many time and financial commitments. Part of the simplicity comes from the accessibility of information available on the Vital Communities website, including financing, step-by-step instructions, and do it yourself advice. Another strength of this program comes from the use of deadlines and cash prizes to motivate contract signing.

2.2b.11 Challenges
There are two major challenges to this program. The first is motivation, which depends on cold winters and oil prices. Lately, oil prices have been low and winter temperatures were warmer than average, thus people have been less motivated to weatherize. VC has attempted to address the motivation problem, through the urgency of cash prizes, but it is too early to tell whether these strategies will be successful.

The second challenge is volunteer bandwidth. It’s a lot of work for the volunteer teams to reach all of the targeted communities. The volunteers in the Weatherize project are responsible for more towns than the volunteers for Solarize communities, which makes organization and outreach more difficult.

2.2b.12 Program Limitations
While it is too early to identify serious limitations of the project, it does not include any additional aid for fixing health or structural issues, which would preclude the house from weatherization. Therefore, it may limit the amount of people who can participate in the program.

2.2b.13 Suggestions to Improve the Program
As the project has only just gotten underway, it is too soon to make effective recommendations, but Weatherize should continue to apply the lessons learned from their Solarize campaign. Flexibility of program volunteers and contractors should also be integrated when working with lower income residents, to address specific needs and increase motivation among this demographic.
### 2.3 NeighborWorks of Western Vermont (NWWVT)

<table>
<thead>
<tr>
<th>NeighborWorks of Western Vermont</th>
<th>Strengths &amp; Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Low Income Focus</td>
</tr>
<tr>
<td>A nonprofit conglomerate of services for middle to lower incomes customers offering energy audits, repairs, loans, and energy efficiency education.</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Energy Sector</strong></td>
<td>Application &amp; Paperwork</td>
</tr>
<tr>
<td>• Residential heating</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Target Population</strong></td>
<td>Community Involvement</td>
</tr>
<tr>
<td>Low to middle income Vermonters across 3 counties</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td>Renters</td>
</tr>
<tr>
<td>Open to middle to low income to 3 service counties</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Outreach Strategies</strong></td>
<td>Multi family</td>
</tr>
<tr>
<td>• Employers</td>
<td>✓</td>
</tr>
<tr>
<td>• Flyers</td>
<td></td>
</tr>
<tr>
<td>• Open Forums</td>
<td></td>
</tr>
<tr>
<td>• Town Clerks</td>
<td></td>
</tr>
<tr>
<td>• Senior Living</td>
<td></td>
</tr>
<tr>
<td>• Energy Meetings</td>
<td></td>
</tr>
<tr>
<td><strong>Partnerships</strong></td>
<td>Transportation</td>
</tr>
<tr>
<td>• VEIC</td>
<td>✓</td>
</tr>
<tr>
<td>• Efficiency VT</td>
<td></td>
</tr>
<tr>
<td>• Department of Energy (DOE)</td>
<td>X</td>
</tr>
<tr>
<td><strong>Participation</strong></td>
<td>Renewable Energy</td>
</tr>
<tr>
<td>600 to 650 contracts over one year (2016)</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Timeline</strong></td>
<td>Health and safety</td>
</tr>
<tr>
<td>Started in 1986 in Rutland, has grown to 3 counties for full service.</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td>Leveraging Partnerships</td>
</tr>
<tr>
<td>No data at this time</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Challenges</strong></td>
<td>Education</td>
</tr>
<tr>
<td>• Inconsistent source of funding</td>
<td>✓</td>
</tr>
<tr>
<td>• Marketing to customers outside of Rutland county</td>
<td>✓</td>
</tr>
<tr>
<td>• Outreach relies on customer enthusiasm</td>
<td>✓</td>
</tr>
</tbody>
</table>
2.3.1 Project Overview

NeighborWorks of Western Vermont (NWWVT) is a nonprofit “one-stop-shop” for middle to lower income Vermonters. NWWVT identifies lower income Vermonters as earning 80% of the area median income (AMI) specific to each Vermont county. NWWVT is committed to serving clients at every step of the energy efficiency upgrade process: from the application through completion of contractor work. NWWVT offers a range of included services focused on education, efficiency, and safety. NWWVT offers energy audits and solutions provided by Heat Squad as well as RealtyWorks, and HomeRepair.

NWWVT is part of a larger parent organization, NeighborWorks of America, that works towards providing affordable housing and progressing community development. The organization’s Vermont charter, NWWVT, was established 30 years ago. Originally based in Rutland County, NWWVT expanded its territory in 2010 with a 4.5 million grant from the Department of Energy (DOE). Today, NWWVT services are only open to residents of Addison, Bennington and Rutland counties, but their service, Heat Squad, has extended its services to Windsor, Windham, and parts of Chittenden, Orange, Washington counties as well. Heat Squad has become NWWVT’s most valuable and critical line of service in energy efficiency measures. Heat Squad is responsible for administering energy audits and connecting homeowners with contractors to make recommended safety and efficiency upgrades. Heat Squad provides middle to lower income Vermonters reduced pricing on energy audits and special financing through LoanWorks. LoanWorks can finance loans as little as $500 or as much as $40,000 with interest rates ranging from 0 to 4.99% based on income, which are subsidized through the Vermont Public Service Board. Finally, HomeOwnership aids in educating middle & low income families on efficient housing options, while RealtyWorks helps to locate homes in their effective price range. A list of applicable NWWVT services can be found in Figure 9. NWWVT’s primary goal is to get Vermonters into safe, efficient homes by helping them finance, repair, and optimize their homes. In the spring of 2017, NWWVT is launching a new strategy to help more lower and middle income Vermonters move into efficient homes. Based on this new strategy, NWWVT will be paying for the majority of loans and home repairs.

2.3.2 Program Approach

While the specific program approach depends on the particular program an individual or family is applying for, NWWVT supports its clients every step of the way. For instance, if a family is suffering from high-energy bills or an inefficient heating system, NWWVT will direct its clients to Heat Squad. During the application process,
Heat Squad can offer energy audits ranging from $0 to $100, based on the client’s income relative to a percentage of AMI (Area Median Income). Once the audit is completed and energy inefficiencies are identified, NWWVT and Heat Squad collaborate to find the best cost-effective solution for the client. If a homeowner decides to take action and make energy efficiency improvements, Heat Squad and NWWVT can offer a range of services to help complete these upgrades. In fact, Heat Squad offers assistance in loan payments through Efficiency Vermont, but only up to $2,000. In addition, Efficiency Vermont offers rebates up to $2500 for weatherization upgrades, $500 for heating system upgrades and $2000 for insulation and air sealing upgrades. If the homeowner requires a loan, their HeatSquad Energy Auditor will refer the homeowner to LoanWorks and their statewide energy loan, an unsecured $40,000 loan with interest rates from 0-4.99%. Most loan applications are accepted in one to two days, helping customers move forward with energy upgrades quickly. NWWVT Heat Squad representatives also provide energy efficiency education, by discussing the benefits that energy improvements can bring to human health and home safety. HomeRepairs will be directed to them. HomeRepairs will provide information on efficient and affordable housing. For example in Rutland, NWWVT has created efficient homes with solar panels and heat pumps on vacant lots that only middle to low-income Vermonters can apply for and purchase. Again, these services are only for Addison, Bennington, and Rutland counties, while HeatSquad’s services extend to Windsor, Windham as well as parts of Washington, Orange and Chittenden counties.

2.3.3 Target population
The target counties for NWWVT are Addison, Bennington, and Rutland counties. Heat Squad offers additional services in Windham and Windsor. While NWWVT target middle and lower income brackets, some upper class clients also use the Heat Squad service to save on energy bills.

2.3.4 Eligibility
Eligibility depends on regional HUD (Department of Housing and Urban Development) income and the number of applications for NWWVT services, such as HomeRepair and LoanWorks. For example, a family of four in Rutland with an income of $52,000 or less— which is considered 80% of the AMI—would be eligible.

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5 Melanie Paskevich Interview
for the lower income services. The percentage of AMI differs depending on the counties, with Addison being higher and Bennington being lower. Additionally, the 80% of AMI criteria allows only lower income Vermonters access one-of-a-kind programs, such as affordable and efficient housing in Rutland. The Rutland housing project supports lower income families and individuals to move into renovated homes equipped with heat pumps and solar panels, making the homes almost entirely self-sufficient. Another unique aspect of NWWVT is providing services to renters and multi-family housing, up to four units. Unfortunately, it has been challenging to access this group, given the split-incentive between landlords and renters (as discussed further in Chapter 1).

Figure 10. NWWVT Rutland Home Renovation.

2.3.5 Annual Participation
Since receiving a DOE (Department of Energy) grant in 2010, NWWVT has seen a sharp rise in participation, especially in the Heat Squad program. From 2010 to 2013, Heat Squad completed 850 energy audits and 155 retrofits as a result. Of these 850 energy audits, 170 were completed for low-income Vermonters. Although this only encompasses one service of the program, the rest of the participation data resides in historical records that are difficult to integrate with their new software. In 2016, NWWVT moved to tracking participation through SalesForce software, which shows exactly which programs customers participated in, across the range of NWWVT’s services. Additionally, since 2016, SalesForce has tracked the number of participants in the program to over 600 customers. Outside of participant data collection, it has been challenging to increase participation in NWWVT services. Melanie Paskevich, one of NWWVT’s directors, suggested that NWWVT needs to re-organize their marketing strategy, in order to make Vermonters aware that the benefits and services are not limited to just Rutland, but are also available in Addison and Bennington counties. Further, Ms. Paskevich believes they could reach a far larger population of lower to middle income Vermonters, but only through increased funding and an improved marketing strategy.

6 Melanie Paskevich Follow-up Interview
8 NWWVT report VT legislation
9 NWWVT report VT legislation
10 Melanie Paskevich Follow-up Interview
11 Melanie Paskevich Follow-up Interview
12 Melanie Paskevich Interview
13 Melanie Paskevich Interview
2.3.6 Energy Sector
NWWVT is a nonprofit organization working in energy efficiency and heating. HEAT Squad is NWWVT’s energy auditing service that serves the residential and small commercial markets.

2.3.7 Savings generated
NWWVT does not have accurate numbers for savings generated, as each home and project are different. Their new SalesForce software, however, may be able to provide savings information in the future to potential customers.

2.3.8 Outreach strategies
In order to reach potential middle and lower income groups, NWWVT employs a number of successful tactics. Their most effective strategy is travelling to employers to make presentations to current employees about their services, which in turn leads customers to their vast range of services. Another method, is the use of flyers for open forums and meetings with town clerks to identify which community members are in need of energy efficiency assistance. NWWVT also coordinates with town halls and offices as well as energy committees to find similar clients who would benefit from the range of services that NWWVT offers (Figure 6).

