

Financing Residential Energy Efficiency in Vermont



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July 2011

Acknowledgements

The research team would like to thank Gaye Symington, Executive Director of the High Meadows Fund, for her support, guidance, and expertise. We owe many thanks as well to our partners from the Vermont Energy Investment Corporation (VEIC) and the Regulatory Assistance Project (RAP) for their collaboration and advice. In particular, we want to thank Peter Adamczyk, George Twigg, and the late Blair Hamilton from VEIC; and Ajith Rao and Riley Allen from the Regulatory Assistance Project.

We thank the following individuals for the valuable contributions they made to this report: Laura Abbott, Dave Adams, Bob Barton, Valerie Beaudin, Joseph Bergeron, Kim Bino, Leslie Black-Plumeau, James Brown, Chris Burns, Tom Candon, Sarah Carpenter, Scott Carpenter, Peter Cillo, Maura, Collins, Sarah Cowan, Peter Crosby, Chris D'Elia, Cheryl Fatnassi, Clay Francis, Jeff Gephart, Ken Gibbons, Peter Goodell, Chris Granda, Arne Hammarlund, Chuck Karparis, James Moore, Polly Nicol, Corey Richardson, Jim Rietmulder, Mike Seaver, Gus Seelig, Chip Stone, Mike Tuttle, Sarah Woodward, Dan Yates, and Zhen Zhang.

We also thank the many Vermont lenders who gave generously of their time and insights to inform this report.

Finally, we appreciate the support from many individuals within Vermont Law School's Institute for Energy and the Environment who assisted with various tasks, from conceptual development to document editing and formatting: Shannon Clarke, Laura Colangelo, Michael Dworkin, Don Kreis, Katherine Johnson, Matt Stern, Jenny Thomas, and David Zoppo.

The Institute for Energy and the Environment at Vermont Law School

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additional copies of this report, please call us at 802.831.1151 or send a request to Institute for Energy and the Environment, 164 Chelsea St, South Royalton, VT 05068.

Dedication

We dedicate this Report to the memory of Blair Hamilton, friend, colleague and inspiration. As co-founder of the Vermont Energy Investment Corporation and first Director of the "Efficiency Vermont" program, Blair both laid out the foundations of our work and showed us a vision towards which we all can go. Moving counties, states, and nations toward new horizons; seeing every problem as an opportunity to create and cure; Blair challenged all of us and made us grow. Blair challenged us and challenged himself even more, for which we owe him the thanks we offer in this report and in our future work as well.

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I. EXECUTIVE SUMMARY

We began this research based on the assumption lack of financing stops most homeowners from improving the energy efficiency of their homes. However, after only a few interviews with Vermont lenders, the primary issue emerged: lack of demand. Without a strong reason to demand more energy efficiency, few homeowners will work through the bewilderingly complex process that leads to an outcome with unknown benefits. Vermont needs a simple, start-to-end process that includes easily accessible financing and policies that make the value of energy efficiency improvements visible to homeowners and to the market. Just as a bird requires two wings to fly, effective energy efficiency will require both adequate financing and strong customer demand.

In 2008, the Vermont General Assembly passed Act 92, The Vermont Energy Efficiency and Affordability Act,¹ ambitious legislation to substantially improve the energy efficiency of 25 percent of Vermont's housing stock (or 80,000 homes) by 2020. Despite encouraging progress toward meeting this goal, Vermont is projected to fall short of the goal by up to 28,000 homes.² The challenge of this projected shortfall is compounded by the high price tag of upgrades; improving a home's energy efficiency by 25% costs an average of \$7,500.

This research led us to conclude that financing itself is a secondary issue. The key issue is lack of demand for energy efficiency upgrades.

In an effort to explore whether there are financing tools or procedures that would enable lenders to accelerate the pace of home energy fitness loans, the High Meadows Fund engaged the Vermont Law School's Institute for Energy and the Environment to research the energy characteristics of Vermont homes, Vermont homeowners' credit characteristics, and the needs and experiences of Vermont lenders with respect to financing energy efficiency improvements in owner-occupied, single-family homes. This research did not delve into the issues faced by low-income Vermonters.

¹ Vermont General Assembly, *The Vermont Energy Efficiency and Affordability Act (Act 92)*, March 19, 2008, <http://www.leg.state.vt.us/docs/legdoc.cfm?URL=/docs/2008/acts/ACT092.HTM>.

² RICHARD COWART, ET. AL, THE REGULATORY ASSISTANCE PROJECT, AFFORDABLE HEAT: A WHOLE-BUILDINGS EFFICIENCY SERVICE FOR VERMONT FAMILIES AND BUSINESSES 6 (2011).

Although this research was originally designed to explore the first-cost barrier of financing energy efficiency improvements, the research quickly led us to conclude that financing is a secondary issue. Instead, we found that the key issue is the lack of demand for energy efficiency upgrades. This lack of demand is due to a combination of many factors other than the lack of capital, working individually or in combination with each other, including: debt aversion, split incentives, disbelief or discounting of savings to be realized, paybacks longer than the homeowner's investment horizon, perceived financing and efficiency upgrade transaction costs, and lack of monetization of full public benefits.

The research also revealed multiple obstacles related to the financing of energy efficiency improvements, both for lenders and borrowers. These include:

- The financing process is cumbersome.
- Many Vermonters are not credit worthy under traditional lending standards and will not be able to obtain financing without additional credit enhancements.
- The scale of demand is insufficient to develop strong lender interest.
- Lenders cannot underwrite based on energy savings.

The upfront costs of residential energy efficiency improvements, high perceived transaction costs, and poor access to capital are often believed to be deterrents for homeowners who want to invest in home efficiency improvements. Thus, to increase the efficiency of the state's housing stock and decrease Vermont's demand for energy, it is essential to provide a comprehensive energy efficiency program that includes both a strong marketing component and effective energy financing options tailored to meet the needs of the different homeowner sectors.

The three sectors of Vermont homeowners include: (1) homeowners for whom financing is not a barrier but who need to be catalyzed into action through a strong marketing program, (2) homeowners who need credit enhancements or access to preferred lending programs because they do not qualify for traditional lending, and (3) low-income homeowners who need direct subsidies to improve their homes. Although there are some common obstacles, there are different issues that are specific to the different demographic sectors.

For credit-worthy Vermonters, the most important aim is to drive action using a strong marketing campaign that is integral to a comprehensive program. The key elements of effective energy efficiency lending include: (1) loan terms and conditions that are more

attractive than standard loan terms for a comparable loan product; (2) a loan application that is easy to complete with minimal information requirements and a short turn-around to approval; (3) a closing process that is quick and convenient with easily understood documents; and (4) a financing process that is a seamless part of the overall energy efficiency program. For those homeowners who do not qualify for traditional lending, a financing program will have to include credit enhancements and may best be facilitated through a centralized lending program. Finally, low-income Vermonters will need subsidies to pay for energy efficiency improvements. Because of limited funds and manpower, the state needs to determine the best strategy to meet the needs of these sectors while working to achieve its Act 92 goals.

An effective financing program alone is not enough. We must first contend with the factors that contribute to lack of demand: a process that is so complex homeowners shy away from it because they do not trust the savings will be adequate to cover the loan payments and/or that the cost will be reflected in an increased value of their homes. Therefore, the perceived benefits do not warrant the “hassle” of engagement.

Our recommendations, therefore, are broken down into three categories that: (1) drive demand for energy efficiency improvements; (2) make the value of energy efficiency improvements more concrete to homeowners and the market; (3) make the energy efficiency improvement process “seamless” rather than complex; and (4) enhance the financing of energy efficiency by addressing lenders’ risk, utilizing a revolving loan fund, and creating alternative lending options. These include:

- Promoting the benefits of energy efficiency by:
 - Creating a strong marketing campaign that focuses on financial benefits, reduced dependence on foreign oil, increased insulation against both uncomfortable homes and the cost of fuel and other volatile energy costs.
 - Incorporating information on the improvement process and services available.
 - Ensuring that these services are readily available and easily accessible.
- Incorporating the value of energy efficiency into the valuation of a home by:
 - Providing information about a home’s energy efficiency at the time of sale (like an MPG sticker on a car) and progress to more stringent methods such as a home rating system or requiring homes to meet energy codes at the time of sale.

- Training appraisers to take into account a home's energy efficiency in the value of a home.
- Educating homeowners about the benefits to their annual energy bills and the resale value of their homes that result from performing energy efficiency upgrades.
- Making the energy efficiency improvement process more straightforward by:
 - Simplifying the steps along the path to an energy efficient home, so consumers can find information and resources more easily.
 - Helping contractors and other retail service providers like fuel dealers and utilities offer services and financing.
 - Coordinating the efforts of local advocates and civic organizations with the resources and outreach programs of Efficiency Vermont.
- Exploring recommendations to improve the efficacy of current financing options and to create new options tailored to the needs of energy efficiency home improvements, such as:
 - Working with lenders to motivate homeowners to incorporate energy efficiency upgrades at key points in existing transactions, such as mortgage origination or refinancing a home mortgage.
 - Providing training to lenders to help them understand the certainty and savings value of energy efficiency investments.
 - Pursuing new procedures that would expedite lending for energy efficiency and provide incentives for progressively deeper energy improvements.
 - Creating a loan loss reserve pool.
 - Engaging a specialty lender to administer an energy efficiency financing program.
 - Creating a statewide revolving loan fund for energy efficiency improvements.
 - Implementing financing mechanisms based on the savings cash flow, not the credit of the borrower, such as PACE and an on-bill tariffed financing.
 - Exploring new entities such as cooperatives or a Green Bank.

For detailed recommendations, see Section IX.

To meet the ambitious goals of Act 92, this report recommends implementing equally ambitious policies and programs to increase the demand for energy efficiency

improvements and expand financing to reach a broad range of Vermonters. The benefits of doing this are clear: improved quality of life and comfort for Vermont residents, reduced expenditures on imported energy, enhanced job creation, and reduced greenhouse gas emissions. Fortunately, the tools exist to make this happen and this is an opportune time to confront this issue. Now we must marshal the political will to implement these tools and, thereby, improve the lives and well being of all Vermonters.

II. INTRODUCTION

Building on Vermont's history of success in developing energy efficiency programs, the General Assembly adopted Act 92 – the Vermont Energy Efficiency and Affordability Act³ – in 2008. Among other things, Act 92 established a goal of improving the energy efficiency of 25 percent of Vermont's housing stock by at least 25 percent between now and 2020. To reach the goal, 80,000 homes would require such improvements.

Investing in broad residential energy improvements will create new jobs, reduce our dependence on fossil fuels, improve Vermonters' quality of life, and provide a public benefit by reducing the state's greenhouse gas emissions.

