



THERMAL ENERGY FINANCE PILOT PROGRAM

"Heat Saver Loan" Program Report

December 1, 2016



Executive Summary

Beginning in early 2014, the Department of Public Service commenced with development of the Thermal Energy Finance Pilot program designed to increase access to affordable financing for residential property owners in the state interested in making thermal energy improvements. Through the pilot, the Department launched the Heat Saver Loan (HSL), a new finance product offered statewide through two finance institutions in conjunction with Efficiency Vermont. The HSL features low interest rates, an easy to use application process, and access to financing for a range of cost-effective thermal energy efficiency upgrades made possible through a network of qualified fuel dealers, building contractors and product vendors.

The TEF Pilot supports thermal efficiency goals established in Act 92 of 2008, State energy goals as expressed in the 2016 Comprehensive Energy Plan, and greenhouse gas reduction goals. The pilot's partners included Efficiency Vermont, and VSECU and Opportunities Credit Union both selected via competitive solicitation.

The pilot included three areas of priority related to the use of finance tools to advance towards thermal efficiency goals:

- Meeting the needs for affordable capital for thermal energy upgrades among families not currently served by the state's Weatherization Assistance Program or existing loan products
- Evaluating the potential for use of an on-bill repayment model through which loan recipients make monthly loan payments to their fuel dealers, which in turn forward payments to a financial institution
- Including the costs savings potential from thermal efficiency upgrades in loan underwriting to understand how such measures could expand the range of qualified applicants

The program received an allocation of \$670,000 with the intention of leveraging up to \$6.5 million to expand thermal efficiency in Vermont homes and clean heating technologies. The pilot was sponsored by the DPS and its Clean Energy Development Fund with funding from US DOE, and the Vermont Low Income Trust for Electricity. The funding supported credit enhancements including loan loss reserves and interest rate buy downs to help make lending to low and moderate income Vermonters more affordable. Eligible equipment included 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 such as insulation and air sealing.

Qualified equipment had to be installed by members of the Efficiency Excellence Network, which was established by Efficiency Vermont in 2013 to better engage and support a wide range of contractors. By the end of the pilot, the number had grown from a handful to over 200 companies.

Heat Saver Loans were available with terms up to 15 years, and with interest rates between 0% and 4.99% based on income and term length.

During the period of November 2014 through September 2016, the pilot's partners generated 249 Heat Saver Loans valued at \$2.85 million using about \$480,000 of interest rate buy down (IRB). The average loan of about \$11,400 utilized an IRB of approximately \$1,900 with each public dollar leveraging nearly \$6 of private funds. Borrowers from 116 towns spread around the state accessed Heat Saver Loans to support thermal energy upgrades by 85 companies participating in the Efficiency Excellence Network.

Weatherization topped the list of most frequently supported activities, followed by efficient boilers or furnaces and heat pumps.

The pilot was intended to determine the level of interest among lower and moderate income residents in investing in thermal upgrades for their properties when provided a low interest rate loan product. A total of approximately \$2.3 million of the total \$2.85 million in loans using 91% of the interest rate buy down went to low and moderate income borrowers, which together comprised 80% of the HSLs that were closed in the program period.

This report provides details on findings from the program along with observations from partners intended to help inform future finance programs in the state. Overall, the program partners received positive feedback on the design and use of the Heat Saver Loan from borrowers and businesses involved with thermal upgrades for their customers. Currently, the Department is reviewing options for how to transition the Heat Saver Loan to a post-pilot form in conjunction with the Vermont Energy Investment Corporation and its new Efficiency Vermont Loan Program, funded via the USDA Rural Utility Service. The initial experiences of the pilot provide ample experiences upon which to build in the quest to achieve the State's energy goals and a low carbon, clean energy future.

Introduction

In 2010, Vermonters paid over \$600 million to import and use fossil-based heating fuels, with most of this money leaving the Vermont economy. Although homes generally use less fuel today than in recent decades, fuel bills have risen and are expected to continue to rise.¹ These energy costs burden many families. Investments in energy efficiency—air sealing, insulation and heating system replacements—offer the potential for substantial savings over the lifetime of the investment. While residents of Vermont have access to financial incentives such as the rebates offered through Efficiency Vermont that lower the costs, the overall price for residential energy retrofits and upgrades can place the investment beyond the reach of many homeowners. Yet when combining incentives with low-cost financing that matches energy savings to monthly loan payments, energy and cost savings come within reach for many more Vermonters. It is within this frame that the Vermont Department of Public Service (DPS) expanded the toolkit for efficiency to include a focus on finance in helping to meet state energy goals.

The State of Vermont has acknowledged the importance of energy efficiency through legislation and policy that help consumers save money, decrease loads on utilities, generate greenhouse gas reductions, and reduce impacts from energy consumption. With a goal of improving the thermal efficiency of 80,000 homes by 2020² and achieving 90% of the state's energy from renewable sources by 2050³, Vermont continues to support innovation and activities that drive tangible energy improvements.