Figure 11. Photo of Morgan Overable, Onsite Project Manager for LaborWorks, presenting at a Project VISION meeting held at the Rutland City Police Department.

2.3.9 Unique factor
Ms. Paskevich commented that as a one-stop shop, or conglomerate of services, NWWVT is uniquely positioned to offer a range of services to lower income communities in need of efficiency upgrades. This sets them apart from other organizations that are focused on providing a single service. Further, NWWVT offers clients services from end to end—another unique factor.

14 Melanie Paskevich Follow-up Interview
15 Melanie Paskevich Follow-up Interview
2.3.10 Strengths

Community Loyalty and Success
The first strength is loyalty within the community. NWWVT has been in Rutland county since 1986, and as of 2017, it has weatherized 6% of low-income Vermont homes within the county—a huge accomplishment for a small program. A director of the program called the success in Rutland, NWWVT’s “golden nugget,” which they hope to replicate in their target counties. Thus, through a continued level of commitment to customers, NWWVT has made a name for itself and spread to other large counties within Vermont. In 2017, NWWVT operates its services in Addison, Bennington, and Rutland county with its Heat Squad service also operating in Windsor, Windham and parts of Washington, Orange, and Chittenden counties. This has increased NWWVT’s scope of customers, allowing more potential clients to benefit from their services.

Funding
NWWVT secured a strong source of funding for middle and lower income Vermonters through both federal and state programs as well as some private funds. Funding has come recently from Efficiency Vermont.

Leveraging Successful Services
The third success of the program is leveraging successful services. Although NWWVT is the umbrella organization, it provides a range of services to potential customers, with a dedicated staff for each one. This makes for an ideal and concise one-stop-shop, allowing customers to fulfill almost all of their needs through a single organization. NWWVT’s most leveraged program, Heat Squad, has been their most successful and requested service. Heat Squad’s goal is to provide low-cost and highly effective outcomes for customers, such as repair suggestions or repair loans. In this way, each service leads the customer to the next service, so they are always aware of the next steps.

One-Of-A-Kind Programs
Innovative solutions for lower income Vermonters provide yet another reason for the program’s success. In an effort to address the issue of inefficient housing in Rutland, NWWVT uses grants to turn vacant property into affordable, efficient housing with heat pumps and solar panels for lower income Vermonters. In addition, the Weatherization Assistance Programs around the state offer free weatherization to households making 80% of area median income or less. HeatSquad’s HELP program can cover up to 50% of the cost of weatherization (air sealing and insulation), up to a $4000 rebate, as well as 30% of the cost of cold climate heat pumps, up to a $3000 rebate. This program, funded through Green Mountain Power’s Community Energy and Efficiency Development Fund, is available to households making 80% of the area median income or below who were previous Central Vermont Public Service customers. Lastly, Heat Squad (depending on income levels in terms of AMI) can provide low-cost energy audits or free audits to low-income homeowners in the HELP program and suggest cost-effective means of energy efficiency.

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17 Melanie Paskevich Interview
18 Melanie Paskevich Follow-Up Interview
19 Melanie Paskevich Follow-Up Interview
20 Melanie Paskevich Interview
**Loans and Financing**

Financing options are an acute strength for NWWVT, as their federal and state funds allow them to lower the loan rates for their middle and lower income customers.\(^{21}\) One unique financing option is for Green Mountain Power (GMP) customers. GMP customers who take out energy or repair loans through NWWVT can pay the cost of the loan through their electric bill, making for a comprehensive statement instead of multiple bills.\(^{22}\)

**Customer Interface**

One of biggest compliments to NWWVT is their easy-to-use web interface. No matter a customer’s needs, their services and contacts are labeled clearly and effectively. Another bonus of the online application process is its simplicity and fast turnover rate. If an individual or family meets the qualifications for the program, service, or loan, the application is quick to fill out. Additionally, applicant’s forms are usually processed and sent back to the customer in two-business days.

**Education**

NWWVT has worked more recently to increase its efforts in education particularly about energy equity as well as home safety and health. The best way to provide this education is either at outreach events or during an energy audit. During the energy audit NWWVT already has their foot in the door and can explain the outcomes if no appropriate actions are taken to address issues such as leaky windows, asbestos or mildew.

**2.3.11 Challenges**

**Lack of Lower Income Participation**

Unfortunately, there isn’t a “magic bullet” for getting every lower income Vermonter to participate in their program.\(^{23}\) A director at the company believed the best strategy is an aggressive payment plans such as the HELP program. This payment plan strategy, which begin in the spring of 2017, would target low income Vermonters only by paying for the bulk of repairs and loans. This would allow NWWVT to increase their customer range to other low-income Vermonters, hopefully expanding to other Vermont counties.

**Renter Participation**

NWWVT has succeeded in Addison and Rutland counties, but it hasn’t been able to sufficiently expand its reach to Bennington county—a region primarily comprised of renters. Thus, given the split-incentive problem, it has been difficult expand to renters in Bennington effectively. NWWVT would be happy to work with renters, but they need the landlord’s acceptance for any projects to go forward.\(^{24}\) Similarly to renters, providing services to multi-family housing tends to be a challenging for NWWVT, as they can only help a maximum of four units within a single building.\(^{25}\)

**Outreach outside of Rutland County**

Additionally, NWWVT has struggled marketing their program to potential customers because they originated in Rutland Country. Lower income Vermonters have commented that they fail to understand that the services and

\(^{21}\) Melanie Paskevich Follow-Up Interview
\(^{22}\) Melanie Paskevich Follow-Up Interview
\(^{23}\) Melanie Paskevich Interview
\(^{24}\) Melanie Paskevich Follow-up Interview
\(^{25}\) Melanie Paskevich Follow-up Interview
programs of NWWVT extend outside Rutland county.\textsuperscript{26} It is especially difficult to market NWWVT’s services to potential rural customers because of their location even if they are most in need of NWWVT’s assistance.

\textit{Funding for Marketing and Outreach}

Lastly, there are limited funds or grants to support education and outreach efforts, further hindering NWWVT’s success and the benefits to potential customers. Funding is a difficult issue because without it, the programs services cannot be utilized and grants usually take a long time to apply for.

\textbf{2.3.12 Limitations}

The biggest limitations to NWWVT are that lower income Vermonters struggle with their own debt and are at times difficult to market to. This has proven to to be an increasingly tricky problem to tackle, and has led some Vermonters to completely ignore the problem, and live with the consequences. NWWVT would like to help all lower income Vermonters and they hope given their range of services and benefits that more lower income Vermonters will begin to trickle in.\textsuperscript{27}

\textbf{2.3.13 Suggestions to Improve the Program}

Paskevich suggests that NWWVT should apply for other grants to increase its funding and expand its reach into other counties.\textsuperscript{28} Furthermore, additional funding could benefit fuel-poor middle income Vermonters. Since most of the grants are only available to lower income Vermonters, middle-income families are often left out of the equation and suffer from issues related to inefficient housing. NWWVT’s new proposed strategy, the HELP program, which is targeted at both lower and middle-income customers, will hopefully help NWWVT gain more customers and increase its presence in the Green Mountain State.

\textbf{2.3.14 Personal Success Stories}

There have been a host of success stories relating to NWWVT’s services. For example, in the month of March 2017, NWWVT focused on working with a divorced mother, living with two kids in a house much too large for their needs. The mother explained that during winter nights, they would have to sleep in one bed to stay warm and that food in cupboards would freeze overnight.\textsuperscript{29} Given these issues, the mother reached out to NWWVT, who directed them to Heat Squad who provided her with a free energy audit courtesy of Efficiency Vermont, and other energy efficiency measures in part due to the HELP program. The mother and her children were beyond excited when an insulation technician came to weatherize their home. This shows that the NWWVT does truly meaningful work, leading to outcomes that profoundly change people’s lives.

\textsuperscript{26} Melanie Paskevich Follow-up Interview
\textsuperscript{27} Melanie Paskevich Follow-up Interview
\textsuperscript{28} Melanie Paskevich Interview
\textsuperscript{29} Melanie Paskevich Follow-up Interview
# 2.4 Heat Saver Loan

<table>
<thead>
<tr>
<th>Heat Saver Loan</th>
<th>Strengths &amp; Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Provides loans at affordable terms to help Vermonters install renewable energy technologies and make energy efficiency upgrades in their homes.</td>
</tr>
<tr>
<td><strong>Energy Sector</strong></td>
<td>Residential heating</td>
</tr>
<tr>
<td><strong>Target Population</strong></td>
<td>Lower and middle income customers across Vermont</td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td>Owner-occupied properties</td>
</tr>
<tr>
<td><strong>Outreach Strategies</strong></td>
<td>Direct marketing by participating vendors, Print materials, Website</td>
</tr>
<tr>
<td><strong>Partnerships</strong></td>
<td>DPS, Efficiency Vermont, Credit unions</td>
</tr>
<tr>
<td><strong>Participation</strong></td>
<td>249 loans granted between November 2014 and September 2016</td>
</tr>
<tr>
<td><strong>Timeline</strong></td>
<td>Pilot started in 2014, currently in post-pilot phase</td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td>No data</td>
</tr>
<tr>
<td><strong>Challenges</strong></td>
<td>No permanent sources of funding, Limited resources to conduct reporting activities</td>
</tr>
</tbody>
</table>

**Strengths & Limitations**
- Low Income Focus: ✓
- Application & Paperwork: ✓
- Community Involvement: X
- Multi family: ~
- Transportation: X
- Renewable Energy: ✓
- Health and safety: ✓
- Leveraging Partnerships: ✓
- Education: X
- Permanent Funding: X
- Data Collection: X
2.4.1 Project Overview

The Heat Saver Loan Program (HSL) was created in 2014 through the Thermal Energy Finance (TEF) Pilot program, an initiative designed to assist residential property owners in financing thermal energy upgrades. The HSL, administered by the Vermont Department of Public Service (DPS), aspires to address the specific gaps identified by Vermont’s Comprehensive Energy Plan. These include a high upfront cost to make efficiency improvements, a lack of comprehensive funding source for efficiency programs, and insufficient options for residents who do not qualify for the state’s existing Weatherization Program. The loans provided by the HSL program are specifically targeted at efficiency improvements and are offered through two participating local credit unions. Though the program was originally scheduled to terminate in August 2016, it was later extended until August 2017. Today, the HSL is in the post-pilot stage. The HSL is a key mechanism to help Vermont meet the goal of improving the thermal efficiency of 80,000 homes by 2020.