Meeting this goal will require an investment of, on average, \$7,500 per home, which would result in an overall investment of \$600 million or more, much of which will need to come from the private sector. Although this is a substantial commitment of financial resources, it

is unquestionably a prudent one. According to the Regulatory Assistance Project, “over the first decade of investment, the efficiency services . . . will return, for every dollar invested, \$2.26 in overall savings.”⁴

Investment in residential energy efficiency improvements will also create new jobs in the energy efficiency field, reduce the amount of money sent out of state for imported energy, and improve the quality of life for Vermonters by reducing their energy bills and making their homes more comfortable. Reducing the consumption of fossil fuels will also reduce Vermont's greenhouse gas emissions, thereby creating a public benefit.

Despite laudable progress toward meeting the state's Act 92 goal, the Regulatory Assistance Project has projected that, without additional policy initiatives, Vermont will

³ See VT. STAT. ANN. tit. 10, §581 (West 2011), which, among other things, requires the state to:

- (1) improve substantially the energy fitness of at least 20 percent of the state's housing stock by 2017 (more than 60,000 housing units), and 25 percent of the state's housing stock by 2020 (approximately 80,000 housing units).
- (2) reduce residential fuel needs and BTU's by 25% in housing units served.
- (3) reduce fossil fuel consumption across all buildings for a total savings of up to 10% by 2025
- (4) save Vermont families and businesses a total of \$1.5 billion on fuel bills over the lifetime of the improvements
- (5) increase weatherization services to low income Vermonters.

⁴ COWART ET AL., *supra* note 2, at 79.

fall short of the goal by up to 28,000 homes. Beyond the sheer magnitude of the expense, this first-cost financing barrier has specific, underlying drivers that include:

- *Limited debt capacity*: This can be due to income or credit constraints, general debt aversion, or competing demands for capital.
- *Complexity of process*: Lack of information, the notion that the process is a “hassle” or confusing, and perceived transaction costs all contribute to this barrier.
- *Skepticism*: This barrier is due to the general discounting of energy efficiency benefits.
- *Uncertainty about occupancy length*: This can deter improvements since it creates uncertainty about ability to recoup the cost of the investment. The age of the homeowner and/or the possibility of a future move both contribute to this barrier.
- *Doubt as to whether improvement costs can be recouped when the home is sold*: Mechanisms that can help ensure that investments in energy efficiency improvements are reflected in home values are not yet implemented in Vermont. Homeowners are, therefore, wary about making these investments.
- *Split incentives*: For rental properties, landlords typically incur the cost of efficiency improvements while the savings accrue to the tenants who pay the energy bills.⁵

In light of the benefits contemplated by Act 92 and the impediments to achieving them, the High Meadows Fund engaged the Vermont Law School’s Institute for Energy and the Environment to conduct research related to the financing of energy improvements⁶ in single-family, owner-occupied Vermont homes.⁷ This research did not delve into the issues related to financing energy efficiency improvements for low-income residents because this sector of homeowners faces unique challenges.

⁵ MERRIAN FULLER, EFFICIENCY VERMONT, ENABLING INVESTMENTS IN ENERGY EFFICIENCY: A STUDY OF ENERGY EFFICIENCY PROGRAMS THAT REDUCE FIRST-COST BARRIERS IN THE RESIDENTIAL SECTOR 4 (2008).

⁶ Other common terms for energy efficiency improvements include retrofits, and energy efficiency upgrades. These terms will be used interchangeably throughout this report.

⁷ Though this report generally excludes energy efficiency solutions for rental property, we did find that one mechanism – on-bill tariff financing – has bearing on both home ownership and rental properties. Therefore, we have included this mechanism—and its relevance to rental properties—in this report.

The research objectives were:

- To explore the characteristics of Vermont homes and homeowners so as to identify what financing tools would be sufficiently affordable and convenient for homeowners.
- To profile the needs and limitations of the lending community and explore options to make financing efficiency improvements more attractive to lenders.

Focusing on single-family, owner-occupied homes, researchers used a variety of resources to gather information for this report. The research is primarily based on over a dozen interviews with Vermont lending institutions, selected to reflect the spectrum of private lenders, as well as representatives from organizations that provide services to low-income citizens. Researchers also interviewed organizations and companies involved in energy efficiency in Vermont and around the country. Several Vermont lenders also responded to a survey about their borrowers.

This research revealed multiple obstacles to financing energy efficiency improvements, both for lenders and borrowers. More significantly, the research led us to conclude that the fundamental reason more Vermonters have not engaged in home energy efficiency improvements is not related to financing as much as it is to a general lack of demand for energy efficiency upgrades.

Section III provides summaries of the obstacles to financing energy efficiency improvements in Vermont, while the obstacles related to the Vermont housing stock are explored in Section IV. Those related to the financial implications of Vermonters' credit characteristics are addressed in Section V. Some of the fundamental causes of lack of demand will be explored in Section VI. The financing options that can address some of these issues are considered in Section VII. Section VIII explores common misperceptions about financing energy efficiency improvements. Finally, Section IX presents some recommendations to address the issues identified over the course of the research, while Section X provides the conclusion.

In coordination with the work Institute's research for this report, the High Meadows Fund engaged the Regulatory Assistance Project (RAP) and Vermont Energy Investment Corporation (VIEC) to work on companion projects. RAP updated its 2008 Affordable Heat report to reflect new developments in public policy, as well as the current efforts in home energy improvement work in Vermont. The new report is titled "Affordable Heat: A Whole-Buildings Efficiency Service for Vermont Families and Businesses" (the "RAP

Report”). VEIC developed a set of case studies – “Case Studies for Home Energy Improvements” – that demonstrate the cost-effectiveness of home energy upgrades and the economics of financing these investments (“VEIC Case Studies”). References to the RAP Report and the VEIC Case Studies will be made throughout this report.

III. OPPORTUNITIES AND OBSTACLES TO PROGRESS IN RESIDENTIAL ENERGY EFFICIENCY

The Vermont Department of Public Service recently embarked on an intense and focused effort to create a new Comprehensive Energy Plan (CEP) for the state, a process that has not been completed since 1998. By statute, the CEP must analyze and project the state's energy needs along with the related costs and environmental impacts. The purpose of the CEP is "to assure, to the greatest extent practicable, that Vermont can meet its energy service needs in a manner that is adequate, reliable, secure and sustainable; that assures affordability and encourages the state's economic vitality, the efficient use of energy resources and cost effective demand side management; and that is environmentally sound."⁸ Thus, while Act 92 establishes a long-term objective, the CEP process offers a near-term opportunity to make the case for bold initiatives related to residential energy efficiency. Such an initiative should have a financing component to overcome the "first cost" barrier that exists for some homeowners.

Certain opportunities and obstacles are of particular relevance to creating an effective program to drive demand for energy efficiency while others relate more exclusively to financing efficiency improvements. These findings include:

Program

HOUSING STOCK

Vermont's owner-occupied housing stock includes a high proportion of older and historic homes, with an average age of sixty years. The most notable deficiencies in Vermont homes are in the area of insulation (ceiling as well as foundation walls), duct leakage, and the prevalence of single-pane windows. This presents a significant opportunity for energy efficiency upgrades that will immediately affect the lives and well-being of thousands of Vermonters (See Section IV).

HOME ENERGY AFFORDABILITY

Among the states, Vermont ranks 44th out of 51 (including the District of Columbia) for energy affordability.⁹ Only Virginia, Delaware, Alabama, Maine, Connecticut, Hawaii,

⁸ VT. STAT. ANN. tit. 30, § 202(a)-(b) (West 2011).

⁹ Fisher, Sheehan & Colton, *State Fact Sheets: 2010 Report*, HOME ENERGY AFFORDABILITY GAP, http://www.homeenergyaffordabilitygap.com/05_Current_State_Data2.html.

and North Dakota have less affordable energy bills than Vermont. This means that Vermonters – particularly low-income Vermonters – are spending an increasingly large percentage of their incomes to heat, cool, and power their homes. According to electricity affordability experts Fisher, Sheehan and Colton, a home energy bill is “unaffordable” if it represents more than 6 percent of total income. Nearly one quarter of Vermonters who live on incomes below 185 percent of the Federal Poverty Level spend from 10 to 70 percent of their income on energy bills. This energy affordability gap is increasing and rising energy prices will exacerbate the problem. In 2010, low-income Vermonters spent \$107.9 million (an average of \$1,871 per family per year) *more* on energy bills than is considered affordable.¹⁰ Although energy efficiency improvements ultimately decrease the cost of owning a home, when finances are tight people are less willing and able to incur debt (See Section V).

LACK OF DEMAND FOR ENERGY EFFICIENCY IMPROVEMENTS

A survey of Vermont lenders indicates that a significant portion of Vermont homeowners have ample capacity to borrow for energy improvements should they choose to do so. Furthermore, many Vermonters’ debt-to-income ratios, and the loan-to-value ratios associated with their mortgaged properties, tend to be well below what lenders require, which means these borrowers are less risky than those with higher values. Nevertheless, Vermont lenders report that there is virtually no demand for any type of borrowing, including financing for energy efficiency improvements, even when it is available on favorable terms. This suggests that, for creditworthy Vermonters, a significant deterrent to energy efficiency borrowing is a combination of debt aversion and lack of information about the benefits of energy efficiency improvements. An additional factor that is likely to inhibit the demand for energy efficiency upgrades is consumers’ perception that the efficiency upgrade process is a difficult (See Sections V and VI).

SUCCESS IS POSSIBLE

The NeighborWorks of Central Vermont’s H.E.A.T. Squad program – which has only been in place since November 2010 – is currently the most successful program in the country at converting homeowners to move from audit to improvements, and in overall penetration rate per capita. In fact, the H.E.A.T. Squad program is currently outperforming the top program in the country – the Clean Energy Accelerator program in Austin, Texas – by almost a factor of two. The H.E.A.T. Squad program, therefore,

¹⁰ FISHER, SHEEHAN & COLTON, ON THE BRINK 2010: THE HOME ENERGY AFFORDABILITY GAP (2010).

demonstrates that with the right combination of community engagement, customer support, and financing, success is possible (See Section VI and Appendix A).

Financing

LENDING IN VERMONT

Lenders in Vermont have consistently been more conservative than lenders in other states. Most Vermont lenders were already using the stringent criteria other parts of the country adopted only after the 2008 real estate collapse. As a result, Vermont was spared many of the devastating effects of the collapse that still plague much of the country. Vermont lenders follow policies and practices designed to comply with federal regulations and minimize lender risk. This results in many lending practices that do not serve all Vermonters, particularly those who are most in need of energy efficiency improvements (See Section V).