One element of the State's suite of policies and programs intended to decrease energy consumption was creation of the **Thermal Energy Finance (TEF) Pilot** program. Conceived in 2014 and announced in February of that year, the program sought to help residential property owners finance thermal energy efficiency upgrades with a particular emphasis on making improvements feasible for lower and moderate income (LMI) households. The DPS engaged with Efficiency Vermont, banks and credit unions and their trade associations, and leading fuel dealers and home performance contractors participating in the Efficiency Excellence Network (EEN) to design a statewide thermal energy loan product that would be easy to use and administer, and that would complement existing incentive programs. The pilot was sponsored by the DPS and its Clean Energy Development Fund with funding from US DOE, and the Vermont Low Income Trust for Electricity (VLITE).

The program owes its origin to multiple threads emerging in the state over the past five years. Finance can play a key role in helping residential property owners pay for often expensive upgrades, and has long been recognized as an essential element in the quest for meeting State energy goals. The 2011 Vermont Comprehensive Energy Plan (CEP) put forth a vision that included finance as one of four key elements needed in any of the relevant domains to achieve success including a focus on lower income Vermonters.⁴

The 2011 CEP identified barriers to increased investment in thermal efficiency, including:

¹ Thermal Energy Task Force: Analysis and Recommendations, January 2013. Pg. v.

² 10 V.S.A. § 581

³ Vermont Comprehensive Energy Plan 2016

⁴ "A comprehensive thermal efficiency program should also address the considerable gap in energy efficiency services and funding available for low-income Vermonters who do not qualify for the existing Weatherization Program. We acknowledge that there is a greater demand for the existing program than it can currently serve. Nonetheless, there should be an investigation into potential opportunities such as do-it-yourself programs, no-interest loans, and needs-based tiered incentives for those who do not meet the eligibility requirements but are unable to afford efficiency measures." Comprehensive Energy Plan 2011, Pg. 165

- High up-front costs and financing aversion
- Lack of a comprehensive funding source for thermal efficiency programs
- Insufficient energy services for low-income households, in particular the gap in services and funding available for lower income homeowners who do not qualify for the state's Weatherization Program⁵

The CEP's recommendations were later supported by the Thermal Energy Task Force in 2012, which identified attributes of finance needed to expand the market for energy efficiency, and the Clean Energy Development Fund (CEDF) 2012 Strategic Plan.

In response to the identified need, the DPS issued a Request for Proposals (RFP) in April 2014 seeking financial institutions willing to help create a new thermal energy finance program. The purpose was to demonstrate the ability of a new energy service provider/finance model to accelerate the number of residential thermal energy upgrades in the state, and to make access to finance as easy and inexpensive as possible. Upon selection of two finalists, the DPS and program partners launched the TEF Pilot that led to the creation of the *Heat Saver Loan*—the featured product that has been used by nearly 250 residential property owners in 116 Vermont communities to finance about \$2.85 million of thermal energy upgrades so far.

This report describes the TEF Pilot and its results between November 2014 and September 2016. Although the pilot remains open, this review was initiated in the spring of 2016 to assemble insights from partners with the intent of informing the future direction of the program—a task that would need to commence prior to the official end of the pilot. Program partners offer insights from the pilot program to inform government and private parties interested in expanding the rate of energy efficiency improvements for residential property owners through the use of finance tools.

Creation of the Heat Saver Loan

The TEF Pilot sought to demonstrate the ability of a new energy service provider/finance model to accelerate the number of residential thermal energy upgrades in the state. The TEF Pilot was intended to provide an opportunity for one or more private lenders to initiate new—or to expand existing—lending activities to homeowners or multi-unit occupants for thermal energy upgrades.

To spur participation, the DPS offered credit enhancements at one or more finance institutions to be selected through a competitive Request for Proposals to help lenders gain confidence with new thermal efficiency products, services and vendor arrangements leading towards self-supporting finance. The program was designed to help fuel dealers, high efficiency product vendors and building performance contractors participating in the Efficiency Excellence Network (EEN) to gain greater access to private financing for their customer's home thermal energy retrofits. Through a combination of loan loss reserves (LLR), interest rate buy downs (IRB), and marketing and technical support, the program sought to increase lending to low and moderate income households by reducing the risks associated with lending specifically to these markets. The end result was anticipated as increased investment in thermal

⁵ Comprehensive Energy Plan 2011, Pgs. 161 - 165

efficiency, decrease energy usage in the state, and greater confidence among financial institutions leading to more participation in this market segment and increased market penetration.

The pilot included three priority areas of interest related to use of finance tools to advance toward thermal efficiency goals:

- Meeting the needs for affordable capital for thermal energy upgrades among families not currently served by the state's Weatherization Assistance Program or existing loan products
- Evaluating the potential for use of an on-bill repayment model through which loan recipients make monthly loan payments to their fuel dealers, who in turn forward payments to a financial institution
- Including the costs savings potential from thermal efficiency upgrades in loan underwriting to understand how such measures could expand the range of qualified applicants

Aspects of the program were designed to generate data on these three inquiries.

The initial objective was for an allocation of \$670,000 of funding to leverage up to \$6.5 million to expand thermal efficiency in Vermont homes and clean heating technologies during the two year pilot. Funding sources included the Department of Public Service and its Clean Energy Development Fund (which included funding from the US Department of Energy), and VLITE.

Program Design Features

The TEF Pilot incorporated a set of features that were designed to make access to the loans easy and effective, both for the borrower and the financial partners. Below are elements of the program design.