2.4.2 Program Approach

The Heat Saver Loan provides loans at affordable terms to help Vermonters install renewable energy technologies and make energy efficiency upgrades in their homes. By supporting credit enhancements including loan loss reserves and interest rate buy downs, the program reduces the risk for the participating financial institutions and allows customers with lower credit scores to access capital at more affordable terms. The program allocated $133,700 in loan loss reserves to help cushion against potential defaults in the program. The HSL program is funded by the Vermont Department of Public Service (DPS), Vermont Low Income Trust for Electricity (VLITE), and the Clean Energy Development Fund using U.S. Department of Energy (DOE) resources.

The HSL program’s main partners are Efficiency Vermont, Opportunities Credit Union, and VSECU. Opportunities Credit Union and VSECU are the two finance institutions providing loans. The primary

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31 Ibid.
34 Vermont Department of Public Service, “Funding Opportunities & Projects.”
responsibility of Efficiency Vermont is to engage a set of qualified contractors that can provide the thermal efficiency equipment for the participating families. In addition, it also has an active role in marketing and outreach.41

There are three steps that customers need to complete in order to obtain loans. First, they need to work with a qualified contractor to choose the thermal efficiency products that best fit their needs and obtain a quote.42 Eligible projects/equipment include the following: cold climate heat pumps, high efficiency oil or propane (and in some cases, natural gas) boilers or furnaces, advanced modern wood pellet central furnaces or boilers, solar domestic hot water systems, and home weatherization upgrades.43 Second, they need to fill out a “Project Verification Form,” including customer and contractor information and the type of efficiency project chosen.44 The final step is to complete the financing with one of the two participating lenders (Opportunities Credit Union or VSECU).

There is no minimum loan amount and the maximum loan is $35,000. The current interest rates vary (0-4.99%) depending on household income and the loan period can be extended up to fifteen years (see Figure 1. for more details).45 Finally, it is important to note that interest rates are fixed for the term of the loan.46

<table>
<thead>
<tr>
<th>Table 1. Table of Heat Saver Loan rate structure</th>
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</thead>
<tbody>
<tr>
<td><strong>Interest Rates</strong></td>
</tr>
<tr>
<td>Income Qualifications</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>Over $96,240</td>
</tr>
<tr>
<td>$64,161-$96,240</td>
</tr>
<tr>
<td>Below $64,160</td>
</tr>
</tbody>
</table>

2.4.3 Target Population

While program is available statewide, program participants are predominantly from lower income (incomes lower than 80% of the Median Family Income (MFI)) and middle income (between 80 and 120% MFI) tiers.48

2.4.4 Eligibility

Owner-occupied properties—including residential buildings, condominiums and cooperatives with up to four units, and land-owned mobile homes—are eligible for the loan. If the property is 50 years or older, or if it is situated in a historic district, participants need to ensure that the newly installed equipment complies with the State Historic Preservation’s criteria. This criterion is only relevant if the equipment is visible for the public or if it causes a ground disturbance.49 The must also property be up to date with its taxes and cannot be an asset in any pending bankruptcy, divorce or legal proceeding.50

41 Ibid., 7.
43 Ibid.
45 Ibid.
47 Vermont Department of Public Service, "Thermal Energy Finance Pilot Program Report".
48 Ibid., 7.
49 Ibid., 7.
50 Ibid., 7.
2.4.5 Annual Participation
Between November 2014-September 2016, the number of Heat Saver Loans granted was 249, with an average loan of approximately $11,400. Low and moderate-income tiers received 58% of the loaned capital and middle-income applicants received 21% of the capital. The participants are residents of 116 different towns throughout Vermont. 85 companies assisted in implementing the energy efficiency upgrades in people’s homes.

2.4.6 Energy Sector
The program’s targeted energy sector is residential heating.

2.4.7 Savings Generated
Currently, there are no data available on the energy savings generated over time, as—according to the DPS—requiring financial institutions to gather data on energy savings might limit their capacity to participate effectively in the program.

2.4.8 Outreach Strategies
The DPS uses a number of strategies to promote awareness about the HSL program. This includes direct marketing by participating vendors, print materials, and a website with program description and frequently asked questions. In addition, the two participating financial institutions also promote the program via newsletters and websites. Finally, Efficiency Vermont created a number of outreach programs via community forums (such as town energy committees), public presentations and its website. In order to finance these outreach and marketing strategies, the DPS allocated some funding specifically targeted at these activities.

2.4.9 Unique Factor
The program has succeeded in harnessing the expertise of its partners to develop a low-cost loan that has helped families statewide to implement thermal efficiency upgrades in their homes.

2.4.10 Strengths
Simple and fast application process
The HSL has been successful at ensuring that borrowers are not deterred from entering the program due to confusing procedures and rules. The “Heat Saver Loan Program Report” indicates that partners find it easy to
explain loan forms to potential borrowers. \textsuperscript{58} In addition, by capturing the application procedure in “three easy steps”, as indicated on the program’s website, borrowers are more likely to participate.\textsuperscript{59} Similarly, the DPS is keen to highlight that applications are normally accepted within two business days.\textsuperscript{60} Thus, given that the program is perceived as a simple and fast way of accessing capital necessary for thermal efficiency improvements, residents are more likely to participate. Indeed, as highlighted by the program’s manager, Ed Delhagen, easy access was one of the key factors that contributed to the program’s success.\textsuperscript{61}

**Leveraging existing programs through partnerships**\textsuperscript{62}
Partnerships are key to the HSL’s success. Collaboration between various agencies, organizations and companies, has allowed the HSL program to capitalize on the diverse skills and resources of the DPS, Efficiency Vermont and credit unions.\textsuperscript{63} For example, borrowers have the option of combining the HSL program with Efficiency Vermont rebates.\textsuperscript{64} Through a close collaboration between these entities, each partner has been able to “draw from their strengths, and not perform functions that they are not well-equipped to do.”\textsuperscript{65}

**Addressing health and safety issues**
One of the most important challenges efficiency programs generally face is the need to address certain health and safety issues prior to installing new energy efficient equipment or weatherization. Given that such issues tend to be beyond the scope of efficiency programs, some households are unable to participate in efficiency programs.\textsuperscript{66} The HSL has made a significant effort to address this barrier by financing up to 50\% of the cost of health and safety repairs needed for energy efficiency measures.\textsuperscript{67} Poor ventilation is the issue that is most typically addressed through this financing.

**Successful outreach to new customers**
The “Heat Saver Loan” Program Report comments that the state has passed the early adopter stage, having successfully attracted new customers who are interested in deep efficiency upgrades.\textsuperscript{68}

**Filling an important niche in the context of available efficiency programs**
By providing affordable capital to residential properties, the HSL has filled an important gap in the energy efficiency market in Vermont. \textsuperscript{69} In fact, Mr. Delhagen highlights that the program was specifically designed to meet a hole in the market that no other program was serving.\textsuperscript{70} At the time when the program emerged, businesses were just beginning to look for possibilities to encourage residents to move to energy efficient technologies, while staying in business. \textsuperscript{71} These companies can now use the HSL to provide such options to their consumers.\textsuperscript{72}

\textsuperscript{58} Ibid., 11.
\textsuperscript{59} Vermont Department of Public Service, “Heat Saver Loan Overview.”
\textsuperscript{60} Ibid., “Funding Opportunities & Projects.”
\textsuperscript{61} Ed Delhagen, interview by Evelin Eszter Tóth, March 16, 2017, interview.
\textsuperscript{62} There are a number of ways in which programs can build partnerships in an effort to improve energy equity programs. Sovacol et al. (2016) notes that this can include the development of partnerships to channel information through trusted community sources, or the collaboration of public and private entities.
\textsuperscript{63} Ibid., “Thermal Energy Finance Pilot Program,” 5.
\textsuperscript{64} Ibid., “Funding Opportunities & Projects.”
\textsuperscript{65} Ibid., “Thermal Energy Finance Pilot Program,” 12.
\textsuperscript{66} Sarah Simonds Brock, Skype conversation, February 28, 2017.
\textsuperscript{67} Ibid., “Heat Saver Loan Overview.”
\textsuperscript{68} Ibid., “Thermal Energy Finance Pilot Program,” 11.
\textsuperscript{69} Ibid., 10.
\textsuperscript{70} Ibid., interview by Evelin Eszter Tóth, March 16, 2017, interview.
\textsuperscript{71} Ibid., “Funding Opportunities & Projects.”
\textsuperscript{72} Ibid.
**Reaching target population**

The program has reached towns and villages in every county that is particularly hard hit by high thermal energy expenditure. These include the following: Grand Isle Country, Franklin, Lamoille, Washington, Orange, Addison, Rutland and Chittenden Counties. Further, the program has also been successful at reaching some of the most economically vulnerable segments of the population. In fact, $1.2 million of the total $2.78 million of loans were distributed to families that earn less than 80% of the median family income ($56,990). Similarly, 27% of all the applicants qualified for a loan at a rate of 0.00%.

**Multi-unit housing included**

The HSL program allows both single as well as multi-family properties (with up to 4 units) to participate, which is crucial in order to ensure the participation of all types of properties.

### 2.4.11 Challenges

**No permanent source of funding**

The Clean Energy Development Fund (CEDF) has been an important source of funding for the HSL program. The HSL initially received $700,000 in funding from the CEDF, the Vermont Department of Public Service, and Vermont Low Income Trust for Electricity. In 2017 CEDF, the funding allocated for the HSL program, is projected to be $327,000. In previous years, the CEDF received funds from Vermont Yankee as part of a settlement with the State of Vermont regarding storage of used nuclear fuel. However, following the plant’s closure, the amount of funding decreased significantly. The most recent budget report indicates that if no new funding sources are identified, the CEDF’s funds will be fully exhausted by 2018. Identifying permanent sources of funding that can continue to support the HSL is one of the program’s most pressing challenges.

**Limited resources to conduct reporting activities**

During the program’s pilot-phase, the DPS did not require the participating credit unions to report data on energy savings over time, having recognized that such a requirement might make it difficult for these institutions to participate in the HSL program. As a result, such data are not available to the DPS internally. Similarly, while the HSL program allows customers to combine their loans with incentives offered by Efficiency Vermont, due to customer confidentiality, the program did not track the number of borrowers who took advantage of this possibility. The lack of sufficient information on savings over time might make it difficult to evaluate the program’s successes/failures. Similarly, such data would have been essential in order to improve the program’s design in the post-pilot phase.

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2.4.12 Program Limitations

The exclusion of rental properties
Only owner-occupied homes are eligible for the Heat Saver Loan. This eligibility criterion has significant repercussions on low-income families, making it the program’s most significant limitation.