NEED FOR FINANCING ASSISTANCE

It appears that 11.5% of Vermonters who make between \$25,000 and \$41,000 dollars per year have neither the cash nor the ability to finance EE projects, and do not qualify for assistance from the Low Income Weatherization Assistance Program. Furthermore, although these mid-zone households would benefit from Efficiency Vermont's incentive programs, because they do not qualify for traditional financing they are unlikely to be able to secure additional funds to pay for the remainder of the cost of energy upgrades. This means they do not undertake the improvements and do not benefit from these incentives (See Section V).

STREAMLINING THE FINANCING OF ENERGY UPGRADES

Loan options vary not only in substantive terms, but also, and often separately, in complexity of process. There appears to be a trade-off between complexity of the loan product and customer participation. A successful financing program should support, and not be a barrier to, customer participation. Financing should be streamlined, easy to access, and quick. Customers need to know they will have access to financing. However, it is important to remember they are not participating in a program simply because it offers good financial terms; rather, they are striving for lower utility bills, an upgraded home, and more comfortable living spaces. Therefore, the key to successful energy efficiency financing is to make it simple and convenient for the borrower (See Section VI).

DETERMINING WHAT FINANCING PROGRAM IS BEST

Instead of choosing one particular loan product and hoping it will cover all energy efficiency needs, it would be better to develop a program that meets the needs of the various market segments. For example, where lack of financing is the primary barrier to participation, a cost effective program needs to be designed to overcome this barrier. Where funds are not the issue, the energy efficiency program needs to address the other issues needed to move these homeowners into action (See Section VII).

EXPANDING FINANCING MECHANISMS AND THE POTENTIAL LENDING POOL

Although Vermont lenders are generally amenable to energy efficiency financing, traditional lending may not be the best way to finance broad, substantial improvements. Even though providing customer choice is a prevailing public policy, the nuisance and complexity of shopping around for the best deal can impede borrowing. Furthermore, conventional lending only reaches Vermonters who are creditworthy by conventional standards. The traditional loan approval process is not well suited to handle the optimal allocation of financial incentives for energy efficiency-related upgrades. A focus on traditional lending techniques does not take advantage of other potential lending sources that can benefit from financing broad energy efficiency improvements; moreover, it ignores the benefits of non-traditional financing mechanisms, such as Property-Assessed Clean Energy (PACE) and on-bill tariffed financing. Finally, some options that are not directly about financing, per se – such as the creation of a residential energy service company, an energy efficiency workers’ cooperative, or funding through a public bank – have the potential to stimulate investment in residential energy efficiency (See Section VII).

IV. VERMONT HOUSING STOCK: AN OVERVIEW

In analyzing the amenability of Vermont households to energy efficiency upgrades, it is important to distinguish between the housing units and the households that occupy them. A housing unit can be described in terms of its size, ownership structure (rented versus owned), and efficiency characteristics. Although the terms “home” and “housing unit” are used interchangeably in this report, it is critical to focus on the households as distinct from housing units because it is the

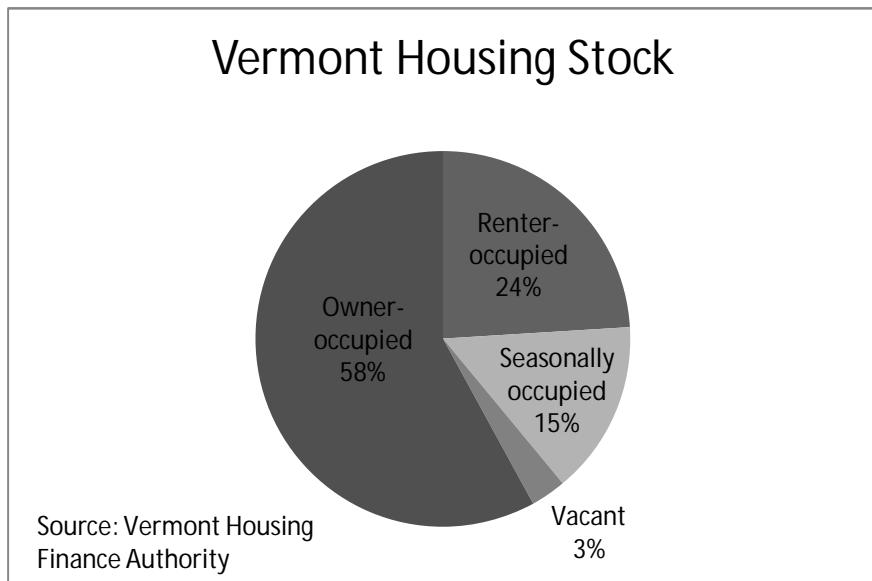


Figure 1: Vermont Housing Stock

former that drive financing decisions for both borrowers and lenders. In other words, however dire the need for efficiency improvements in a particular housing unit, the characteristics of the household will determine whether those improvements are actually made. Vermont's housing stock – the number and types of homes, occupancy rates, and building components – is clearly an essential component of the analysis. Vermont's high concentration of vacation homes and its above-average rate of homeowners with lower incomes are factors that influence how the state should approach financing its Act 92 goal.

Housing types

The U.S. Census Bureau defines a housing unit as a house, apartment, mobile home, group of rooms, or single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Twenty-four percent of homes in Vermont are rental units, 15 percent are occupied seasonally as vacation homes, 3 percent are vacant, and the remaining 58 percent are owner-occupied homes. Of the owner-occupied homes, 10 percent are mobile homes.¹¹ These different housing types are further described below.

¹¹ Vermont Housing Finance Agency (V.H.F.A.) and the University of Vermont: Center for Rural Studies, *Vermont Housing Data Profiles*, VERMONT HOUSING DATA, <http://www.housingdata.org/profile/resultsMain.php> (last revised Apr. 12, 2011).

RENTAL HOMES

Twenty-five percent of homes in the state are rental units. When considering investment in energy efficiency with rental units, the problem of split incentives arises. Owners are typically not responsible for the energy bills associated with the housing units they rent, and thus they lack any financial incentive to invest in efficiency upgrades. Conversely, even though tenants typically pay their own energy bills they are usually reluctant to invest in efficiency upgrades with payback periods longer than a year or two because they doubt they will recover their investment. Therefore, this research focused on single-family residences.

Although an analysis of the rental housing sector was not included in this study, we note that on-bill tariffed financing – a non-debt financing mechanism that has relevance for single-family residences – may be able to effectively service this sector because this mechanism does not involve household debt in the traditional sense. Under such a system, the repayment obligation associated with the efficiency measures becomes part of the household's utility bill and, in essence, remains with the housing unit's utility meter, to be assumed by succeeding occupants until the obligation is repaid. (See Section VII and the RAP Report at Section 6 for more information about non-debt-based financing techniques.)

VACATION HOMES

In Vermont, 15 percent of homes are seasonally-occupied vacation or second homes. The credit characteristics of the owners of this segment of the housing stock are not analyzed in this phase of the project. Nonetheless, there is a general presumption that most people who own second homes in Vermont would be considered creditworthy for purposes of borrowing to finance residential energy upgrades. One challenge unique to this segment of homeowners is the fact that payback periods are longer and the energy bill savings smaller because the homes are not occupied full-time.

OWNER-OCCUPIED HOMES

Households that own and occupy their homes year-round have the most powerful incentive to invest in energy efficiency upgrades. These households will see an immediate benefit in lower energy bills, and the payback period for their investment will be shorter than for vacation homes used only intermittently. While owners of vacation homes may respond to the same price signals and programs as owners who live in their

homes year round, the most cost effective energy savings, with the quickest payback period will be in owner-occupied homes.

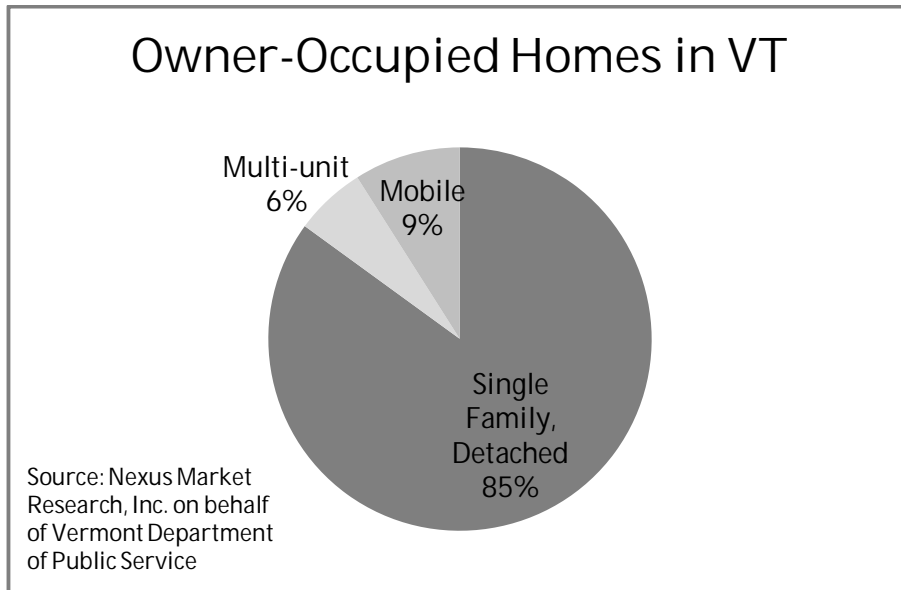


Figure 2: Vermont Owner-Occupied Homes

MOBILE HOMES

Approximately 9 percent of Vermont’s owner-occupied homes are mobile homes. Since mobile homes are generally considered personal property rather than realty, mobile home owners have difficulty accessing traditional sources of financing. Financing is less constrained for those who own the land beneath their mobile homes or live in a cooperatively owned mobile home park, but this is a minority of Vermont mobile home owners. Some organizations, such as the Housing Foundation, have programs that attempt to address this challenge by making financing available specifically to mobile home owners. However, to date, eligibility for these programs has been limited to homeowners who live in a non-profit or cooperatively owned mobile home park. For the 80 percent of mobile home-dwelling Vermonters who rent sites from privately owned mobile home parks, there is essentially no access to traditional financing.¹² Credit characteristics of mobile home owners are not analyzed separately in this study; however, these homeowners are included in the income segments described below.

¹² Interview with Sarah Woodward, Mobile Home Project Resident Organizer, Champlain Valley Office of Economic Opportunity (Mar. 29, 2011).