Partnership – The pilot was structured as a partnership between the DPS, Efficiency Vermont and the credit unions with the recognition that each brought distinct skills and resources needed to achieve success. The intent was to build on the strengths of each towards greatest advantage. The resources provided by VLITE and the CEDF were combined with departmental funding to design and implement the pilot program.

Program Period — The program was formally announced in February 2014 with the recognition that “investments in energy efficiency save Vermont families money on their fuel bills, but also support local jobs, strengthen the economy, and reduce greenhouse gas emissions.” The pilot was initially structured to run through August 2016 but was later extended through the end of 2016.

Eligible Properties – Participation in the TEF Pilot, and access to the Heat Saver Loan, was open to 1 to 4 family owner-occupied residential dwellings located in the state. Properties had to be up to date on their taxes, and could not be an asset in any pending bankruptcy, legal or divorce proceedings. This included both primary residences as well as vacation homes.

The selection of financial institutions included a provision that the new financial product would be available to customers throughout Vermont. Potential borrowers had to become a member of one of the credit unions in order to access the Heat Saver Loan product.

Eligible Activities – The program design intentionally decided to match products and services that currently have incentives available either through Efficiency Vermont or the Clean Energy Development Fund. The list included 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 such as insulation and air sealing. Repairs of existing systems do not qualify under the program except to the extent that such repairs are required for the specific type of approved thermal energy systems and energy efficiency measures. This could include health and safety measures, which had a cap of 50 percent of the total project cost that could be financed.

The set of financeable measures was phased in over the period of the pilot, with the first set—high efficiency oil and propane furnaces and boilers—eligible at the end of 2014 and a full set including weatherization upgrades, advanced wood pellet systems, cold climate heat pumps and solar domestic hot water joining the list in the spring of 2015. The measures selected were tied to rebate programs offered by Efficiency Vermont and the CEDF Small Scale Renewable Energy Incentive Program (SSREIP) to help customers achieve the lowest cost possible. The program made allowances for Vermont Gas System customers who could not access financing through the VGS program, but were eligible to participate in the Home Performance with ENERGY STAR program offered via Efficiency Vermont.

Heat Saver Loan Features

- **Geographic Scope** – Available statewide
- **Interest Rate Buy Down with Tiered Rate Structure** – Heat Saver Loans fall into three tiers based on income levels pegged to the US Department of Housing and Urban Development (HUD) median family income rates in Vermont for terms up to 5 years, or from 5 to 15 years (Figure 1).
- **Amount of Loan** – Applicants could borrow up to \$35,000 with no minimum loan amount and no down payment required. Borrowers can pre-pay the full cost of the loan without penalty.
- **Fixed Rate Loans** – All interest rates were fixed for the term of the loan.
- **Secured or Unsecured** – Applicants could seek either a secured or unsecured loan with payments set to match anticipated energy cost savings.
- **Approvals** – Applicants typically received approvals within two business days.

Figure 1. Heat Saver Loan Rate Structure

| INTEREST RATES | | |
|-----------------------------|---------------|--------------------|
| Income Qualifications | Loan Term | |
| | Up to 5 Years | From 5 to 15 Years |
| Over \$96,240 | 3.99% | 4.99% |
| Between \$64,161 - \$96,240 | 1.99% | 2.99% |
| Below \$64,160 | 0.0% | 1.99% |

- Median Family Income for Vermont, based on the Burlington-South Burlington MSA

Loan Loss Reserves – The TEF Pilot included provision of loan loss reserves (LLR) for the two participating credit unions originally totaling \$133,700. These funds were included to help cushion against potential defaults in the program, and thus reduce risk at the financial institutions. An additional allocation was provided for Opportunities Credit Union in the case that an income eligible applicant would qualify for a guarantee by HUD.

Equipment Vendors –The high efficiency oil and propane heating equipment to be installed or the weatherization work performed at a home was slated for completion by companies participating in the Efficiency Excellence Network (EEN). The network was established in 2013 to better engage and support a wide range of contractors. The primary goal of the EEN is to provide contractors more access to Efficiency Vermont support and benefits, while raising the bar on quality and training so they can identify and promote energy efficiency equipment and opportunities in their work. Contractors meeting the requirements of the network may participate with Efficiency Vermont in the Efficiency Excellence Network. Conversely, participation in EEN also enables customers to more readily identify and connect with qualified contractors.

The EEN included about a dozen firms at the outset of the pilot and grew to over 200 in 2016. Eligibility of the equipment vendors or contractors was verified during the underwriting process by the financial partners.

To help ensure quality, EEN participants were offered training and required to adhere to a set of standards set by Efficiency Vermont. These standards are tailored to each specific trade group within the EEN and help to ensure contractor expertise, quality, professionalism, consistency and accountability. Regular training is made available to EEN contractors in all regions of the state, covering topics such as financing, available efficiency rebates and incentives, new technologies and effective sales. Companies maintaining current status in the EEN were allowed to offer Heat Saver Loans to their customers.

Companies that sell advanced wood heating systems or solar domestic hot water systems were not included in the EEN during the term of the pilot; however, eligible firms did include those qualified to sell and install their products as part of the CEDF's Small Scale Renewable Energy Incentive Program, managed by the Renewable Energy Resource Center at Vermont Energy Investment Corporation (VEIC). By the end of the pilot, Efficiency Vermont was working to bring more of these vendors into the EEN.