2.4.13 Suggestions to Improve the Program

Promoting the use of renewables
Most of the technologies installed as part of the HSL program are energy efficiency upgrades, while only a small share of the loans are used to support renewables energy technologies (2% pellet furnace or boiler, and 1% solar domestic hot water). Renewable systems are underutilized in the context of this program, as most borrowers are interested in general efficiency upgrades or heat pumps and the demand for technologies, such as pellets and solar hot water systems, is very limited. Focusing on efficiency is an important step to save money for low-income families. Nevertheless, achieving deeper transformations in the energy systems through the development of renewable energy sources will be a crucial strategy in order to meet the state’s overarching renewable energy and GHG reduction goals.

Improving data collection
The DPS has not been successful at collecting data on energy savings over time. Similarly, information on the number of customers who took advantage of both the HSL and the incentive program offered by Efficiency Vermont is absent. The DPS recognizes this shortcoming, and in its latest report it emphasizes the need to gather energy and finance data in a way that does not burden program partners. In addition, collecting demographic data on the program’s customers is another crucial strategy, allowing the development of better program design, outreach, and marketing mechanisms. Some examples of types of data that can be collected include the following: renter versus owner, multifamily versus single family, race/ethnicity and gender.

Developing more efficient outreach programs
Currently, outreach activities are primarily driven by vendors, participating credit unions and by town energy committees. By engaging in additional outreach activities (such as informational videos, or door to door outreach), the DPS can target families (especially in rural, underserved areas) who otherwise wouldn’t know about the programs. Including stories of people who have directly benefitted the program could be an important strategy to encourage participation and remove the stigma about taking advantage of programs designed for low-income families.

Improving the targeting mechanisms
Although the HSL program is primarily designed to help lower and moderate income households meet their energy efficiency needs, so far the DPS has not developed a built-in targeting mechanism to identify and reach these segments of the population. The main source of outreach is through participating vendors who market the

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81 Idem.
83 Idem.
HSL program through their regular marketing activities, which may, however, only reach existing customers. Efforts to reach low-income communities specifically, has been primarily channeled through the Opportunities Credit Union. This financial institution focuses on people with modest income and limited assets, and has therefore been able to work though some of the challenges of first time buyers.\(^85\) Thus, in an effort to reach more low-income audiences around Vermont, it is imperative to complement the Opportunities Credit Union’s outreach efforts with a more comprehensive targeting mechanism.

**Involving more financial institutions**

Currently, participation is at the level where the DPS had hoped it would be, and between the two participating financial institutions—Opportunities Credit Union and VSECU—the HSL program has developed access around the entire state.\(^86\) However, if the program scales up in the future, bringing in additional financial institutions will be an important step in order to ensure that needs of even more borrowers can be accommodated.

**Providing a clear definition of underwriting criteria**

One of the findings of the Heat Saver Loan’s program report is that there were a number of borrowers whose actual incomes put them on the cusp of lower rates when all sources were counted. These borrowers were disappointed when they found out that they were not eligible for a lower rate. Consequentially, the report highlights that “defining underwriting criteria such as income as clearly as possible for prospective borrowers” is of paramount importance.\(^87\)

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86 Ed Delhagen, interview by Evelin Eszter Tóth, March 16, 2017, interview

Chapter 3: Strengths and Challenges of Vermont Energy Equity Programs

Key Strengths of Vermont Energy Equity Programs

Simple Application Process
Consumers can become confused and discouraged from entering a program due to the complexity of rules. The Vermont programs we have analyzed in this report have all put significant efforts towards ensuring that the rules and application processes are easy and simple for the participants. For example, the HSL’s application process in ‘three simple steps’, and Vital Communities’ step-by-step instructions and free site visits are crucial strategies that have contributed to the program’s success.

Leveraging Partnerships
Building partnerships can help streamline program delivery and maximize participation. The Vermont programs we have reviewed excel at leveraging other programs in an effort to combine expertise and draw on the strengths and skills of their partners. For example, the eVolve Panton is based on a partnership between Efficiency VT, Green Mountain Power and Panton Vermont. Similarly, the NWWV collaborates closely with HeatSquad to deliver its services. Further, the HSL is supported by various credit unions, the Vermont Department of Public Service and Efficiency Vermont. Finally, the Solarize Upper Valley and Weatherize Upper Valley programs rely on their community partners for cost reduction and community trust.

Integrated Efficiency Education Programs
In order to ensure that communities receive consistent information regarding possible savings and ways in which they can make their homes more energy efficient, it is important to integrate efficiency education in energy equity programs. Drehobl and Ross (2016) indicate that this can include the provision of educational materials on energy saving behaviors, feedback on families’ energy use or interactive strategies encouraging energy savings. The Solarize Upper Valley and Weatherize Upper Valley programs have incorporated such strategies in their outreach programs by hosting events and organizing forums for community members. Similarly, NWWV has developed an education strategy aimed at middle and lower income families on health and safety and efficiency in their homes. Teller-Elsber et al. (2016) comment that these programs are crucial strategies to ensure that people are aware of the “savings that can be achieved through energy conservation and efficiency…and other tips for safely reducing energy consumption.”

1 Massachusetts Save Low-Income Multifamily Retrofit Program and Clean Vehicle Rebate Project in Chapter 4 address how to further strengthen this aspect.
3 Drehobl and Ross, 33.
4 iCanConserve and Clean Vehicle Rebate Project use other education strategies that could benefit Vermont programs
5 Drehobl and Ross, 6.
6 Ibid., 28.
7 Teller-Elsberg et al, 88.
Successful Community-Based Strategies
Marketing and delivering energy efficiency services through trusted community partners is a key recruitment strategy. A report by Habitat for Humanity highlights that “many low-income households are...wary of getting involved with government agencies.” Similarly, people might have low levels of trust in energy utilities or large institutions. By applying a community-based social marketing approach—a strategy that is sensitive to community concerns, values, and beliefs—energy equity programs can reach and build trust with low-income families more effectively. Solarize Upper Valley, Weatherize Upper Valley and eVolve Panton are all based on this model. These are key strategies that have allowed these programs to succeed.

Coordinating Program Delivery with Other Services
Hoffman emphasizes the benefits of creating a “one stop shop” where qualifying people can apply for multiple services, including energy efficiency programs. By using categorical qualifications, community action agencies can sign families up for weatherization programs when they apply for other services, such as nutrition programs. The NWWV is an outstanding example of a successful one-stop-shop program, offering multiple services that can meet the diverse needs of families.

Key Challenges and Limitations of Vermont Energy Equity Programs

The Unique Market of Renter Households
None of the programs we have analyzed in this report have specific strategies to address renter households—a significant limitation that should be addressed in future programs. Thus, given that renters represent a unique market with different actors and decision-makers, designing programs that meet the needs of renter households is of paramount importance.

Including Multi-Family Households
As discussed in Chapter 1, multifamily households face unique challenges. Most Vermont programs we have analyzed in this report do not offer specific mechanisms to include multifamily units. The only exceptions are the HSL and the NWWV, however even these programs are limited in scope to houses with up to 4 units.

Transportation
The transportation sector in Vermont has been largely absent from low-income energy equity programs. Considering that 52% of all energy spending in Vermont is in the transportation sector, the lack of transportation-related programs specifically directed towards low-income families is a significant gap in Vermont’s energy equity program-landscape. In a primarily rural, widely spread population, typical low-income transportation initiatives, such as public transportation and ride-sharing, are much harder to develop. Most of Vermont’s transportation energy work has focused on increasing PEV ownership, however electric vehicles are an expensive investment and very little funding has been focused towards helping lower-income customers finance ownership or leasing.

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8 GIZ Initiative and iCanConserve show further ways to maximize the benefits of community involvement in Vermont.
9 Scavo et al., 49.
10 Ibid., 48.
12 Ibid.
13 Ibid.
Health and Safety Issues

Older buildings tend to face health and safety issues that must be addressed before energy efficiency upgrades can be implemented. Similarly, older rooftops often need to be repaired or redesigned to be able to accommodate solar systems. These problems increase the overall cost of making upgrades, thus posing a significant barrier to participation in energy equity programs. Hoffman highlights that since health and safety costs are normally not covered by program funding, nearly 1 in 5 retrofit applications are rejected due to the presence of these issues. Regrettably, most Vermont programs we have analyzed do not account for health and safety costs. The only exception is the HSL, which provides some funding—although only up to 50%—that can be used for health and safety improvements.

Securing Permanent Sources of Funding

Securing permanent sources of funding that can keep the existing projects running is a significant challenge for most programs in Vermont. The NWWV’s director highlights the difficulty of having to apply for grants to keep the program running. Similarly, in the absence of funding mechanisms to keep the HSL going, the DPS might not be able to continue the program’s operation in its post-pilot phase. Finally, Panton’s most important funding-related challenge is to tailor the financial model/offering to fit a specific community. This is a process that takes a lot of time—a significant difficulty given that the program is scheduled to run for a year.

Insufficient Data Collection

By collecting demographic data on participation, as well as on energy savings realized, managers can assess the success of programs and can make informed decisions on how to improve them. Nonetheless, some of the programs we have analyzed do not conduct extensive data collection. The HSL has failed to collect data on energy savings realized over time, and the NWWV has not been tracking program participation.

Distrust Factor

Ian Hoffman, the senior scientific engineering associate at Electricity Markets & Policy Group, highlights that one of the key challenges limiting full participation in energy efficiency programs is a “distrust factor”—a weariness of accepting free programs. In fact, families are often concerned that they will be charged for the efficiency upgrades later. Similarly, low-income households are often reluctant to disclose their incomes to others or accept free services as a matter of pride. The distrust factor is particularly significant amongst undocumented immigrants who might be afraid that their status is going to be revealed if they participate in energy efficiency programs. The distrust factor is a significant barrier challenging the success of energy programs in Vermont.

Lack of Awareness and Limited Outreach Programs

More than 60% of the population lives in rural areas in Vermont. It is difficult to extend energy equity programs to rural households, as contractors tend to achieve economies of scale in urban environments. In addition to

15 Scavo et al., 34.
16 Ibid.
17 Scavo et al., 34.
19 Drehobl and Ross, 6.
21 Ibid.
22 Ibid.
23 Ibid.
rural households, foreign language-only families represent another segment of the low-income families that are particularly hard to reach. As a result, some households might not be aware of the existing energy equity programs or may lack information about the potential energy savings associated with building retrofits. Thus, effective outreach to remote and underserved communities is a recurring challenge in most Vermont programs. The director of NeighborWorks of Western Vermont (NWWV) highlights that one of the key difficulties related to the program is to expand its reach beyond Rutland. Similarly, the Heat Saver Loan does not include any integrated mechanisms designed to target the particularly hard-to-reach segments of the population. Finally, due to limited volunteer capacity, outreach has been a significant challenge for the Vital Communities’ Solarize campaign as well. Therefore, in the absence of outreach strategies specifically targeted towards the most remote and marginalized segments of the population in Vermont, participation in existing programs may be significantly limited.