Lack of critical efficiency measures in Vermont homes

A 2009 report for the Department of Public Service documented that existing owner-occupied homes in Vermont lack basic weatherization measures that would drastically reduce home energy use and operating costs.¹³ The most notable include:

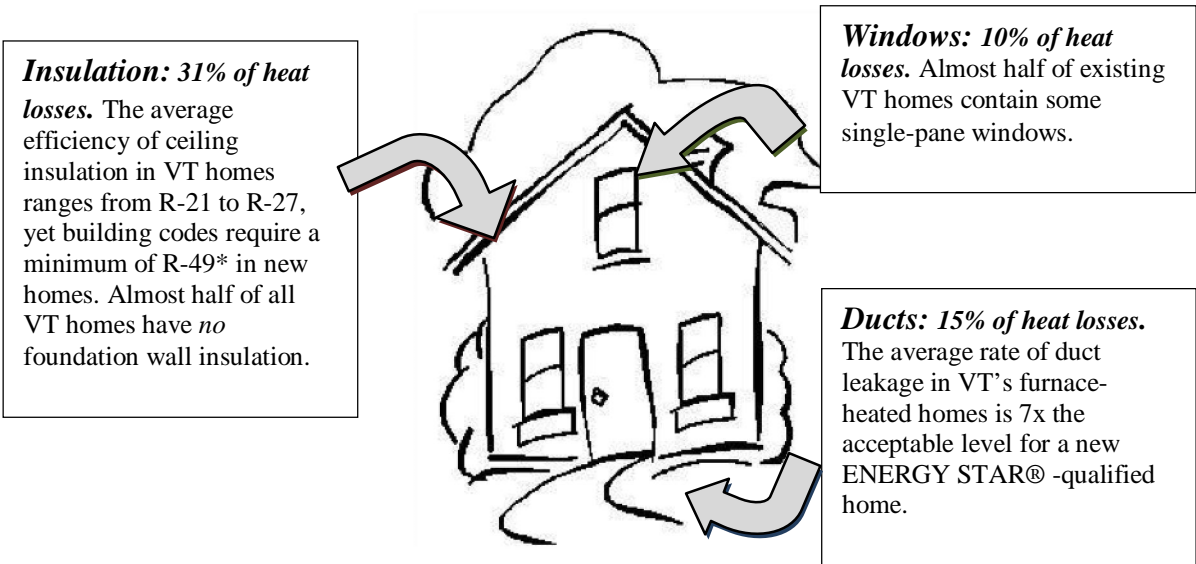


Figure 3: Average Vermont Home Energy Efficiency

* Note: Higher R-values indicate an increased ability to impede heat flow and, therefore, indicate increased energy efficiency.

This presents a significant opportunity for energy efficiency upgrades that will immediately improve the lives and well-being of thousands of Vermonters by reducing energy bills and increasing the comfort level of their homes. Unfortunately, most homeowners are unfamiliar with home energy improvement services, and the benefits of an energy upgrade are mostly invisible to the customer. The regular integration of air sealing with insulation and HVAC measures in a comprehensive, whole-house approach seems out of reach. The energy savings and comfort improvements from home energy upgrades are realized over the life of the home, while the costs must be paid up front. All of this makes home energy improvements a difficult sell. Current home energy improvement programs have not been able to significantly increase the pace at which homes in Vermont are being renovated.

¹³ DOROTHY CONANT, NEXUS MARKET RESEARCH, INC. FOR THE VERMONT DEPARTMENT OF PUBLIC SERVICE, ANALYSIS OF ONSITE AUDITS IN EXISTING HOMES IN VERMONT (2009).

The increasing home energy affordability gap

Home energy bills are considered affordable if they comprise less than 6 percent of household income. In New England, home energy bills average \$2,400 annually, or almost 5 percent of median household income in Vermont. This is well within the range considered affordable and leaves room for other essential expenditures.¹⁴ However, for low income Vermonters, the cost to heat, cool, and power the home swallows a larger percentage of income. Nearly one-quarter (24 percent) of Vermont households live on incomes below \$33,000, which is 185 percent of the Federal Poverty Level. Because

Low income Vermonters spend up to 70% of their household income on unaffordable energy bills, or an average of \$1,871 more every year for their energy bills than is considered affordable.

families cannot do without heat and electricity, these households spend the same dollar amount as other families, but the amount represents a larger portion of their income; from 10 to 70¹⁵ percent of these households' income is spent on home energy bills.¹⁶ This *far* exceeds the 6 percent level considered affordable for energy costs.

The energy affordability gap – the dollar difference between an “affordable” energy bill and the total energy bill a family actually pays – has increased dramatically in Vermont since 2002. The quarter of Vermonters mentioned above now spend an annual total of \$107.9 million (an average of \$1,871 per family per year over the 6 percent that is considered affordable) *more* on energy bills than is considered affordable. Only a handful of states have less affordable energy bills than Vermont – Virginia, Delaware, Alabama, Maine, Connecticut, Hawaii, and North Dakota.¹⁷ The driving forces of high energy costs are Vermont’s reliance on fuel oil and the inefficiency of homes throughout the state. Increasing the efficiency of homes in Vermont will significantly reduce this financial burden on low-income homeowners.

¹⁴ Fisher, Sheehan & Colton, *What is the Home Energy Affordability Gap?*, HOME ENERGY AFFORDABILITY GAP, http://www.homeenergyaffordabilitygap.com/01_WhatIsHEAG3.html#AffordabilityGap.

¹⁵ FISHER, SHEEHAN & COLTON, *supra* note 10. For people who live below 50% of the poverty line, home energy costs 70% of their income.

¹⁶ *Id.*

¹⁷ *Id.*

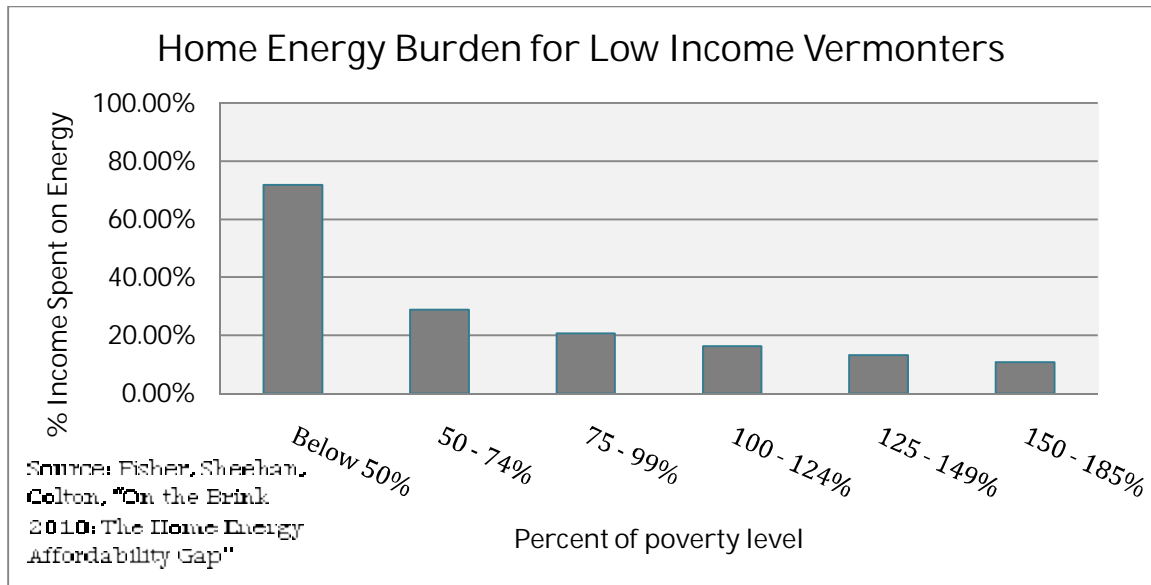


Figure 4: Home Energy Burden for Low-Income Vermonters

V. VERMONTERS AS BORROWERS FOR ENERGY EFFICIENCY

One aim of this research was to identify typical credit characteristics of Vermont borrowers. In pursuit of this information, a lenders survey was performed with the assistance of the Vermont Bankers' Association and the Association of Vermont Credit Unions. Institutions representing a lending market share of more than 26 percent responded to the survey. Analysis of the responses was challenging because lenders did not always provide comparable information.¹⁸ An additional complicating factor is that Vermont borrowers may do business at several institutions or transfer lending instruments out of state.

The survey results suggested that a significant portion of Vermont homeowners who used a Vermont lender for their mortgages have ample capacity to borrow for material efficiency improvements, should they choose to do so. On interview, lenders confirmed this hypothesis, speculating that a significant deterrent to such borrowing is a combination of debt aversion, the “invisibility” of the benefits of energy efficiency improvements, and the hassle of getting this work done.

According to the Vermont Housing Finance Agency (VHFA), Vermont has a high level of lower-income homeowners but a low rate of foreclosure. In 2009, Vermont's foreclosure rate was 2.2 percent, well below the national average of 4.3 percent, suggesting that Vermonters tend not to abandon their homes when under financial stress. Nevertheless, Vermonters – particularly those with low incomes – are not able to finance substantial energy efficiency upgrades from their personal savings. The VHFA, which services moderate- to low-income households, supplied the following information about its borrowers' credit characteristics:

¹⁸ Tom Candon of the Vermont Department of Banking, Insurance, Securities and Health Care Administration (BISHCA) confirmed that this is an under-researched area; it is difficult to obtain comparable, quantitative data in part because each lending institution compiles and analyzes this information differently.

	Income Group Relative to State Median		
	<50%	50-80%	>80%
<i>Percentage of all loans</i>	12%	51%	37%
Median loan to value ratio	90	95	96
Median total debt to income ratio	38.58	37.81	35.79
Median credit score*	725	725	710

Figure 5: Credit Characteristics of VHFA Borrowers

According to Tom Candon of BISHCA, the VHFA debt-to-income ratios are typically higher compared to most of the state’s mortgage lenders, where debt-to-income ratio values are usually closer to 24 percent (PITI) and do not exceed 36 percent (overall) as a general rule. However, a broader range of debt-to-income ratios was common when subprime lenders operated in the state. For example, Fannie Mae allows debt-to-income ratios of up to 50 percent for unsecured loans and the H.E.A.T. Squad program – a residential energy efficiency program launched in late 2010 by NeighborWorks of Western Vermont using funding provided by the federal stimulus bill – allows debt-to-income ratios of up to 45 percent for both unsecured and secured loans. On the other hand, the VHFA credit scores are mostly higher than the credit scores of Vermont borrowers obtaining loans from other sources. For example, credit scores for Vermonters borrowing from some out-of-state lenders have been as low as 620 – 680, which reflects subprime lending practices followed by some of these lenders. The difference is probably due to two things: VHFA offers educational opportunities that help borrowers increase their credit scores, and/or VHFA requires low-income borrowers to have more attractive credit characteristics.