Marketing – To foster awareness of the new loan product, the DPS allocated funds for direct marketing and for outreach to participating EEN companies. Heat Saver Loans were marketed through a variety of pathways, including direct marketing to vendors and customers, print materials, a program website www.heatsaverloan.com, and through the two selected credit unions. The primary channel was intended to be through members of the EEN and qualified vendors of equipment for pellet or solar hot water systems. These contractors and vendors were allowed to link to the HSL website, list access to the loan in their marketing materials, and share printed materials provided by the program. Both participating credit unions provided information via their own internal marketing activities including newsletters and websites.

DPS provided support to engage the Energy Futures Group, which assisted in developing marketing materials, creating the website, and conducting outreach to fuel dealers. Efficiency Vermont also conducted a wide range of outreach activities, including marketing via its website, community forums, public presentations and staff consultations with customers. Thus, potential borrowers seeking finance for their thermal upgrades could learn about the loan product through multiple channels.

Program Administration – The TEF Pilot was managed, monitored and overseen by the DPS Planning and Energy Resources Division staff. This set of activities included program design, financial partner selection, coordination with Efficiency Vermont, funding management, program compliance, evaluation and reporting. The Department selected Opportunities Credit Union and VSECU through the competitive

RFP process, then negotiated grant agreements that included terms for the loans, credit enhancements, reporting requirements and other elements. The Department agreed that each credit union should employ its own underwriting procedures with an eye towards bringing in new customers that might not qualify without credit enhancements and projected energy savings.

Reporting – Reporting by the credit unions included financial and program metrics. The DPS did not require data on energy savings in recognition that gathering such information would place an extra burden on the financial institutions, potentially limiting their ability to participate effectively in the pilot. Data collected by DPS via quarterly reports on program activity from the credit unions forms the basis for this analysis.

TEF Pilot and Heat Saver Loan: Results

During the period covered by this report, the TEF Pilot generated 249 Heat Saver Loans valued at \$2.85 million. The program provided \$479,672 of interest rate buy down to borrowers with an average loan of \$11,441 and average IRB of \$1,927. The program thus effectively leveraged nearly \$6 of private financing for thermal energy upgrades for each public dollar. No defaults were reported during the period of this review (Figure 2).

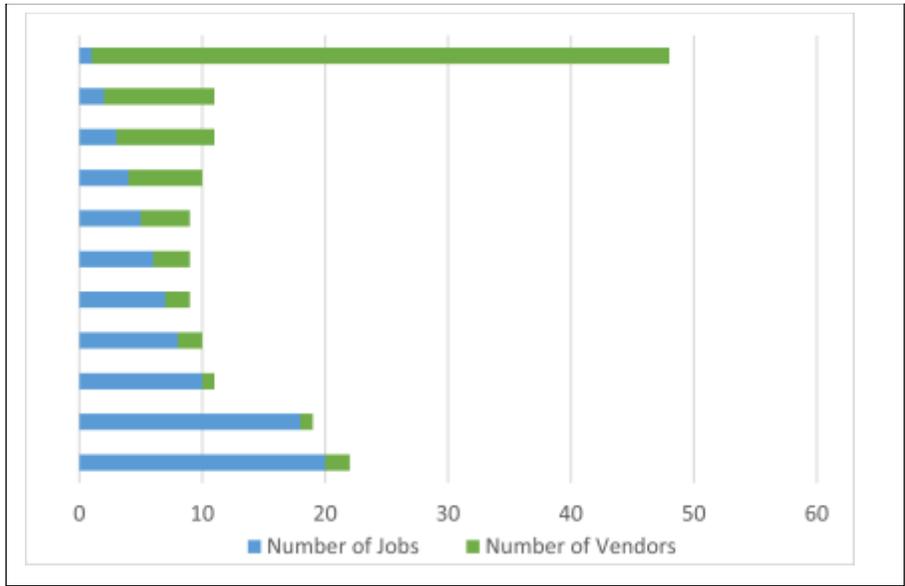
Figure 2. Thermal Energy Finance Pilot Program Summary (November 2014 to September 2016)

| | |
|--|-------------|
| Number of Heat Saver Loans: | 249 |
| Value of HSLs (\$): | \$2,848,552 |
| Amount of IRB Provided (\$): | \$479,672 |
| Average HSL (\$): | \$11,441 |
| Average IRB (\$): | \$1,927 |
| Leverage (Private \$ to Public \$): | 5.9 |
| Number of Towns Served: | 116 |
| Number of Qualified Vendors Participating: | 85 |

By the end of September 2016, 85 companies had participated in upgrading residential properties. Of the 249 jobs financed in the program, nine were reported as being performed by a combination of a fuel dealer working with a building contractor—one of the queries the program was intending to test.

Fifteen of the participating companies utilized the Heat Saver Loan five or more times, with two companies completing 20 jobs each and an average of 2.9 jobs per company. These companies alone completed 136 jobs (55%) of the total. However, 56 companies (66%) accessed the Heat Saver Loan two times or less (Figure 3).

Figure 3. Number of HSL-Funded Jobs Completed by Vendor



Technologies and Services Utilized

Home owners participating in the TEF Pilot made use of a variety of heat saving products and services, with weatherization activities (e.g., insulation and air sealing) topping the list at 98 installations (39%; Figure 4). High efficiency propane or oil furnaces and boilers comprised 81 installations (33%) with heat pumps following with 41 installed (16%). About 3% of the participants selected wood pellet or solar hot water systems for their properties. Projects including weatherization combined with some sort of heating system upgrade were completed by 22 borrowers (9%).