**Reaching Fuel-Poor Households that Don’t Qualify for Energy Equity Programs**

Teller-Elsberg et al. (2016) indicate that fuel poverty is not only experienced by lower income families. Middle-income households also often spend more than 10% of their income on energy use. In fact, in 2012, “average energy burdens for the bottom three deciles of Vermont households were above the fuel poverty threshold.” These families are often not eligible for the energy equity programs that lower income families qualify for. Expanding the available programs to ease the financial burden for fuel poor, middle-income families is thus an important consideration to be addressed in the existing energy equity programs.

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26 Ibid.
27 Scavo et al., 49.
28 Teller-Elsberg et al., 83.
29 Ibid.
Chapter 4. Out of State Energy Equity Programs

It is important to turn to energy equity programs in other states that could offer potential solutions to the limitations that make it challenging for Vermont programs to achieve maximum participation levels and inspire them in new ways. These out of state programs come from states around America including Missouri, Wisconsin, Oregon, Massachusetts and California, and all have unique characteristics that could help Vermont increase the reach of current and future energy equity programs.

<table>
<thead>
<tr>
<th>GIZ Initiative</th>
<th>iCanConserve</th>
<th>Healthy Homes</th>
<th>Massachusetts Save Low-Income Multifamily retrofit program</th>
<th>California Low Income Weatherization</th>
<th>Clean Vehicle Rebate Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplicity and efficiency</td>
<td>--Simple descriptions of program and</td>
<td>--One stop shop</td>
<td>--Stand alone website</td>
<td>--Spanish translation for communities</td>
<td>--Community organization involved</td>
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<tr>
<td>Targeted outreach</td>
<td>--Door-to-door outreach</td>
<td>--Single web-based point of contact</td>
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<tr>
<td>Community Involvement</td>
<td>--Community leader involvement</td>
<td>--Community leader involvement</td>
<td>--Community organization involved</td>
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<tr>
<td>Renters or multifamily</td>
<td>--Discounts for renters</td>
<td>--Hosts community challenges</td>
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<tr>
<td>Transportation component</td>
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<td>--Entirely</td>
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<td>Renewable energy component</td>
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<td>--In addition to energy efficiency upgrades</td>
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<td>--Clean energy vehicles</td>
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<tr>
<td></td>
<td>Pre-weatherization actions</td>
<td>Relatable framing to community</td>
<td>Education Component</td>
<td>Funding</td>
<td>Data Collection</td>
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<tr>
<td></td>
<td>--Pre-weatherization repairs discounts</td>
<td>--Money saved</td>
<td>--Involve schools and has education classes for all ages</td>
<td>--Cap and trade</td>
<td>--Intense data collection for community challenges</td>
</tr>
<tr>
<td></td>
<td>--Health and safety pre-weatherization updates</td>
<td>--Money saved</td>
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<td>--Intense data collection for Infographics</td>
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4.1 The Green Impact Zone (GIZ) Initiative, Missouri

<table>
<thead>
<tr>
<th>Benefits Provided by Program</th>
<th>Targeted outreach</th>
<th>Community Involvement</th>
<th>Renters or multifamily</th>
<th>Pre-weatherization actions</th>
<th>Relatable framing to community</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Door-to-door outreach</td>
<td>Community leader involvement</td>
<td>Discounts for renters</td>
<td>Pre-weatherization repairs discounts</td>
<td>Money saved</td>
</tr>
</tbody>
</table>

**Description**

A community-based approach to the federal weatherization assistance program (WAP) in Missouri (MO) offers potential solutions to address the limitations of corresponding Vermont energy equity programs. The MO program, named the “GIZ” initiative, was a targeted community-based initiative to weatherize 659 homes in a 150-block area of five low-income, primarily African-American neighborhoods in the Green Impact Zone (GIZ) of Kansas City. In the end, the program failed to meet its goal, only weatherizing 349 homes. Nonetheless, there are qualities of the program that similar Vermont initiatives could benefit from including: working with community members to understand priorities of the community and tailoring outreach appropriately; accommodating older, more run-down homes; and incentivizing landlords and renters to participate in the weatherization process.

**Strengths of Program**

**Local Context**

The program’s success in terms of reaching minority, lower income members of the community shows how important the local context is in overcoming participation barriers, as it allows for alternative solutions that might have been overlooked otherwise. Policy workarounds were implemented thanks to the program’s ability to recognize and understand the unique characteristics and needs of the target community.

**Community Involvement**

The involvement of community members allowed the program to reach lower income families in a number of ways. The citizens of the targeted neighborhoods of Kansas City were lower income, with unique economic and social concerns. Therefore, by working closely with community leaders, the Kansas City WAP initiative put significant efforts into properly framing the program. By emphasizing the money saved from weatherization, the GIZ Initiative succeeded in getting the target population to relate to and support the program. Since the citizens targeted in Kansas City were highly untrusting of outsiders, approaching existing community leaders and requesting their support and assistance allowed the program to reach more people within communities.

**Targeted Outreach**

When neighborhood meetings on energy efficiency measures were first held, the lower-income citizens in the targeted GIZ zone of the neighborhoods were not participating. In order to reach these individuals, the

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2 Reames 2016
3 Reames 2016
4 Reames 2016
5 Reames 2016
6 Reames 2016
WAP program organizers launched advocacy-training sessions for the neighborhood association leaders to enhance their understanding of the program and its benefits. This in turn allowed for an extensive door-to-door, neighborhood-by-neighborhood outreach mechanism to be established, spreading awareness about energy efficiency and encouraging residents to apply for weatherization of their homes. This allowed for a more successful outreach in a community that would not have been possible otherwise.

**Pre-Weatherization Repairs**

Further successes of the program involved recognition of the need for pre-weatherization repairs. The GIZ initiative acknowledged that many of the homes in the GIZ area were old, and required pre-weatherization repairs. In order to address this issue, the program offered discounted repairs before the weatherization began so that the residents could afford the repairs and still participate in the program.

**Renter Focus**

Involving renters and landlords in the outreach strategy is one of the GIZ initiative’s key strengths. The high number of renters in the neighborhoods of focus meant that the program had to accommodate and overcome the split incentive problem. In order to address this issue, the program offered a discount to landlords to increase their willingness to weatherize their rental properties. Furthermore, a short video of landlords who participated in the program was created to encourage other landlords to participate, addressing the benefits that accrue to both the tenants and the owners. This not only sparked interest among landlords, but also residents who began to feel as if they could properly inform their landlords about the weatherization program, with less risk of eviction or highly rental prices.

**Benefits of Implementation in Vermont**

**Framing**

Similar to the communities in the Green Impact Zone of Kansas City, many Vermonters are lower-income, with similar economic and social concerns, thus making program framing important. A study by California’s Energy Commission (2016) highlights the importance of proper framing when targeting lower income members of the community, noting that “many consumers decide to move forward with energy improvements to solve other household or business problems...these motivations for non-energy benefits were highlighted during the community meetings for this study, particularly issues of family health.” Therefore, proper framing also involves understanding local context and community involvement, allowing programs to highlight the benefits that are most important to the community of interest. Therefore it will be important for Vermont energy equity programs to understand what lower income Vermonters are most interested in achieving in participation, whether that be financial, environmental or social benefits, and frame their program accordingly.

**Community Involvement**

Rural, lower income Vermonters are likely to be hesitant to trust outsiders who come in and tell them what is best. Therefore, involving community members in the outreach mechanisms is an important strategy to overcome the ‘distrust factor.’ A study by California’s Energy Commission (2016) found that many local communities were...
afraid of scammers, but working with trusted members of churches and schools to educate the community helped to minimize the initial feelings of distrust, thus helping the program’s reputation. Similar community involvement will be important for Vermont energy programs to overcome initial feelings of distrust in an effort to enhance participation. Developing outreach strategies targeted at the most vulnerable segments of the population (such as women, or economically marginalized groups) has also been found to increase equity and empowerment. Such strategies can further benefit Vermont programs that are attempting to help harder to reach populations in Vermont communities.

Pre-Weatherization Repairs
Many Vermont houses are old and are in need to pre-weatherization upgrades. Addressing this barrier is a crucial strategy to increase Vermont participation in energy equity programs.

Renter Focus
Due to the lack of focus on renters in existing Vermont energy equity programs, a similar discount for landlords, and a similar informative video could also be used to spread awareness and provide motivation for landlords and rental tenants to participate in Vermont energy equity programs, overcoming a significant barrier that currently exists in the state.

Barriers to Implementation in Vermont

Funding
The GIZ initiative was a federally funded program under the Weatherization Assistance Program, and therefore it had a stable source of funding to implement the measures needed for discounted pre-weatherization repairs and discounts for landlords. Programs in Vermont that are not federally funded will have to work to find a new way of financing the additional costs associated with pre-weatherization repairs and landlord burdens.

Urban Context
The GIZ initiative worked within urban communities, which meant that residents were living in much closer proximity to one another. This made door-to-door outreach and discussion between members of the community much easier. In Vermont, residents in a community can be more spread out, making outreach and diffusion of information much more challenging. The rural nature of Vermont will make the involvement of existing community leaders in target areas even more important; these are the people that will know the methods of information diffusion in their communities and will help to spread the word of the benefits and importance of participating in energy equity programs.

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4.2 iCanConserve, Wisconsin

<table>
<thead>
<tr>
<th>Benefits Provided by Program</th>
<th>Simplicity and efficiency</th>
<th>Community Involvement</th>
<th>Relatable framing to community</th>
<th>Education Component</th>
<th>Data Collection</th>
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<tbody>
<tr>
<td></td>
<td>Simple descriptions of program</td>
<td>Minimizes time spent on audits</td>
<td>Community leader involvement</td>
<td>Hosts community challenges</td>
<td>Money saved</td>
</tr>
</tbody>
</table>

**Description**
iCanConserve, a community intensive energy efficiency program in Wisconsin, was established to identify and overcome social barriers facing potential participants and determine the ability to implement a larger scale offering in the future.\(^\text{11}\) iCanConserve was instigated by the Wisconsin Energy Conservation Corporation (WECCUSA). WECCUSA designs and implements energy efficiency and renewable energy programs and “partners with utilities, local and state governments, regulatory agencies, and other organizations to provide cost-effective solutions that help both consumers and businesses save energy and money.”\(^\text{12}\)

The iCanConserve program was piloted in three small, urban communities: Brillion, Allouez, and Plover.\(^\text{13}\) It had four main components: (i) energy efficiency program opportunities, (ii) promotion of non-standard rates, (iii) tools and technology options and (iv) community level reward for each community that reached specific participation targets.\(^\text{14}\) The program emphasized the local context of the program in each of the target communities, and ultimately it installed more than 12,000 energy efficiency measures, paid about $2.5 million in incentives, exceeded all participation targets in each of the three community and experienced more than a 60% completion rate with whole house retrofits.\(^\text{15}\) The success of this program demonstrates that the personalized approach of addressing energy needs in a community is an effective way to motivate residents to participate.