Implications for financing energy efficiency upgrades

Currently, approximately 2,800 homes undergo efficiency upgrades each year. This rate, however, is misleading because it includes the improvements performed through the Weatherization Assistance Program, which will lose its funding at the end of 2011, as well as the H.E.A.T. Squad program, which has funding to improve 1,000 homes. Even this bolstered rate is well below the rate needed annually to meet the legislature's goal of upgrading 80,000 homes by 2020. The Regulatory Assistance Project projected the gradual increase in energy efficiency improvements needed over the next ten years to meet the goal, which are included in Figure 6, below.

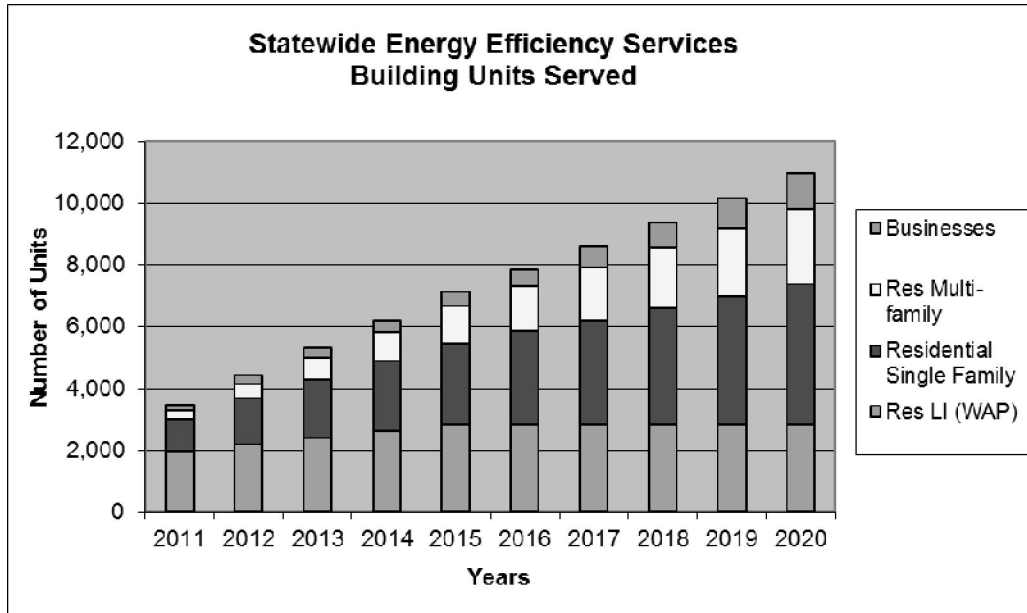


Figure 6: Statewide Energy Efficiency Services (courtesy of RAP)

While increasing access to traditional financing tools for energy efficiency improvements might make financing easier and less expensive for the 48 percent of homeowners considered creditworthy by lending institutions, this will not help either the 23 percent of Vermont households considered non-creditworthy or the 29 percent who are renters. These homeowners either do not have access to any kind of financing or require significant flexibility on the part of the lending institution. Innovative financing solutions, plus increased financing for direct weatherization assistance, are critically needed to alleviate the burden of unaffordable energy bills for these households.

Who needs financing for an energy efficiency upgrade?

The median statewide annual household income in Vermont is \$51,000.¹⁹ Representatives of lending institution interviewed for this report indicated that, generally, homeowners with household incomes above 80 percent of Vermont’s median income (more than \$41,000 per year) are eligible to obtain traditional financing and are, therefore, generally considered creditworthy. Homeowners whose income is below 80 percent of the median

¹⁹ LESLIE BLACK-PLUMEAU & MAURA COLLINS, VERMONT HOUSING FINANCE AGENCY, VERMONT HOUSING NEEDS ASSESSMENT (2010). V.H.F.A. does not factor household size into its median income calculations.

income require additional assistance in the form of loan guarantees, interest rate reductions (also known as “buy-downs”), grants, and other mechanisms explored below in order to engage in energy efficiency home improvements.

Creditworthy homeowners account for 48 percent of Vermont households, while non-creditworthy homeowners represent 23 percent. The remaining 29 percent are renters, a sector that falls outside the scope of this study. The following sections analyze how the credit characteristics of different income sectors affect the ability of homeowners to adopt in energy efficiency improvements because of access to financing and incentives.

HOMEOWNERS ABOVE 80 PERCENT OF VERMONT’S MEDIAN INCOME

Wealthier households can choose from a variety of financing tools for residential energy efficiency upgrades, including self-financing. Although Vermont lenders expressed a general willingness to lend to homeowners in this sector, they explained that there are three subcategories to this sector: (1) those who have both high income and high equity (the most creditworthy), (2) those who have high income but lower equity (somewhat less creditworthy), and (3) those who have lower income but high equity (the least creditworthy). These homeowners account for 48 percent of all households in the state.

Homeowners in this sector generally qualify for financing and can take advantage of energy efficiency financial incentives, although this may not be enough to drive demand. Efficiency Vermont’s Home Performance with ENERGY STAR (HPWES) program offers up to \$2,500 in incentives for qualified home energy improvements. Given the \$7,500 average cost of improving a home’s energy efficiency by 25 percent, even the

maximum benefit available through HPWES leaves a significant private capital need of \$5,000.²⁰ Many Vermonters do not have this amount of money available so will need access to financing. Nevertheless, most lenders we interviewed observed that many of their clients already have the means to fund residential energy efficiency improvements but do not choose to do so even though need-blind financial incentives are offered. This indicates that the

One Vermont bank president reported that he received incentives through EVT even though he didn’t “need” the money and would have undertaken the improvements without it.

²⁰ It is important to note that there is not enough rebate money available to provide financial incentives at this rate for the number of homes that would need to be upgraded to meet the Act 92 goals.

availability of financing, even for the Vermont homeowners who are most able to afford the work and take advantage of financial incentives, is not enough to drive demand for energy efficiency improvements.

In our judgment, existing loan products can fund energy efficiency improvements for this credit-worthy sector of Vermonters, but a different borrowing process is necessary to spur energy efficiency improvement borrowing. Furthermore, to address the debt-aversion issue, non-debt financing options such as PACE and/or on-bill tariffed financing could spur demand from otherwise latent interest. (See Section VII of this report and Section 6 of the RAP Report for more information about non-debt-based financing techniques.)

HOMEOWNERS BETWEEN 50 AND 80 PERCENT OF VERMONT'S MEDIAN INCOME

Homeowners in this income bracket are particularly vulnerable to high energy bills because they are in the most challenging position regarding ability to access financing or financial assistance to make energy efficiency upgrades. In this bracket, household incomes range from \$25,000 to \$41,000, so these homeowners generally do not qualify for standard financing or for the free Weatherization Assistance Program (WAP). These homeowners account for 11.5 percent of households in the state.

Although these homeowners would benefit from Efficiency Vermont's HPWES program, they are unlikely to be able to take advantage of it. Homeowners in this sector generally will not undertake energy efficiency renovations because they neither have the means to self-finance nor qualify for financing. Therefore, they will not benefit from HPWES incentives because they lack access to the upfront capital necessary to finance the project. In effect, this means the HPWES program only reaches customers who can secure additional financing, so it does not support renovations by those who are most in need of financial assistance.

A 2010 pilot program by Central Vermont Community Action Council (CVCAC) – the Do-It-Yourself (DIY) Home Energy Efficiency Pilot Program – attempted to increase access to home energy upgrades by training homeowners interested in making energy efficiency improvements themselves and providing access Efficiency Vermont's HPWES program rebates. The DIY approach presumably would reduce the cost of a home retrofit that would otherwise cost \$7,500, which would benefit this sector of homeowners. Nonetheless, homeowners in this sector are likely to have limited time to install upgrades. Furthermore, even at a reduced cost, any course of action that requires this sector of

homeowners to incur debt in order to implement efficiency measures is unlikely to get much traction. For more details about this program, see Appendix A.

Non-traditional financing or significant augmentation to financing will likely be necessary to fund energy efficiency upgrades for homeowners in this bracket. Encouraging action on a home energy upgrade by the households in this sector will require either a significant financial incentive coupled with loan risk mitigation, such as a loan-loss reserve pool or loan guarantees, or non-debt-based financing solutions such as PACE and/or on-bill tariffed financing. (See Section VII and the RAP Report at Section 6 for more information about non-debt-based financing techniques.)

HOMEOWNERS BELOW 50 PERCENT OF VERMONT'S MEDIAN INCOME

Homeowners with incomes below \$25,000 represent another 11 percent of households in the state. These households suffer from unaffordable energy bills, spending from 10 to 70 percent of their incomes on energy bills alone. Although these homeowners generally do not qualify for traditional financing mechanisms, they generally do qualify for the Weatherization Assistance Program (WAP).²¹

WAP offers free home energy weatherization upgrades to qualified low-income households, including homeowners and renters. Households see an average of 34 percent

Funding for WAP and interest rate "buy downs" are needed to support low income Vermonters.

energy savings as a result of these weatherization measures. In 2009, WAP reached 1,832 households in Vermont, including both owner-occupied and rental units.²² Due to the funding the state received via the 2009 federal stimulus package (ARRA), the number of households reached in 2009 was 300 to 400 more homes

than the state can support with its standard budget. However, because the ARRA funds sunset in 2012, in subsequent years WAP will reach only 1,400 to 1,500 homes per year (For more details about ARRA funding and WAP, see the RAP Report at Section 2).

Vermont is home to the Opportunities Credit Union (Opportunities), "Vermont's only regulated financial institution dedicated to serving low-wealth individuals."²³ It offers low-cost energy efficiency financing programs in partnership with Efficiency Vermont

²¹ These median income statistics do not directly correlate with income requirements for WAP, but they approximate the household income necessary to qualify.

²² Conversation with Geoff Wilcox, Vermont Office of Economic Opportunity, Department for Children and Families.

²³ See OPPORTUNITIES CREDIT UNION, <http://www.oppsvt.org/>.

and Vermont Gas, an investor-owned utility. Even with these programs in place, Opportunities is experiencing the same homeowner debt aversion that other lending institutions report. An executive at Opportunities opined that in the absence of very low or zero rate financing, it will be very difficult to induce consumers to borrow in this economy. Current market rates for a home equity loan are at least double that rate, while personal loans rates generally start closer to 7 percent. In order to offer loans at the reduced rates, banks and credit unions report that they require additional funding to reduce interest rates, or “buy down” the rates, because these are generally unsecured loans that carry a higher level of risk and, therefore, require greater loan loss reserves from a regulatory perspective.

Besides the low-wealth Vermonters who have the means to borrow from Opportunities, few households in this income bracket are able to take out a standard loan. Thus they will

Non-debt financing techniques could enable otherwise “unbankable” Vermonters to improve their homes and live more comfortably while saving money.

likely continue to rely on WAP, which will require increased funding to meet the state’s residential energy efficiency goals. Therefore, Vermont must find a way to close the gap in funding for WAP so these Vermonters, who are most in need, can live in comfortable homes they can afford to heat. Financing solutions that do not involve traditional debt instruments— such as

PACE and/or on-bill tariffed financing – may also be suitable for this sector of homeowners (See Section VII and RAP Report at Section 6 for more information about these financing techniques).