Figure 4. Summary of Technologies Installed or Services Performed

| Technology or Service | Number | % of Total |
|--|------------|-------------|
| Air sealing/Insulation//Weatherization | 98 | 39% |
| Efficient Furnace or Boiler | 81 | 33% |
| Heat Pump | 41 | 16% |
| Weatherization and Heating System | 22 | 9% |
| Pellet Furnace or Boiler | 5 | 2% |
| Solar Domestic Hot Water | 2 | 1% |
| TOTAL | 249 | 100% |

Customers Served

Borrowers came from 116 towns served by the credit unions and participating vendors/contractors. The geographic reach of the program was statewide, with property owners spread across the state’s communities (See **Appendix** for a list of communities and counties served).

One of the primary selling features for the Heat Saver Loan is the interest rate reduction provided to borrowers. Tiers were set for three levels of family income derived from the South Burlington Statistical Metropolitan Area to foster the greatest access. The three tiers were set broadly to simplify messaging, streamline the application process, and help LMI property owners afford substantial thermal upgrades. Loans of approximately \$1.2 million were disbursed to applicants with incomes lower than 80% of the Median Family Income (MFI), whereas about \$1.1 million went to moderate income applicants (between 80 and 120% MFI) and another \$584 thousand went to the upper tier (more than 120% MFI; Figure 5).

Borrowers attained a range of final interest rates after the interest rate reduction. A total of 58% of loaned capital was split between borrowers in the low and moderate income tiers who received interest rates of 0 to 1.99%. Combined middle and low income tier applicants borrowed 79% of the capital (\$2.26 million) and received the 91% of IRB for upgrades, while only about one fifth of borrowed capital went to the top tier (Figure 6).

Figure 5. Total HSLs by Income Level

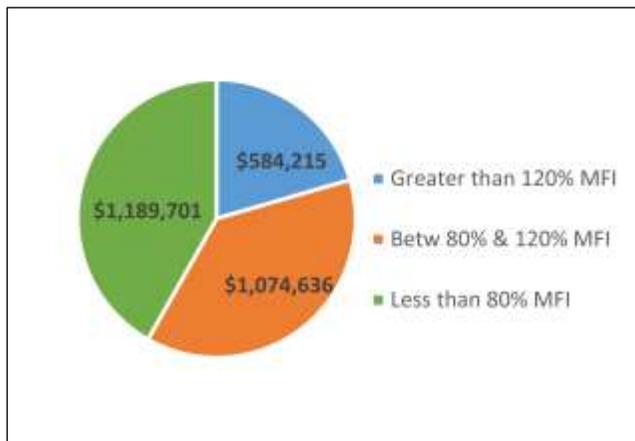
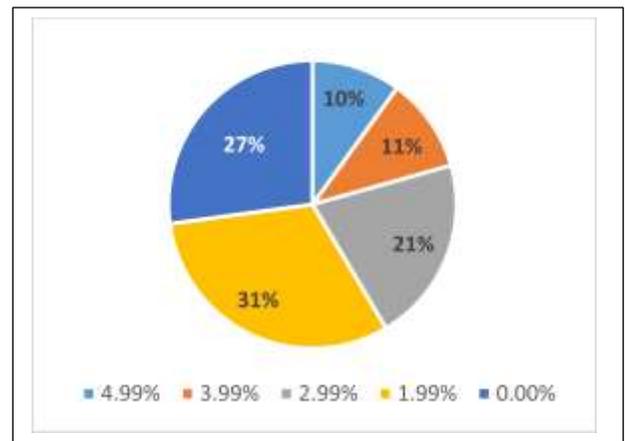


Figure 6. Percentage of Loan \$ by Final Interest Rate



Participant Review

Beginning in April 2016, DPS engaged partners from the TEF Pilot in a review of activities, experiences and insights from the first two years. The Department convened a workshop on April 29th to focus on questions regarding the stages of program development including design and start up, implementation and scale up. This section covers insights gathered during that meeting.

Benefit of Financing – The Heat Saver Loan has filled an important niche in the energy efficiency market place. This product provides affordable capital to residential property owners facing substantial price tags for upgrades needed to save money and/or reduce a carbon footprint. The period during which the pilot ran was a transformative time in the energy efficiency market when companies began looking for cost effective ways to encourage their customers to decrease their energy usage while still staying in business. With the advent of the Heat Saver Loan, qualified vendors now have a menu of finance options to offer their customers.

Partners in the program observed that the state has evolved passed the early adopter stage with energy efficiency upgrades to the point where many new customers are entering the market, often wishing to

complete deep upgrades to their home energy systems. Having access to affordable financing was recognized as a key element that would be necessary to serve this emerging market segment into the future. Having access to the HSL which is only for high efficiency products/services is helping to transform the market towards greater efficiency.

In some cases, it is important to note, there were borrowers whose actual incomes put them on the cusp of lower rates when all sources were counted. When not eligible for a particular rate, there was some disappointment in not obtaining it, as this was one of the reasons for taking advantage of a rebate and financing. This feedback highlights to the importance of defining underwriting criteria such as income as clearly as possible for prospective borrowers.