**Strengths of Program**

**Flexibility**
WECCUSA remained flexible in their initial plans for the pilot communities, allowing for adjustment based on feedback from community members and initial evaluation results.\(^\text{16}\) This provided for a successful redesign of several aspects of the program that were lacking in participation, and a concentration on offerings that were more successful.\(^\text{17}\)

**Framing**
The community based approach allowed WECCUSA to understand that, program participants, saving money is one of the most important reasons for participating.\(^\text{18}\) Similar to the program in Missouri, this understanding helped WECCUSA to frame their mission in a way that made it most intriguing to the target participants.\(^\text{19}\)

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14 Cadmus, 2013
15 WECC, 2013
16 Cadmus, 2013
17 Cadmus, 2013
18 Cadmus, 2013
19 California study highlights the importance and possibilities of framing, mentioned in previous section
Simplicity and Efficiency

Residents expressed their feelings of being overwhelmed by the level of information in their audit reports, which showed the importance of minimizing the amount of information that potential participants need to process. To solve this issue, the program began to organize reports with a high level summary, with additional details if the recipient wanted to understand more.20 Similarly, since residents could express the limited time they had to work to implement energy efficiency standards, the program ensured that the audit activities occurred during a single visit, thereby preventing the need for follow-up visits that could deter residents with limited time.21

Community Wide-Challenges

Creating community-wide challenges was a successful strategy—i.e. if the community reached a certain level of participation then it would earn a “reward”, which in this case was energy efficiency outdoor lighting installed in a sports complex, a village park, and city hall.22 This community reward motivated homeowners and businesses to participate and brought the community together to achieve a common goal.

Benefits of Implementation in Vermont

Community Involvement

Whenever possible, the program used local contractors for audit activities. This decision increased scheduling options for participants, benefited the local economy, and provided familiar faces to the audits.23 This aspect of the program also instilled trust between the program and the residents, helping to foster support among the community. WECCUSA also used community member advocates to walk customers through the entire process so that the participants understood what was going to happen; this led to increased customer satisfaction and higher completion rates.24 Ultimately, the personalized approach that iCanConserve followed within the communities left a positive impression among the residents, and helped to achieve high participation rates. Further studies cite additional benefits of community based energy programs including increased public awareness, enhanced consumer knowledge of the value of energy efficiency, leveraged resources to support energy efficiency, assured resources to remote hard to reach communities and populations, built long term support, and engaged public leaders in energy efficiency support.25 Community involvement in Vermont energy equity programs would therefore benefit both the community members and programs by fostering participation and support for entire community.

Education

Implementing energy efficiency education programs in schools could benefit Vermont. The members of the three pilot communities in Wisconsin responded favorably to the program working with the local schools to educate

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20 Cadmus, 2013
21 Cadmus, 2013
22 WECC, 2012
23 Cadmus, 2013
students and ultimately engage families in adopting energy saving practices.\textsuperscript{26} Hosting classroom sessions and creating courses helped to root the idea of energy efficiency in the minds of young children and participating family members and friends.\textsuperscript{27} Integrating energy efficiency education in energy equity programs could help improve participation of lower income Vermonters. Firstly, these ideas could be planted in children’s minds at a young age, incentivizing them from early on to engage in energy efficiency measures, and secondly, children could become a potential source of information and inspiration for parents who might not go to school, but learn from their children about measures the family can take.

**Barriers to Implementation in Vermont**

**Data Collection**
Implementing community wide targets requires data collection that currently many Vermont programs lack. iCanConserve designed tracking databases that recorded participatory and activity levels in the communities. Vermont programs would have to design a similar data collection method in order to track participation and implement a community wide goal.

**Urban Context**
iCanConserve took place in three small, but urban communities, whereas Vermont is a very rural environment. Therefore, building community camaraderie and reaching residents of a much more geographically dispersed community will require more effort and time. However, these challenges can be overcome by Vermont programs that aim to implement a similar, community-wide, community-focused energy equity program; it will merely require more effort and planning in order to reach all of the community members and bring them together to achieve a common goal.

\textsuperscript{26} WECC, 2013 \textsuperscript{27} WECC, 2012

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Figure 15. The teachers of the communities in Wisconsin believed that educating students would benefit the coming generations, showing the support for education programs in communities.
4.3 Healthy Homes, Oregon

<table>
<thead>
<tr>
<th>Benefits Provided by Program</th>
<th>Pre-weatherization actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Health and safety pre-weatherization updates</td>
</tr>
</tbody>
</table>

**Description**

Healthy Homes is a small initiative launched by the Community Action Partnership of Oregon (CAPO). CAPO is a State Association for Oregon’s Community Action network comprised of 17 Community Action Agencies and the Oregon Human Development Corporation, a statewide agency serving farmworkers. It provides a series of services, including energy assistance, aiming to alleviate the high energy-burden of low-income Oregonians through involvement of the national, local and state energy policies. Their definition of a “healthy home” is one that is “designed, constructed, maintained, or rehabilitated in a manner that supports the health of residents. This can be defined broadly to include physical and environmental factors, and personal/behavioral factor.” The program’s primary goal is to identify health and safety issues in the home environment and act to eliminate or mitigate the problems through a “one touch” philosophy that pairs grant funded work with current weatherization services. This brings health and indoor environmental quality and energy efficiency standards together, so that both goals can be accomplished under the same program.

**Strengths of Program**

*Holistic Approach*

Healthy Homes is unique in that it uses a holistic approach to address residents’ high energy and medical costs. It combines energy weatherization with home repairs to reduce the financial burden of inefficient and unsafe homes. This holistic approach allows the program to assess risks within a home related to broad safety and health upgrades, along with information provided to homeowners about energy efficiency upgrades and potential follow-ups.

**Benefits of Implementation in Vermont**

*Health and Safety Focus*

Since many Vermont programs lack a method of addressing health and safety concerns in houses that want to participate in energy efficiency programs, this is a model program where both aspects can be addressed together. Many lower income Vermonters live in older homes that are in need of health and safety upgrades before energy upgrades can be considered and installed. If funds for energy efficiency audits and upgrades included money for health and safety upgrades that would at the same time provide for energy efficiency upgrades, then the program would be able to address both the health *and* energy side of the financial burden felt by many Vermonters.

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29 CAPO, 2016
30 CAPO, 2016
**Rural Context**
Oregon is a rural state, similar to Vermont, thus the methods associated with implementing the Healthy Homes program can be applied to implementing a similar program in Vermont.

**Barriers to Implementation in Vermont**

**Funding**
A possible challenge associated with the implementation of a similar program in Vermont is the need to secure a source of funding that would address both health *and* energy upgrades in residential homes. This source of funding would have to be larger than funding for programs that are only focused on one aspect or the other. Nonetheless, if a program that focused on health and safety of homes in Vermont partnered with an energy equity program that worked on improving efficiency or renewable energy use, then the programs could work side-by-side, utilizing their two different sources of funding to accomplish the same goals that Healthy Homes set out to achieve in Oregon. This would split the burden of the more holistic approach to improve living standards in Vermont, with the hope that one day a unified program could acquire the resources needed to address both issues of concern. Combining both health and energy concerns would increase the likelihood of collaboration and success in achieving energy equity throughout Vermont.
### 4.4 Massachusetts Save Low-Income Multi-Family Retrofit Program, MA

#### Description

The Massachusetts Save Low-Income Multi-Family Retrofit Program is a program that helps non-profit, for-profit, and public housing authorities make energy-efficient upgrades to lower-income residences and multi-family buildings throughout the state. The program is part of Mass Save, and is funded by the Massachusetts Energy Efficiency Program Administrators and the Low-Income Energy Affordability Network (LEAN). Lower income, multi-family properties are eligible to apply for assistance in improving energy usage of their buildings, and in situations where applications are approved the programs provide grants to property owners to cover the cost of energy efficiency upgrades of their buildings. There are a series of eligibility requirements that need to be met in order to apply, including (a) having five or more families residing in the building, (b) 50% of the households having an income at or below 60% of the area median income, and (c) the site has to be served by a certain Energy Efficiency Program Administrator. The clients are the residents of the homes and these clients must complete an online information form documenting tenant income eligibility, and creating an energy tracking account at wegowise.com, which tracks the building’s energy consumption. This helps the clients see the success of the upgrades once completed. When the client is approved, they receive either an electric/appliance audit, a Comprehensive Building Assessment, or a mix of cost-effective building shell, heating, and/or ventilation upgrades. Potential upgrades include: space heating systems, hot water systems, air sealing and insulation of building envelopes, interior and exterior lighting retrofits, refrigerators/freezers, window, air conditioners, energy saving power strips, low-flow showerheads, faucet aerators, as well as programmable thermostats.

#### Strengths of Program

**Multi-Family Focus**

The program focused solely on multi-family units. As discussed in chapter 3, reaching multi-family residential buildings is a major barrier faced by many energy equity programs as exemplified by the split incentive problem; therefore, mimicking this program by allowing residents to reach out with the landlord’s approval and picking up most of the cost to the landlord, incentivizes residents to participate in the program.

**Simplicity - One-Stop Shop**

The program is a one-stop shop. It offers numerous services clients might need, including electrical and appliance upgrades, or cost effective building shell, heating or ventilation upgrades, so that residents of buildings can go to one place for an array of necessities.

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32 An initiative sponsored by Massachusetts natural gas and electric utilities that aims to provide energy efficiency services that help residents and businesses manage their energy use and costs (“Mass Save Energy Saving Programs.” Mass Save. The RCS Network, n.d. Web. 06 Apr. 2017.)
34 Columbia Gas of Mass, Nationalgrid, Berkshire Gas, Unitil, Liberty Utilities, Eversource Energy, The Cape Light Compact
**Simplicity - Single Point of Contact**

The program offers a web-based single point of contact for building owners and residents to apply. This facilitates application by not deterring potential clients due to confusion or by overwhelming them with a large number of steps to apply, and facilitates understanding through an easy to navigate website.