VI. 1986 – 2011: WHAT 25 YEARS HAVE TAUGHT US

Financing programs for residential energy efficiency upgrades in Vermont date back as far as 1986. For more than twenty years, lenders and efficiency experts have partnered together to offer different incentives and programs for financing efficiency upgrades. Lenders have also marketed their own loan products for financing efficiency upgrades, usually referring homeowners to Efficiency Vermont for information about efficiency upgrades and contractors. Nonetheless, to a large extent, the results of these efforts have been disappointing.

Even though energy efficiency is anything but a luxury, many Vermonters of limited means appear to regard it as such. This is demonstrated by the demographics of early adopters of residential energy efficiency improvements, the vast majority of whom are well-educated, high-income homeowners. For example, the income demographics of participants in the H.E.A.T. Squad program do not reflect the state demographics. As of mid May 2011, of the 250 homes in the program, 78 percent of the homeowners earned more than 80 percent of the state median income while only 22 percent of the homeowners earned less.²⁴ These ratios do not reflect the state income ratios: 48 percent and 22.5 percent, respectively. The Vermont State Employees Credit Union, a statewide credit union, reported similar demographics among their members who participated in an energy efficiency lending program offered in conjunction with Efficiency Vermont.²⁵

This section discusses experience in Vermont and other states to determine how to overcome the first-cost barrier of paying for energy efficiency improvements and motivate a broader range of homeowners to drive demand for energy efficiency improvements. It then identifies key factors that influence lending decisions and describes issues related to at-risk Vermonters. Finally, the section provides several conclusions based on experience from other states.

Experience with energy efficiency financing in Vermont

Nearly a dozen energy efficiency financing programs have been implemented in Vermont. Although they have generated some interest among homeowners, they have achieved limited success.²⁶ Almost universally, lenders have cited lack of homeowner

²⁴ NEIGHBORWORKS OF WESTERN VERMONT, HOME EFFICIENCY ASSISTANCE TEAM (H.E.A.T.) SQUAD RESULTS (as of Feb. 15, 2011) (on file with authors).

²⁵ Interviews with Chuck Karparis and Valerie Beaudin, Vermont State Employees Credit Union.

²⁶ Although Vermont homeowners historically have shown little interest in energy efficiency, it is important to remember that, for years, Efficiency Vermont only offered homeowners compact fluorescent

interest as one of the primary challenges to developing a robust program.²⁷ At least two programs have been cancelled or suspended due to lack of interest. While some Vermonters may be interested in efficiency upgrades, the complexity of this process and a lack of understanding of the benefits of energy efficiency upgrades deters many homeowners. Without a seamless, straightforward process for loan application and approval, contractor selection, and final inspection, lenders will continue to have a difficult time persuading many homeowners to borrow enough money to achieve the optimal efficiency upgrades.

Programs to finance residential energy efficiency upgrades			
Past		Current	
Provider	Program	Provider	Program
VT Housing Finance Agency	Home Energy Improvement Loan	Bank of Bennington	Green Loan
	Yearly Energy Savings System Mortgage Program	Brattleboro Savings and Loan	Energy Loan Program
	Energy Saver Loan Program	NeighborWorks	H.E.A.T. Squad
Vermont Energy Investment Corporation	Energy Rated Homes of Vermont	Opportunities Credit Union	Energy Loan
		Passumpsic Savings Bank	Energy Efficiency Loan Program
		Union Bank	GreenLend
		Vermont State Employees Credit Union	Green Loan

Figure 7: Vermont Energy Efficiency Financing Programs

COMPLEXITY

Aside from the mess and aggravation associated with having construction work done on one’s home, setting out to make a home more energy-efficient means finding an auditor and a knowledgeable contractor, finding the best way to fund the improvements, and applying for a loan if needed. It also entails understanding the options for energy efficiency upgrades, figuring out payback periods, and coordinating between the lender

light bulbs and appliance rebates. Therefore, homeowners felt there was little information that was helpful or user-friendly.

²⁷ See *infra* Appendix A (reviewing financing programs in Vermont).

and contractor, all of which can be overwhelming. Even though Efficiency Vermont provides some support services for people engaged in this process, many people who undertake home energy efficiency improvements find the process bewildering.

The early Energy Rated Homes of Vermont program addressed this hurdle by making energy raters available to solicit bids, interact with the lender, and provide the final inspection. However, this service came at a cost. When Efficiency Vermont took over the program, it calculated that these services cost approximately \$800 per home. Since that program was discontinued, no other program offered this level of support until NeighborWorks of Western Vermont launched its high-touch H.E.A.T. Squad program.

The H.E.A.T. Squad program offers a one-stop shop for homeowners interested in conducting a home energy assessment²⁸ (referred to as “check-ups”) and upgrade. Among

Many who undertake efficiency improvements to their homes find the process bewilderingly complex – even with the assistance of Efficiency Vermont. NeighborWorks of Western Vermont offers a high-touch program that has a high conversion rate, suggesting they are overcoming these barriers.

other things, the H.E.A.T. Squad program offers assessment and improvement appointment scheduling, credit counseling, and home energy assessments reviews with a project manager. Not surprisingly, with this kind of active support, NeighborWorks is experiencing more success at driving action than other programs in Vermont.²⁹ In fact, with its conversion rate of almost 50 percent, the H.E.A.T. Squad program is currently performing better than any other program in

the U.S. at converting homeowners to move from audit to upgrade. This program’s penetration rate per capita is also the most successful in the U.S.³⁰ (See Appendix B and Section 2 of the RAP Report for more information about the H.E.A.T. Squad program).

²⁸ The H.E.A.T. Squad program refers to home energy assessments as “check-ups.” Another common term is “energy audit” or simply “audit.” This report uses these terms interchangeably.

²⁹ The NeighborWorks H.E.A.T. Squad program has experienced a high audit-to-improvement rate: 49 percent as of mid-May 2011. NeighborWorks of Western Vermont, *supra* note 16.

³⁰ Historically, Austin Energy’s Better Building program has had the highest level of penetration per capita in the U.S. For example, serving a population base of approximately 900,000 people, in 2009 – one of the best years ever for Austin prior to the introduction of their “Best Offer Ever” – Austin’s program reached approximately 2,500 households. This equates to a penetration rate of .00277 percent. If this penetration rate were applied to the population base served by the H.E.A.T. Squad program (approximately 61,000 households), then about 168 households would be reached. However, in its first six months of operation alone, the H.E.A.T. Squad program has upgraded or is upgrading 250 households.

ATTRACTING ATTENTION

Although VEIC – doing business as Vermont’s efficiency utility under the trade name Efficiency Vermont – has often actively marketed its financing programs, Vermont’s community banks and credit unions generally do not put much marketing resources behind their efficiency loan products. For example, when the Vermont State Employees Credit Union started a loan program, it created a web page for the program but undertook no outreach and received little response. However, other private lenders like the Bank of Bennington, Union Bank, and Brattleboro Savings and Loan have advertised through mass mailings, email messages, brochures, booth displays at local events, and discussions with realtors and others in the housing industry, among other means. But even these marketing efforts have resulted in disappointingly low interest.

Most lenders believe the lack of interest is because homeowners do not understand the benefits of home energy improvements or are deterred by the complexity of the process. As lenders explore additional marketing opportunities, such as social media applications like Facebook and Twitter, a more thorough peer-to-peer homeowner outreach and education campaign is needed to provide community engagement, and thereby spur demand. This should use community-based social marketing³¹ techniques and be developed as part of the “seamless path” to energy efficiency, so that Vermonters hear consistent messages about the benefits of home energy improvements from people they know and trust.

MOVING HOMEOWNERS INTO ACTION

While access to financing is an important part of promoting energy efficiency improvements, it only addresses the first-cost barrier and only does so for those who can afford to borrow money. Even for those who qualify for financing, other barriers exist. For example, many people lack the motivation to get a loan, even on favorable terms. As

³¹ For more information on these programs, see BARBARA C. FARHAR, U.S. DEP’T OF ENERGY, NAT’L RENEWABLE ENERGY LAB., PILOT STATES PROGRAM REPORT: HOME ENERGY RATING SYSTEMS AND ENERGY-EFFICIENT MORTGAGES (NREL/TP-550-27722) (2000); BARBARA C. FARHAR ET AL., U.S. DEP’T OF ENERGY, NAT’L RENEWABLE ENERGY LAB., LINKING HOME ENERGY RATING SYSTEMS WITH ENERGY EFFICIENCY FINANCING: PROGRESS ON NATIONAL AND STATE PROGRAMS (1996); PATRICIA C. PLYMPTON, U.S. DEP’T OF ENERGY, NAT’L RENEWABLE ENERGY LAB., NATIONAL STATUS REPORT: HOME ENERGY RATING SYSTEMS AND ENERGY-EFFICIENT MORTGAGES (NREL/TP-550-27635) 12 (2000); Greg Thomas, *Home Ratings Sweep the Nation—Almost*, HOME ENERGY MAGAZINE ONLINE (1999), <http://www.homeenergy.org/archive/hem.dis.anl.gov/eehem/99/990908.html>; Home Energy Ratings: A Primer, RESNET (2010), <http://www1.resnet.us/ratings/overview/resources/primer/HP02.htm>; *States Promote Rating Systems*, 45 ENERGY SOURCE BUILDER (1996), available at <http://oikos.com/esb/45/hers.html>.

energy costs continue to rise, homeowners may feel more motivated to act, but without further intervention, transaction costs and lack of information are likely to continue to inhibit action.

As discussed above, the challenge of moving homeowners into action is closely linked to the complexity of the process, coupled with skepticism regarding the benefits of installing energy efficiency. What is needed is a seamless process to build demand for home energy assessments, recruit program participants, assess which improvements are most appropriate (homeowners may want a second opinion from someone like EVT regarding the cost and necessity of what the contractor proposes), match homeowners with the right contractors, connect borrowers with appropriate financing (if necessary), and verify that the work was performed correctly. Optimally, all this would occur in a manner the public perceives as pleasant, simple, popular, and consistent across the state.