Time for Planning – By offering the loan product, companies have the option to encourage customers to replace old and outdated equipment before it breaks. This would allow customers time to consider their options and select activities or investments that would provide the greatest efficiency, comfort and safety. However, there are times when customers' systems fail, and the HSL provided a manageable option for those who needed emergency responses.

Couple to Incentives – Designing the program to match the incentives offered by Efficiency Vermont and the CEDF made it possible for home owners to optimize their investment. The program did not track the number of borrowers that accessed incentives, but it is reasonable to assume that borrowers made use of both resources. However, incentives come and go from time to time. Thus, it is important to retain the availability of affordable finance options to help customers who need to upgrade their systems even when incentives are not available.

Easy to Explain – Partners in the program stated that the details of HSLs (terms, rates, qualified equipment, etc.) and the loan forms were easy to explain to potential borrowers, and for them to understand. With a network of technical resources available on call from Efficiency Vermont, the credit unions and their customers found the application process manageable. During the first phase of the pilot, the program partners coordinated regularly to identify issues and resolve them, thus helping to create a product that received positive remarks from borrowers.

Trusted Network of Providers – For customers, having access to the Efficiency Excellence Network of trusted, trained providers was identified as a key feature of the program. During the period of the pilot, Efficiency Vermont brought more companies into the EEN, and developed protocols for participation by different technologies. Thus, the EEN expanded from about a dozen at the launch of the pilot to over 200 vendors by September 2016 with customers from 85 EEN members accessing an HSL for their energy upgrades.

Part of the application process required the credit unions to validate the participation of the company in the EEN or as a qualified vendor on the Small Scale Renewable Energy Incentive Program list. The process required underwriters to check against vendor lists that were updated periodically. This step prevented companies that are not offering high efficiency products or services from accessing the Heat Saver Loan for their customers. At first, this process was cumbersome, but with practice the participating underwriters gained familiarity with how to validate the vendors. Later in the program, Efficiency Vermont upgraded the search function on its Find a Contractor website to streamline the validation procedure.

From the perspective of Efficiency Vermont, it was noted that the Heat Saver Loan did help with recruitment into the EEN. Access to the loan product became a marketing tool for many companies.

Zero Money Down – From the perspective of the credit unions, having a no down payment, low interest product was a very important part of the message to prospective customers.

Target Audience – The pilot intended to reach lower and moderate income Vermonters. This group is more likely to have higher cost financing available (e.g., credit cards, unsecured loans), and debt aversion may impact the willingness of some families of modest means to move forward with financeable projects.

Program partners spent considerable time and effort with product design and marketing activities to reach this set of homeowners. As a result, the HSL finance product appeared to fit well in the budgets of many applicants. A loan whose terms and payments could be matched to projected energy savings may have helped facilitate the decision by many Vermonters to make substantial energy investments.

Good Working Arrangements – The program fostered development of good working arrangements between the underwriters at the credit unions and the technical staff at Efficiency Vermont. One participant stated that the program allowed each partner to draw from their strengths, and not perform functions that they are not equipped to do. Having technical staff available who could respond to questions about product eligibility was recognized as a highly valuable element of the program design.

Findings

The pilot had three areas of inquiry that the program partners hoped to explore and learn about.

- **Reaching Low and Moderate Income Vermonters** – The data from the pilot indicate that the HSL was well used by lower and moderate income property owners (80% of loans) to invest in substantial energy upgrades for their properties. Feedback from borrowers provided by Efficiency Vermont and the credit unions acknowledged that the clear, easy to use application form coupled with guidance from trained underwriters and technical staff helped customers navigate the application process. The geographic spread of the loans around the state including many small towns and villages provides evidence that the loan product was accessed statewide as desired even though there are a limited number of physical branch locations for the two credit unions (See **Appendix**).
- **On-Bill Repayment Model** – The pilot included provisions to develop and test an on-bill repayment design through which a fuel dealer would allow its customers to make payments towards a Heat Saver Loan via the regular fuel bill. This model derives from on-bill repayment models developed with electric utilities.

According to program partners, this model did not work. Two different versions for on-bill financing were developed. The Energy Co-Op of Vermont agreed to do a pilot that included marketing to over 2,000 of its members. The on-bill financing option received no interest. Additional direct marketing was done to members who had completed energy audits with proposed energy improvements

covered by the program. There were no members who opted to try on-bill financing from either group.

Outreach to the Vermont Fuel Dealer's Association along with two models for on-bill financing were proposed. While interest was expressed in participating in a pilot, there were no takers for the pilot which was attributed to the system and infrastructure requirements for on-bill financing and how busy fuel dealers are with their regular business activities already.

On-bill financing requires participating vendors to have both software systems and operational capacity to collect, process and remit part of the client's bill to a third party monthly. While this seemed of interest, the time and investment to make this happen was not attractive to any of the proposed partners. Unless on-bill financing results in more business, loyal customers or added value to the fuel dealer/partner, it is unlikely that this approach will attract many takers. To do so may require a value proposition that serves as an inducement to invest in systems and operational procedures to make this a viable choice. This option may make more sense for companies who would be billing a large number of on-bill financing participants monthly.