**Benefits of Implementation in Vermont**

**Multi-family Focus**

The multi-family residential buildings in Vermont are concentrated around urban and semi-urban areas according to a 2012 Analysis of Impediments to Fair Housing Choice by the Department of Housing and Community Development. Since a number of organizations have mapped these areas in Vermont, multi-family focused program would have easy access to relevant information regarding the locations of these housing units. Furthermore, existing programs that already serve these areas could start focusing their attention on multi-family housing, given that they have a well-established relationship with these communities.

**Simplicity - Single Point of Contact**

Any energy equity program in Vermont could benefit from facilitating the application process by creating a single point of contact on the Internet. This would minimize residents’ confusion and reluctance to figure out how to participate in energy programs.

**Barriers to Implementation in Vermont**

**Agreements with Utilities**

A challenge associated with implementing a similar multi-family residential program in Vermont is that agreements with utilities will have to be made similar to the ones made between Mass Save and utilities in Massachusetts. This will be essential not only in securing a source of energy upgrades, but also in securing proper funding for the project. This will be a key strategy to keep the price of upgrades down for the building owners and residents. Green Mountain Power, one of the biggest utilities in Vermont, has launched their own energy equity programs, and supports the push towards greater access, which offers an encouraging start to establishing an agreement to help secure a source of upgrades and funding for a similar program in Vermont.

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38 Such as eVolve Panton
### 4.5 California Low-Income Weatherization, California

<table>
<thead>
<tr>
<th>Benefits Provided by the Program</th>
<th>Renters or multifamily</th>
<th>Renewable energy component</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multifamily focus</td>
<td>In addition to energy efficiency upgrades</td>
<td>Cap and trade</td>
<td></td>
</tr>
</tbody>
</table>

**Description**

The California Low Income Weatherization Program (LIWP) is dedicated to increasing lower-income residents’ access to renewable energy. It provides for installation of solar panels, solar hot water heaters, and energy efficiency measures in lower-income single and multi-family homes. Its joint goals are to reduce greenhouse gas emissions and maximize co-benefits to disadvantaged communities. Many older homes have a high rate of pollution, along with health and safety concerns and the program aims to improve both aspects by installing technology that improves health and a safety of the house and reduces greenhouse gas emissions. By reducing energy costs and providing environments with improved health and living conditions, the program also provides financial benefits. This is especially important for low-income households, as it provides an opportunity for job creation and economic development. To be eligible single family homes and small multi-family buildings must be within a disadvantaged community and the residents “must meet income qualifications of 60 percent of state median income or income eligibility requirements under the California Solar Initiative’s Single Family Affordable Solar Homes Program” (CSD, 2016c). For owners of larger multi-family properties (more than 20 units), the Large Multi-Family Program provides incentives for up to 80 percent of energy efficiency upgrades and 100 percent of solar installations. This incentive aims to attract more multi-family building owners to make the change towards greater energy efficiency and greater reliance on solar energy. The California cap and trade program helps to fund the program, with about $174 million of the cap and trade auction proceeds allotted for LIWP in the 2014-2015, 2015-2016 and 2016-17 state budgets. To date, more than $48.8 million is being used to install more than 12 megawatts of solar PV, benefitting about 3,585 lower-income households.

**Strengths of Program**

**Holistic Approach - Efficiency and GHG Emissions**

The program’s joint goals of aiming to offer benefits to lower-income households while also reducing greenhouse gas emissions, creates a holistic way of tackling the current environmental and energy issues facing the world today. Fuel poverty and the need to transition into a lower-carbon economy are pressing issues around the country. All states can reduce their carbon footprint, and all states have individuals suffering from an energy burden; the California LIWP tackles both of these issues through energy efficiency and solar energy installments. By taking a holistic approach to solving the energy and environmental issues of today, the program has been able to maximize economic, environmental and social benefits in the communities it serves.

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41 Identified in the CalEnviroScreen California Energy Commission, 2016
42 California Energy Commission, 2016
43 California Energy Commission, 2016
44 California Energy Commission, 2016
**Benefits of Implementation in Vermont**

**Multi-Family Focus**
The program focuses on multi-family dwellings alongside single-family dwellings, overcoming a common barrier that many programs face in addressing only one or the other. Serving both types of housing allows the program to expand its reach. The multi-family residential buildings in Vermont are concentrated around urban and semi-urban areas, and previous organizations have mapped where these areas are located. Thus, a multi-family focused program would have easy access to relevant information regarding the locations of these housing units. Programs that focus on multi-family housing units alongside single-family units in areas of Vermont would reach a greater share of the population, especially lower-income Vermonters who tend to live in multi-family units.

**Funding**
While many Vermont programs have to rely on grants that need to be renewed, this program has a stable source of funding through California’s cap and trade program. California is in a unique position because it can allocate money from its cap and trade program to fund energy equity programs such as LIWP.

**Barriers to Implementation in Vermont**

**Coordination**
This large undertaking requires massive amounts of coordination on the part of the project leaders, as well as a large source of funding. Serving both single and multi-family homes, addressing health concerns through installation of energy-efficient or renewable energy technologies, creating jobs, and reducing greenhouse gas emissions through energy efficiency upgrades are challenging, yet important goals to strive towards.

**Funding**
Funds provided by California’s cap and trade program offers a large, stable source of financing. Nonetheless for this to be implemented in Vermont, significant policy changes would be required to establish, approve and implement a cap and trade program or an equivalent financing mechanism. This said, the development of a similar cap and trade program is not impossible and it could certainly be a potential source of funding for many energy equity programs in Vermont.

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4.6 Clean Vehicle Rebate Project, California

<table>
<thead>
<tr>
<th>Benefits Provided by the Program</th>
<th>Simplicity and efficiency</th>
<th>Targeted outreach</th>
<th>Community Involvement</th>
<th>Transportation component</th>
<th>Renewable energy component</th>
<th>Education Component</th>
<th>Funding</th>
<th>Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand alone website</td>
<td>Spanish translation for communities</td>
<td>Community organization involved</td>
<td>Entirely</td>
<td>Clean energy vehicles</td>
<td>Work with community organizations to educate</td>
<td>Cap and trade</td>
<td>Intense data collection for infographics</td>
<td></td>
</tr>
</tbody>
</table>

**Description**

The Clean Vehicle Rebate Project, created in 2010, is a voluntary incentive program designed to accelerate the goal of increasing the quantity of zero-tailpipe emission capable passenger vehicles on the roads and to encourage clean technology innovation. The program provides rebates for the purchase or lease of eligible vehicles and provides clean-vehicle market information to California consumers. Rebates are offered for eligible individuals, businesses, nonprofits and government entities that are based in California; consumers are not eligible for CVRP rebates if their gross annual incomes are above the income cap, and consumers with household incomes less than or equal to 300 percent of the federal poverty level are eligible for an increased rebate amount. Therefore, the rebates are available for individuals and businesses with lower income levels, and the rebates get larger as one’s income decreases. Since the project started in 2010, CVRP issued or reserved nearly 123,000 rebates totaling over $260 million. The program has a focus on reaching lower income and disadvantaged communities through specific outreach strategies, however, in the fiscal year 2014-2015, only about 6% of CVRP rebates issued since the project began have gone to disadvantaged communities, and only about 3.9%–10.4% of participants of rebates were in the lower income population based on consumer survey responses. Therefore, while the program does have a focus on lower income and disadvantaged communities, the majority of the participants do not come from this category, indicating a gap in adoption of clean energy vehicles in these communities.

**Strengths of Program**

**Clearing House**

Like California, Vermont is one of the country’s ten Zero Energy Vehicle regulation states—states that have adopted the CA requirements in the Clean Air Act. This means VT requires auto manufacturers to sell an increasing share of PEVs and hydrogen ZEVs in relation to their total sales. However, VT’s Drive Electric Vermont (DEV) program—a clearinghouse of PEV resources and information that hopes to increase PEV ownership and sales—is not working to make these vehicles more accessible to the entire Vermont community, namely lower income populations.

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Benefits of Implementation in Vermont (2012 Drive Electric Vermont program (DEV))

Education and Outreach

California’s Clean Vehicle Rebate Program’s education and outreach strategies would be a valuable asset to the DEV program. Specifically, working with existing community based organizations to get more Vermonters interested in joining the program should be a primary goal. Due to a lack of community-based organization influence in the program’s four year period, lower income Vermonters still remain cautious of joining the program. Simply, Vermonters aren’t convinced that PEV’s can handle the Vermont weather especially in the winter and spring seasons, thus leading to declining participation.\(^\text{52}\) Even with former Vermont Governor Peter Shumlin’s goal of 3.3 million ZEV’s by 2025, the demand needs to be in place for that goal to become a reality. In the absence of a more incentivized and community-based program for lower income Vermonters, it will remain a goal and not become a reality.

Infographics

The California Vehicle Rebate Project has a community dashboard and interactive maps that make it easy to see the rebate available, the number of rebates given, and the number of cars sold in each area.\(^\text{53}\) Infographics are an effective way of presenting complex information into easily shareable content.\(^\text{54}\) Given that studies have shown that 90\% of information remembered is based on visual impact\(^\text{55}\), the DEV program would benefit from replicating a similar community dashboard or interactive map on their website.

Abundance of Charging Stations

The abundance of both level 1 and level 2 charging stations in California makes owning electric vehicles easier as there are many places to charge the car once purchased. Vermont would benefit from expanding the number of charging stations as currently only 50\% of the state’s 111 charging stations offer free charging and of these free options the charging offered is only Level 1 (3-5 miles per one hour of charge).\(^\text{56}\)

Funding

California’s rebate program is funded by Air Quality Improvement Program (AQIP), by cap-and-trade auctions, and by several budget cycles from the California Energy Commission’s Alternative and Renewable Fuel and Vehicle Technology Program and Fund.\(^\text{57}\) These funding sources are unique to California, and the legislation in place that makes these funding source possible are not initiated in Vermont. Currently the DEV’s rebate program is rooted in a single entity, the Vermont Low-Income Trust for Energy (VLITE), which funded 76 small rebates of $500 to Vermonters who purchased PEVs at participating dealerships.\(^\text{58}\) Since rebates were fixed, the program was not tailored to

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52 Wagner et al., 2016
53 The interactive community dashboard
57 Wagner et al., 2016, p. 11
59 Wagner et al., 2016, p. 15
60 Wagner et al., 2016, p. 15
the specific needs of lower income Vermonters. The same rebate program, through VLITE funding, launched again in June 2016 with $1,000 incentives to purchasers, however funding was exhausted on March 30, 2017. In addition, rebates were not targeted at low income Vermonters. Therefore, implementing different sources and types of funding in Vermont, like in California, could allow for greater monetary benefits to low income Vermonters.