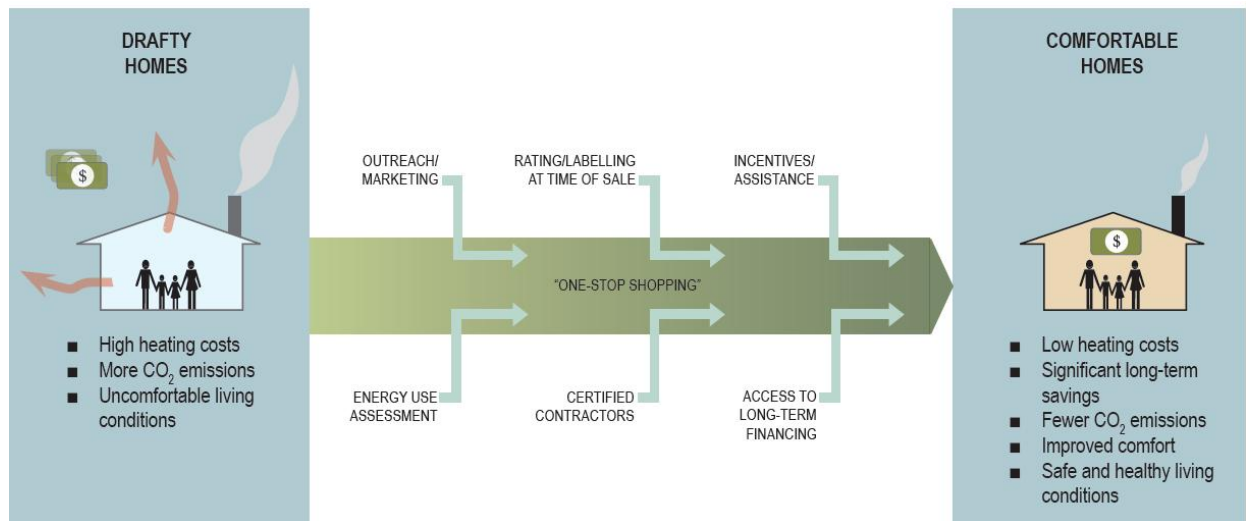


Figure 8: Seamless Path to Energy Efficiency (courtesy of RAP)

Other measures to help drive demand include:

- Accounting for energy efficiency savings: most lenders, especially those selling mortgages to the secondary market, are hesitant to take energy cost savings from efficiency upgrades into account when deciding whether to make a loan. The Vermont Housing Finance Agency’s early programs were able to take energy cost savings into account due to the home rating program,³² which has since been

³² See U.S. ENVT’L PROT. AGENCY, CLIMATE CHANGE SOLUTIONS: VERMONT TRIMS ENERGY BILLS FOR LOW-INCOME FAMILIES (1998), available at <http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=40000PQ2.txt>

discontinued. Although federally-backed energy efficient mortgages through the Department of Veterans Affairs and the Federal Housing Authority allow cost savings to be taken into consideration, loans through these programs have not been very popular in Vermont or around the country generally. (See Appendix B for more information about this program.)

- Recently, Fannie Mae added an Energy Improvement Feature, which provides an exception to its usual lending practices by allowing cost savings to be factored into loan determinations,³³ but very few lenders currently know about this program. Most lenders expressed concern about the lack of a widely accepted rating or certification system as well as reliable data demonstrating anticipated cost savings.
- The VEIC Case Studies analyzed homes that have undergone significant energy efficiency upgrades. For all the homes analyzed for these case studies, the savings realized were within 3 percent of what was projected based on the energy assessment. The VEIC Case Studies also analyzed the economics of financing the investments and demonstrated that home energy efficiency upgrades are cost-effective and can provide a positive cash flow under certain circumstances. The information in the VEIC Case Studies may provide the kind of information lenders and homeowners are looking for.
- Disclosures at Change of Ownership: several drivers come into play regarding disclosures at change of ownership. These include time-of-sale disclosures, compliance with Vermont's Residential Building Energy Standard, and including the energy fitness of homes in appraisals.
- Time-of-sale or lease disclosure requirements are increasingly being recognized as a key means to drive demand for energy efficiency improvements. Several U.S. municipalities as well as several countries in the European Union³⁴ have adopted programs that require disclosure of the dwellings' results under a home energy rating system when a building is sold or leased (often known as time-of-sale

("The Vermont Housing Finance Agency provides mortgages for 15-20 percent of the existing and new homes bought each year in the state. Many of these sales have involved VEIC's Energy Rated Homes of Vermont program, allowing energy efficiency to be incorporated into the mortgage process").

³³ See *Energy Home Improvement Feature*, FANNIE MAE (Dec. 1 2010), <https://www.efanniemae.com/sf/mortgageproducts/pdf/eifeaturefacts.pdf>.

³⁴ Notably, in 2002, the European Union released a Directive Mandating that the energy efficiency of all buildings in a certain size range be disclosed; since then, several countries, including Denmark have mandated the same for residences. See Directive 2002/91, of the European Parliament and Council of 16 December 2002 on the Energy Performance of Buildings, 2003 O.J. (L 1) 65-71. Notably, the European Union requires energy efficiency disclosure both at the time of sale and when a property is leased.

requirements).³⁵ For example, in Austin, Texas, sellers must disclose a home's energy performance or demonstrate that the house has undergone a whole-house efficiency upgrade.³⁶ Some states, including Vermont, have related legislation under consideration.³⁷ With some exceptions, the city of Burlington requires energy efficiency compliance disclosure when rental properties are sold.³⁸

- In addition, Vermont's Residential Building Energy Standard (RBES) was recently updated as part of H.56, the 2011 Energy Bill. The new RBES applies to all alterations, renovations, and repairs to existing buildings and, therefore, will apply to residential energy efficiency improvements.³⁹ Although compliance with the RBES is mandatory, it relies on self-certification by the general contractor; the state has no enforcement mechanism. Nevertheless, seller disclosures and buyer awareness statements are routinely required for transactions involving such elements as radon tests, lead paint status, water quality standards, waster water and septic systems, physical structure inspections, and ownership title. Requiring sellers to disclose and buyers to explicitly accept the status of properties in regard to energy codes should, at a minimum, be placed on a similar footing and treated as a routine part of real estate transactions within the state of Vermont. Therefore, the state and the real estate investment community should give attention to increasing compliance with current and expected codes and standards for energy efficiency in residential dwellings. This could be implemented through voluntary means, such as through coordinated outreach to Vermont building, energy-efficiency, mortgage, and real estate professionals or, in the event of their inaction, through regulatory or statutory requirements. Policy measures that enhance energy efficiency disclosure at the time the property is sold are justifiable because energy efficiency provides both public and private benefits.

³⁵ See *infra* Section IX, p. 63.

³⁶ See Tim Kisner, Austin Energy, *Austin's Early Experience with Time-of-Sale Ratings*, REGULATORY ASSISTANCE PROJECT (Dec. 15, 2011), http://www.raonline.org/docs/rap_kisner_wholehouseretrofitwebinar_austinenergy_2010_12_15.pdf.

³⁷ Vermont H.57.

³⁸ BURLINGTON, VT., CODE OF ORDINANCES art. 12, §18-500 (2011), available at https://www.burlingtonelectric.com/page.php?pid=43&name=time_of_sale.

³⁹ See *Proposed Rule: Residential Building Energy Standards*, Vt. Dep't of Pub. Serv. (Jan. 5, 2011), http://publicservice.vermont.gov/energy/ee_files/rbes/VT%20RBES%20Proposed%20Rule.pdf. See also, VT. STAT. ANN. tit. 21, § 266 (West through No. 7 of 2010-2011 Legis. Sess.). The previous RBES only applied to new construction and additions greater than 500 sq. ft., which excluded many energy efficiency upgrades. This current version of the RBES will apply to construction that commences after the RBES becomes effective, which is expected to be in the Fall of 2011.

- Notably, currently, Vermont law neither lists nor excludes energy efficiency as a factor that appraisers may or must consider.⁴⁰ However, some progress is being made in Vermont to promote the valuation of energy efficiency improvements. The Vermont Green Home Alliance, working with Vermont’s appraisal, lending, and real estate associations, has increased educational opportunities for appraisers, lenders, and realtors regarding valuing residential energy performance. Currently it is working to develop a database of homes with Home Energy Ratings (HERS), ENERGY STAR® Home and other third-party verified green building certifications that can be used to facilitate valuation and, in particular, help appraisers find comparable homes. This collaboration succeeded in getting the Northern New England Real Estate Network, operator of the Multiple Listing Service (MLS) serving all Vermont, to include a searchable field where HERS Index scores, ENERGY STAR and other third-party verified green building certifications can be listed. However, even with this progress, valuation of energy efficiency improvements on existing homes will remain an elusive goal until a home energy efficiency rating is established that can effectively inform home buyers about an existing home’s energy-efficiency or lack thereof.
- While all of these policies have the potential to make the value of energy efficiency improvements more visible in the long run, caution must be taken in how they are implemented, as these policies can affect the market value of some homes. This is concern is particularly relevant during a period when home values are declining.

Reaching at-risk Vermonters

Approximately half of Vermonters face another set of issues because they do not qualify for financing or because they cannot afford to own a home and, therefore, live in rental

On-bill tariffed financing may be a “game changer” because it overcomes the debt aversion barrier while reaching a broad range of Vermonters, including landlords.

properties. As previously discussed, there are three overlapping categories of Vermonters who are particularly at risk for not being able to afford to heat their homes: (1) homeowners who earn between 50 and 80 percent of the state’s median income, (2) low-income Vermonters who earn less than 50 percent of the state’s median income, and (3) Vermonters who live in rental properties.

⁴⁰ VT. STAT. ANN. tit. 26, § 3311(4) (West 2011).

VERMONTERS WHO EARN 50-80 PERCENT OF MEDIAN INCOME

Although Vermont lenders were generally sympathetic about the concept of “stretching” their criteria to accommodate energy efficiency investments, because of increased federal scrutiny since the economic collapse of 2008 they are extremely cautious when they make loans. Nevertheless, several lenders expressed a willingness to extend energy efficiency improvement loans to customers who might not otherwise qualify for loans if there were a sufficient risk abatement system in place – such as a loan loss reserve pool – as well as credible cost savings projections they could rely on. In all cases, however, Vermont lenders said there is a limit to this stretch; they simply will not make loans to customers who cannot take on any more debt or those who have poor credit ratings, even if the loan has the potential to save the customer money. Therefore, financing that is tied to the meter rather than the individual, available through an on-bill tariffed financing program, could both help overcome the debt aversion barrier for creditworthy Vermonters and meet the needs of Vermonters whose credit scores do not meet the criteria established by traditional lenders. The on-bill tariffed financing program is discussed in more detail in Section VII of this report as well as in Section 6 of the RAP Report.

VERMONTERS WHO EARN LESS THAN 50 PERCENT OF MEDIAN INCOME

The issues pertaining to this sector of Vermonters is beyond the scope of this research. The Regulatory Assistance Project report, “Affordable Heat: A Whole-Buildings Efficiency Service for Vermont Families and Businesses,” describes the particular challenges facing this group of Vermonters and provides extensive recommendations on how to deal with these challenges. In particular, see Section 5 of the RAP Report.