- **Including Energy Savings During Underwriting** – The third area of inquiry for the pilot was whether energy savings could be used during underwriting to help move marginal credit-worthy customers into a loan product. The idea is that money saved by thermal energy upgrades can count toward a customer's ability to make monthly payments. Both credit unions agreed that such savings could be counted if needed. However, the pilot did not yield sufficient data on this question to generate insights as the vast majority of applicants—low, moderate or high income—had good credit and did not need to rely on such savings to qualify for a loan. In the future, as lower credit applicants seek resources to upgrade their properties, this provision may come into play.

Observations on the Pilot

The following insights acknowledge some areas went well while there are other areas that will require additional attention should the program continue beyond the pilot stage.

- **Fuel Dealer & Building Performance Contractor Pairing** – One topic the Department wanted to investigate during the pilot was whether fuel dealers would coordinate with building performance contractors on HSL financed jobs, and if so, how often. Doing so would allow the home owner to size a new heating unit based on a reduced heating load and thus reduce energy usage more than by just purchasing a new high efficiency heating system.

The data from the report period identified nine projects (4%) through which such pairings occurred. Clearly, the bulk of the thermal upgrades were completed by single firms working independently. However, the fact that some contractors and fuel dealers did work together provides evidence that such partnerships are possible, and warrants further investigation into how to increase such arrangements. Anecdotal information from program partners indicated that this number may be under-reported, as some projects were known to include a fuel dealer or building contractor as a sub-contractor.

The fact that some pairings did occur raises a question about what it would take to increase the number of fuel dealers working together with building performance contractors. Partners will have an opportunity to explore this among companies that worked together going forward. However, one fuel dealer acknowledged that when a heating system breaks and requires immediate replacement, this is not the time to cross sell energy efficiency.

- **Equipment Standards** – Participating vendors and contractors were required to provide equipment that met a set of efficiency standards to qualify for HSL rates. While these standards push the envelope towards highest efficiency, some fuel dealers reported that not all high efficiency systems perform so well over time. Thus, it may be possible for a homeowner to obtain a highly efficient system that requires frequent repairs or early replacement. Although there is growing awareness among vendors about equipment reliability and energy efficiency, there are few resources to help the customer to obtain comparative performance data to determine “overall value” versus “energy efficiency” of heating systems. Also, some customers use heating equipment considered to be ‘space heating’ as their central heat, but this equipment was ineligible for the loan.

Two suggestions emerged from this insight. First, program partners may want to consider allowing more durable but slightly less efficient systems as eligible to foster long term value if such characteristics can be verified. Second, it may be worthwhile to find a tool or means to provide customers with product performance information to help guide decision making. It was recognized that this latter step would require a substantial undertaking that may be beyond the scope of the program.

- **Marketing** – The design of the program with its easy application process, low-cost fixed rate loans and no money down offered a useful marketing message. Coupled with a quick turnaround by the credit unions, the loan product was seen as a success by fuel dealers and product vendors whose customers used the Heat Saver Loan. A handful of companies made repeated use of the loan product, with 15 companies completing more than five jobs and the top two vendors/fuel dealers generating 20 jobs each. However, 47 companies performed only a single HSL-financed job as the program geared up. It is likely that more of these companies will complete jobs before the formal end of the pilot in December 2016. In the interim, there is an opportunity to learn from the companies that have repeatedly connected their customers with a Heat Saver Loan and those whose customers have accessed the loan only once.

One question to explore going forward is how to enhance marketing efforts that will promote access to financing as a tool to achieve deeper energy savings, especially among the LMI audience the HSL was intended to reach. Additional outreach and engagement with community organizations may help reach more residents that would not otherwise hear about the program, or be able to afford deeper energy improvements without access to low interest financing.

- **In-Program/Out-of-Program Equipment Issues** – The program design limited the types of eligible equipment in the pilot, thus complicating loans for certain types of projects. For example, borrowers interested in “net zero energy” homes could not use the HSL to finance solar PV systems. Further, while there were provisions to address health and safety related issues, there were limits to how much repair could be financed under the program. The decision to restrict such repairs was done in

light of program resources constraints. This led to circumstances where the credit unions would need to issue two loans to cover “in-program” and “out-of-program” expenses, thereby adding to administrative requirements.

One option going forward would be to further expand access to financing for equipment and measures that legitimately reduce thermal energy consumption. For instance a work scope may include a recommendation for a space heater or small output wood pellet stove, so allowing for provisions like this would make sense for the borrower’s situation and keep the financing simple.

- **Finding Qualified Contractors** – Although the primary means for helping generate loans was via direct marketing by the fuel dealers and equipment vendors, there were some customers of the credit unions who wanted to find qualified contractors to do the work. At the beginning of the pilot, Efficiency Vermont and the CEDF’s Small Scale Renewable Energy Incentive Program had lists of eligible vendors and contractors. The information on these sites was determined to be ineffective as few people identified with titles such as “Efficiency Excellence Network.” A website revision at Efficiency Vermont in 2016 changed how the search functioned, thus making it easier for customers and program partners to find contractors or vendors participating in the program by searching for the desired service (e.g., weatherization) or product (e.g., heat pump). Future efforts to consolidate all vendors into one listing will further streamline the product/service search process.
- **Data Management** – The initial program design opted to collect information on the loans within the boundaries required by the finance institutions and not requiring collection of energy-related data. Doing so was a trade-off that helped the DPS gain understanding of a new loan product without burdening the finance partners with reporting requirements. This decision did not generate data to catalog the energy savings from the investments, however. Efficiency Vermont provides incentives for all the equipment offered under the TEF Pilot, but due to customer confidentiality, there was no way to track which borrowers also accessed incentives. Going forward, it will be helpful to find a means to gather energy and finance data without unduly burdening program partners.