Barriers to Implementation in Vermont

Funding

The program funding is unique to California and is a result of the state’s commitment to reducing GHG emissions and the cap and trade program. This goal helped to secure permanent sources of funding for CVRP. Therefore, for Vermont to achieve a similar stable funding mechanism would require changes in state legislation first.

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Chapter 5: Looking Forward

The Vermont Energy landscape is rich in emerging programs that focus specifically on the needs of low-income families experiencing fuel poverty. These initiatives range from community based strategies to state programs promoting renewable energy sources and energy efficiency measures. While some of these programs focus on developing renewable sources in small communities, others have expanded their reach to cover the entire state.

The Vermont programs we have analyzed in this report excel at providing simple application processes, leveraging partnerships, integrating energy efficiency education into programs, developing successful community-based strategies, and coordinating program delivery with other services. Some of the challenges that are common in most Vermont programs are the exclusion of renter and multi-family houses and of middle-income, fuel poor households. Health and safety issues, lack of permanent sources of funding, insufficient data collection, ‘distrust factor’, lack of awareness, and limited outreach programs are also significant recurring challenges in all Vermont energy equity programs.

Examining the ways in which other states approach the issue of fuel-poverty can provide possible ways to improve the existing programs in Vermont. Based on the analysis of four out-of-state energy equity programs, we recommend the following: increasing community involvement in program design, adopting a holistic approach to energy equity (including pre-weatherization repairs), reevaluating and upgrading programs when new information is found, securing stable funding, and creating mechanisms to ensure consistent data collection.

As we begin our transition into a low-carbon future, it is important to recognize the ways in which the existing Vermont programs can be improved to better serve the communities suffering from a high energy burden. Most importantly, energy inequity in Vermont reflects the global theme of the role of low-income, marginalized communities in addressing the emerging threat of climate change. As such, energy equity initiatives in Vermont are not only important to address local fuel poverty, but they also represent the need to ensure that our global efforts to combat climate change are based on just and fully inclusive processes.
One challenge encountered in the process of writing this report were the varying metrics that could be employed to evaluate the ‘success’ of the various programs. Not only does this cloud the definition of “success”, but it also makes the task of evaluating the general effects of the programs more difficult. This appendix includes a list of success metrics that were gleaned from the research conducted for this report. The list itself is meant to function as a ‘reading guide’ for both this report and in future program assessment research efforts.

**Quantitative metrics:**

1. Savings generated
   ○ Savings can take multiple forms such as dollars saved, trees saved, or carbon tons reduced. The most frequent quantitative savings metric encountered was in financial savings, given that energy burden is often quantified in resources wasted.

2. Percent of target population reached & number of participants served annually
   ○ Many programs have ‘target population’ goals, such as eVolve Panton that aims to increase efficiency in every home in the entire community of Panton, VT. However, such goals are not always achieved completely. Currently, Panton has only conducted house walkthroughs for 75 of the 255 houses.

3. Number of people aware of the program
   ○ For larger-scale programs a barrier to participation is often knowledge that an entity exists to solve a specific problem. Drive Electric Vermont, a statewide initiative, defines one of their metrics of success as the number of people aware of PEV options.

4. Kilowatt hours generated
   ○ For renewable projects success is often measured by the energy, in the form of kilowatt hours, produced by the renewable project. This is then easy to translate and compare to typical energy usage, either by household or community.

5. Funding
   ○ The funding that a program receives often reflects what the program can achieve and the types and scopes of its resources. Although, funding dollar amounts can only be compared in tandem with the information on how many communities or individuals they serve. The $700,000 received by the Heat Saver Loan from the DOE seems like a lot of money, however dividing this amount amongst 249 loans and other operational costs, the funding dramatically dwindles, especially in the context of expensive efficiency technology and retrofitting projects.

6. Availability of infrastructure
   ○ For programs relating more specifically to transportation there is often an aspect of infrastructure inherent to the efforts (ie. charging stations for PEVs, public transportation). By quantifying the number of charging stations or bus lines in a given service area, an estimate can be made as to how well a community is served.
Qualitative metrics:

1. Program expansion and growth
   ○ Programs can grow in a variety of ways -- the number of participants served, the geographic span of the program, or the timeframe of the program may increase or decrease in a beneficial manner. Noting any growth is most likely a reflection of the program’s success being translated into new areas. Additionally, if a program structure or mechanism is repeated or translated to an area different from what it already serves (ie. a new county or state), this is another reflection of success. If the program works well, other places will want to replicate it.
   ○ Examples of growth pertinent to this report include the expansion of NWWV’s territory of Rutland county to include Addison and Bennington counties as well. Heat Saver Loan also experienced growth when it was scheduled to terminate in August 2016, but was later extended until March 2017.

2. Normalization & stigma reduction
   ○ One significant barrier related to introducing renewable energy projects into lower-income communities is the stigma associated with these originally expensive technologies - a sort of ‘this isn’t meant for us’ frame of thinking. Programs that aim to normalize energy efficiency behaviors and renewable energy usage combat this challenge and tend to foster more lasting and impactful change. For example, part of Vital Communities successful outreach strategies include forums where community members who had participated in the programs speak with their neighbors. The organization found greater participation rates based on the fact that potential participants knew that others in their community were also participating.

3. Extent of community support
   ○ Given that the main stakeholders of many of these programs are the actual communities and individuals they serve, it is quite obvious that the success of the program would be reflected in the extent of support it garners from its participants. For example, eVolve Panton will not be able to reach its lofty participation goals unless all members of the community willingly sign-up for the program.

4. Program timeline achievements
   ○ Occasionally programs set a timeline of goals to help keep efforts on track, or invoke a specific timeframe in order to encourage greater participation. If a program is consistently meeting its timeline benchmarks close to on time, this is usually an indicator that efforts are proceeding smoothly and successfully. Additionally, if a program is able to deliver benefits quickly or take the proper time to assess problems, this is another reflection of good work and success. An example of a beneficial timeframe occurs with NWW’s HomeRepair, wherein repairs applications are accepted in one or two days.

5. Ease of access
   ○ The initial challenge of a program often involves accruing customers to participate in the program. Often times what turns participants away are large amounts of paperwork or confusing eligibility requirements. Programs that combat such complications by offering a one-stop-shop approach such as NWWV or offering a broad range of eligibility such as eVolve Panton and Weatherize Upper Valley. Heat Saver Loan’s program director even attributes one of the key factors of the program’s success to its easy access and clear eligibility breakdown.

6. Waitlists
   ○ Some programs, such as the national Weatherize Assistance Program, have long backlogs that signify a lack of resources and structuring in relation to meeting actual demands. Programs that have waitlists, but are short mean that the program resources are properly serving the demand, while programs without waitlists could also reflect an excess of resources or a lack of demand.

7. Re-evalutions & piloting
   ○ Programs are usually never perfect at their outset and might fall behind as communities or issues...
develop. Therefore, initiatives that incorporate consistent re-evaluations or include pilot programs have a much better grasp on how the program is actually performing and how situations or issues may be changing. For example the Clean Vehicle Rebate program in California (Chapter 4.6) engages in continual re-evaluation such as quality assurance or website updates in 2015.

8. State and local policy support
   ○ A major source of funding and other resources in relation to environmental and energy issues is local government. Support from such entities can then greatly increase the impact and or reach of a given program. For example if a local government defines building codes that require consistent weatherization updates, Weatherize Upper Valley might have an easier time serving multi-family housing units as the building code overcomes the split-incentive barrier. By mandating rather than incentivizing, building codes supercede this issue all together.
In the case that similar program assessment work will be done on other VT programs or utilized in other states, this guide offers a summary of what questions and/or topics generated the most useful and insightful answers that aided in creating more thorough and thoughtful case studies. The guiding questions are based on research interviews conducted by the authors of this report. The subjects of these interviews ranged from members of utility companies, non-profit organizations, and program directors. The guiding questions are broken down into three sections that cover the initial research, strength/weakness assessment, and the forays into areas where there are current ‘gaps’ in effort that were necessary in writing the report’s case studies and subsequent evaluations.

Initial Overview Questions:
- What are the goals of this program/initiative?
- What is the target population and who are the main stakeholders?
  - Does the program target individuals or take a more community-wide approach?
- What energy sector(s) is the program focused on (electricity generation/solar, appliances, heat, transportation)?
  - If the program focuses on multiple energy sectors, what is the breakdown of such efforts? Is the work in some sectors more prevalent than others?
- What are the mechanisms of the program and how are they accomplished? (ie. where does the funding come from, how do financing offers work out, etc.)

Investigating Program Strengths & Weaknesses:
- What do you see as the strengths of the program?
- What do you see as the limitations or barriers to the program?
- What challenges has the program faced, in both a practical and theoretical sense?
- What are the benchmarks of success that the program hopes to reach? And how does this actually compare to what is happening on the ground?
  - Are initial program goals actually being accomplished?
- How did the program begin?
  - Did it aim to fill a specific need or low income groups?
  - Did it aim to improve a pre-existing program?
  - Did it begin in an effort to accomplish larger goals? (ie. VT’s goal to reach 90% renewables by 2050)
- What collaboration efforts are apparent in the program?
  - If so, what is the breakdown of such collaboration? And has it been helpful or more of a hindrance?
  - In what ways has the program capitalized on the strengths of its partners?
- Is there any data collection associated with the program? And if so, what is it being used for? What does it assess?
- Is there a timeline for the program? What is the nature of the timeline (purposefully fast/slow)? Are the benchmarks of the timeline being reached?
- Has the program grown? And if so how? (ie. has it grown geographically, by number of participants, or over an extended period of time)
○ If not, where could the program grow? How could it expand?
● In what aspects could the program improve? What are the current frustrations?

**Program Involvement in Addressing Unfilled Niches in the VT Energy Equity Landscape:**

● Does this program include rental properties or non home-owners and/or address the split incentive issue?
● How much focus is put on the transportation energy sector? And do these efforts actually address populations of lower income?
● How much focus is put on the renewable energy sector?
● How has the program address barriers to entry, such as eligibility confusion?
● Does the program have a protocol when health and safety issues come into play?
  ○ For example, if the program is focused on weatherization or retrofitting and a health hazard like asbestos is found, halting any weatherization work, is there funding for the remediation work? Or, do the efforts stop there?
● What efforts, if any, are there to include components of education on the topics or technologies that the program addresses?
● To what extent are the community stakeholders involved in the program? Are they counseled during improvement efforts?
  ○ Are they able to provide feedback on the program’s success?
  ○ In what ways do they participate in the decision-making process?
References


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Sarah Brock, Solarize & Weatherize Upper Valley
Melanie Paskevich, NeighborWorks of Western Vermont
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