Process Observations

There were several elements of the program that worked well, including the working relationships developed between the credit unions’ lending staff and the technical staff at Efficiency Vermont. The day-to-day interactions helped program partners understand and navigate the Heat Saver Loan requirements for eligible equipment, installers, rebates and other important factors. The effort that the group invested in designing the application process also helped. Further, keeping a single set of easy to understand interest rates helped potential borrowers quickly to see what rates would apply to them. Finally, having multiple points of entry—via the program website, EEN contractors, or partner outreach—offered different ways for borrowers to learn about the loan product.

The partners faced several challenges during the pilot. These included different understandings about who was responsible for marketing, and what messages to use. The group reframed the marketing work in the spring of 2015, leading to a more simplified set of messages and information shared by all and ultimately reflected in the new Heat Saver website. Another challenge included the reporting

requirements. Credit unions do not typically capture information on energy savings as part of reporting for their regulators or for internal purposes. Attempts to capture additional data proved challenging given the limitations from the software employed by financial institutions and the work involved. Just assembling the regular program data required additional effort to set up and then streamline by credit unions.

Conclusion

Overall, the program partners received positive feedback on the design and use of the Heat Saver Loan from borrowers and the businesses involved with thermal upgrades to homeowners. The design for a statewide low-cost loan program intended to reach lower and middle income customers yielded about \$2.8 million in loans for thermal energy upgrades to about 250 primarily lower and moderate income borrowers and engaged a wide range of thermal energy companies in the process. The public resources for the program helped generate substantial investments for energy savings at a ratio of about \$6 private dollars for each public dollar with the target audience. These investments will provide economic and environmental benefits for property owners and the state for years to come.

The pilot provided initial data that shows some building performance contractors and fuel dealers are willing to collaborate on thermal energy projects to help homeowners reduce energy use and save money. Although there were only a handful of such cases, the pilot provides an opportunity to learn how to replicate the successes in the future.

The pilot's one area that did not provide positive results entailed on-bill repayment with customers interested in using their fuel bills to make monthly loan payments. Although this effort did not find any takers, it did reveal the complexity of such a task, and provided some contours of the terrain should the Department or others seek to further explore this approach.

The general consensus based on participant feedback is that the Heat Saver Loan offers an important tool in the evolving suite of clean energy finance products in the state, and should be supported post-pilot. Doing so will require consideration of lessons learned, possible options and funding going forward.

The recent announcement of the Efficiency Vermont Loan Program at VEIC, funded through a loan from the USDA Rural Utility Service, offers the State a new potential channel for continuing the work begun through the Thermal Energy Finance Pilot. The DPS plans to work with Efficiency Vermont, VEIC, VSECU and OCU to explore options for how the Heat Saver Loan might integrate into this new loan program.

The initial experiences and systems put into place can be readily adapted or migrated to work in the new Efficiency Vermont loan program or other contexts. The Department of Public Service looks forward to this exciting new chapter towards achieving the state's energy goals and a low carbon, clean energy future.

Appendix – Towns & Counties Served by the *Thermal Energy Finance* Pilot Program

Addison

Bristol

Cornwall

Lincoln

Middlebury

North Ferrisburgh

Salisbury

Shoreham

Vergennes

Waltham

Whiting

Bennington

Bennington

Manchester Center

Manchester

North Bennington

North Pownal

Peru

Shaftsbury

Sunderland

Caledonia

Barnet

Danville

East Burke

Hardwick

St. Johnsbury

Sutton

Waterford

West Danville

Chittenden

Burlington

Charlotte

Colchester

Essex Junction

Essex

Hinesburg

Huntington

Jericho

Milton

Richmond

South Burlington

Underhill

Westford

Williston

Winooski

Essex

Granby

Franklin

Enosburg Falls

Fairfax

Richford

St. Albans

Swanton

Grand Isle

South Hero

Lamoille

Jeffersonville

Johnson

Morristown

Morrisville

Stowe

Wolcott

Orange

Bradford

Fairlee

North Thetford

Randolph

South Strafford

Thetford Center

Vershire

Washington

West Topsham

Williamstown

Orleans

Craftsbury

Glover

Irasburg

Newport

Newport Center

North Troy

Orleans

Rutland

Castleton

Clarendon Springs

Killington

Middletown Springs

Pawlet

Proctor

Rutland

Tinmouth

West Rutland

Washington

Barre

Cabot

Calais

Duxbury

East Barre

Graniteville

Marshfield

Middlesex

Montpelier

Northfield

Plainfield

Waitsfield

Waterbury Center

Waterbury

West Berlin

Worcester

Windham

Bellows Falls

Brattleboro

East Dummerston

Grafton

Newfane

Putney

Saxtons River

South Newfane

West Dover

Windsor

Brownsville

Chester

Hartford

Norwich

South Royalton

Springfield

West Hartford

White River Jct.

Wilder

Windsor

Woodstock