RENTERS

Although the issues pertaining to this sector of Vermonters is also beyond the scope of this research, the utility bill financing option that a on-bill tariffed financing program can offer could service both homeowners and landlords. This topic is, therefore, discussed in more detail in Section VII of this report as well as in Section 6 of the RAP Report.

Lessons learned from other programs

Energy efficiency financing programs have been around for many years. Financing programs have been available through the federal government since the early 1990s. In 2010, a report from the National Home Performance Council found that, of 126 whole-house assessment programs across the country, nearly half provide some kind of

financing.⁴¹ Efforts in other states and communities have had mixed results; their experiences provide important lessons for Vermont. Over the past few years, several new programs have emerged, especially with the influx of federal stimulus funds. Appendix B describes several new and mature programs, ranging from state-based programs offered in Pennsylvania, Massachusetts, and Wisconsin to federally-backed programs through the Department of Veterans Affairs, the Federal Housing Administration, and other agencies. Experience from these and other lending programs suggests the following four components offer an important starting place for an institution seeking to develop an energy efficiency financing program:

- ***Do not re-invent the wheel.*** Rather than trying to redefine energy efficiency or establish new criteria for energy efficiency improvements, most programs limited eligible upgrades to those administered through recognized programs like the Home Performance with ENERGY STAR or ENERGY STAR products.
- ***Trust but verify.*** A strong majority of programs require an inspection before funds are released from escrow or before the contractor is paid. A final inspection is important to ensure that work quality remains high. In addition, to ensure that only qualified professionals perform the work, financing programs should make it easy for homeowners to identify pre-approved contractors.
- ***Keep it central.*** Without central coordination, programs risk shuffling homeowners around until they finally get to the right person or institution. A fully integrated “one-stop shop” works best to connect homeowners with contractors and lenders.
- ***Keep it simple.*** Busy homeowners, and those unfamiliar with energy efficiency products or home maintenance, can be difficult to attract with a do-it-yourself-style financing program. Homeowners will be less likely to participate if they are responsible for finding a contractor, selecting an energy efficiency project, applying for financing, and coordinating the efforts of the auditor, contractor, and lender. Even if the process is coordinated by a case manager, if the process is drawn-out or burdensome, it will still deter homeowners. Therefore, straightforward and standardized procedures can help ensure that the process is seamless. Efficient coordination among partners is necessary. Lenders must approve loans quickly, contractors must complete projects on time, and auditors must perform reviews as soon as possible.

⁴¹ ROBIN LEBARON & KARA SAUL RINALDI, NAT'L HOME PERFORMANCE COUNCIL, RESIDENTIAL ENERGY EFFICIENCY RETROFIT PROGRAMS IN THE U.S.: FINANCING, AUDITS, AND OTHER PROGRAM CHARACTERISTICS 13 (2010).

- ***The right mix of incentives is important.*** Valuable, short-term promotions can jump-start interest in a loan program. For example, participation in Austin Energy’s loan program increased ten-fold when, for a three-month period, they offered both reduced rate loans and rebates along with their usual provision of free audits.⁴² The promotion for this program, known as the “Clean Energy Accelerator Best Offer Ever” featured the fact that federal tax credit availability for efficiency upgrades was going to expire at the same time as their time-limited program. Prior to this program Austin was the top-ranked program in the U.S. for penetration per capita, financing approximately 1 in 10 of completed upgrades through loans offered by Austin Energy. In contrast, during the Best Offer Ever, 100 percent of the homes upgraded (or 564 homes) were financed through the special program. Notably, during the Best Offer Ever program, 95 percent of the homes that underwent energy assessments engaged in substantial thermal upgrades.

For information about other state and municipal energy efficiency programs, see Appendix B.

⁴² See, Spotlight on Austin, Texas: Best Offer Ever Produces 564 Upgrades in Record Time, BETTER BUILDINGS: U.S. DEP’T OF ENERGY (Apr. 2011), available at http://apps1.eere.energy.gov/buildings/publications/pdfs/betterbuildings/cs_austin_gettingstarted.pdf.

VII. WHY FINANCING MATTERS

Investments in energy efficiency are not made for their own sake, but in order to avoid other, higher costs. In the case of investments by retail customers, the avoided costs are largely retail electric bills that decrease because of improved end-use efficiency. This retail electricity is typically valued at 11-13 cents per kilowatt-hour.

In addition some efficiency investments may avoid or reduce the cost of other resources, such as water, wood, gasoline, and propane or natural gas. For each of these, a market price and an estimate of future market prices may provide relevant data for measuring the value of efficiency measures. Also significant is the fact that many investments in efficiency may reduce environmental harm. Although these harms are not readily priced in markets, they may matter enough to some users in a manner that is not meaningfully different than a market-based measure of value. Similarly, some customers will assign an economic value to the avoided cost of “discomfort” from drafty or ill-lit premises.

In all these cases, if the cost of the investment in efficiency is borne by retail customers, they can make their own calculation of expected benefits. However, they often may not have the data to do this with much precision. For example, people who decide how much insulation to put into a new or renovated house may put in too little because they base their decision on past fuel or cooling costs rather than on future prices. Historic patterns, which indicate a systematic level of under-investment, corroborate this lack of informed decision making.

When society—through rules, regulations, information programs, or subsidies—bears part of the cost of investments, it is appropriate to consider social costs such as the wholesale price of electric power (typically levelized at 5 to 6 cents per kilowatt-hour whether bought or built, operated, and maintained) plus the cost of building, operating and maintaining transmission and distribution lines (typically levelized at about 6 to 7 cents per kilowatt-hour, for a total of about 11 to 13 cents per kilowatt-hour) and/or equivalent pipelines, canals and highways for deliveries. For customers who are inclined to do so, the value of avoided environmental impacts can be added to these social costs, to reach what some would consider a fair measure of the costs that are “avoided” through investments in end-use efficiency.

Importantly, these two measures of cost should produce similar results, since the prices a retail customer sees would, if calculated properly, equal the sum of all the wholesale

costs faced by different elements of society that contribute to creating and delivering power to the end-user. If we were willing to make these calculations and act on them, our nation would never build (or run) power plants (or transmission or distribution systems) that cost more than other means of satisfying customers' needs.

However, in reality, such unnecessarily expensive construction or combustion may well occur for several reasons. Two of these are particularly related to financing, and understanding each of them requires thinking of investments in end-use efficiency as just what they most often truly are—alternatives to investments in electricity supply systems. The first of these is fundamental to why financing matters at all: it is because the costs of insulation, lighting, or motors all have to be paid by someone in the first year of installation, yet the benefits (i.e., avoided costs) may well continue for many years. Remember that the financial benefits of efficiency investments occur, not when they are installed, but when they allow the cancellation or deferral of a power plant, power contract or power line, or avoid the need to burn some coal or other fuel power plants.

This is also true of upfront costs and ongoing benefits applicable to power plants and power lines, with one significant difference. The builders of electricity power plants benefit from a century of carefully developed financial mechanisms that allow them to borrow money at the installation phase and to pay it back over decades that follow and to do so at both very low carrying costs and, also, at transaction costs which are a tiny fraction of the costs of huge highly concentrated investments. Electricity customers, in contrast, make many small, disaggregated investments rather than a few highly concentrated ones and often pay all investment costs in the first year. When they do spread costs over time through some form of borrowing, they may (through measures like home equity loans) be able to match the carrying costs of utilities, but they cannot usually match the very small per-dollar transaction costs that utilities routinely achieve.⁴³

Another factor is also relevant: potential investments in efficiency are routinely compared (in the competitive sense that doing more of one means doing less of the other) to power supply investments. Those power supply investments are usually made by companies that are comfortable depreciating them over periods of decades; indeed average depreciation rates for most electric utility property is often in the 3-4 percent range, implying a 25 to 30 year recovery period. Most electricity customers, however, seek a

⁴³ For example, a billion dollar power plant and a thousand dollar installation job may both pay similar carrying costs of, say, 4 to 6% interest rate, but the transaction costs, such as settlement fees, might be a far higher portion of the borrowed amount in the case of a thousand dollar investment than in case of a billion dollar borrowing.

‘payback’ period far shorter than 25 to 30 years; indeed they often forego investments with payback periods as short as 25 to 30 months. This ‘pay-back imbalance’ means that power supply investments may be made that have longer paybacks than demand-side options that are less costly than the long-term supply projects. Finance mechanisms that correct this imbalance would play a part in leveling the playing field between supply-side and demand-side investments, thus allowing more focus on which investments are truly the least expensive ones.

VIII. FINANCING OPTIONS AND OPPORTUNITIES

Based on experience with energy efficiency financing in Vermont and other states, as well as the current needs and issues of Vermont lenders and homeowners, there appear to be three routes to addressing the financing barrier: (1) traditional financing through Vermont's lending institutions, (2) aggregated lending through a centrally managed revolving loan fund, and (3) non-traditional mechanisms such as PACE specialty lending, and on-bill tariffed financing. Each of these options is reviewed below. While assessing these alternative routes, however, it is essential to remember that different issues prevail for creditworthy homeowners versus those who are not. For example, for creditworthy Vermonters, the real issue is how to motivate them to improve the efficiency of their homes. For Vermonters who are not in the position to borrow, the state needs to ask how it will get the funds needed to underwrite the Weatherization Assistance Program. Finally, for those in between, the state needs to decide how much it is willing and able to provide to develop a program that meets the needs of these homeowners. Vermont faces particular challenges in this regard because of the state's small population. It may, therefore, find that solutions that work in other states with larger populations will not work well for Vermont. Instead, it may be more straight forward and cost effective for the state to pay for some upgrades directly. Making these determinations is an essential calculus to resolving the energy efficiency financing conundrum, a calculus only the state can make.

Traditional financing

Conventional financing is generally used when a homeowner wants to install energy efficiency improvements but needs to borrow money in order to pay for the costs. Traditional lending is usually provided by disaggregated lending institutions, including banks, credit unions, and mortgage companies. These lending institutions offer either equity-based loans – such as home equity loans, mortgages, or refinancing – or personal, unsecured loans. The other major source of funding for energy efficiency programs is through specialty lenders, who generally offer unsecured loans. Specialty lenders use funds aggregated from banks, foundations, state treasury offices, clean energy developments, federal funds, and other investors to underwrite energy efficiency improvements. Specialty lending is discussed in the next section: Alternative Financing.

The most attractive traditional loan packages are generally thought to be those with positive cash flow, where the cost savings are higher than the monthly loan payment for the upgrade. Equity-based loans generally have a longer term and lower interest rates

than personal loans but require a more complicated and costly loan procedure.⁴⁴ While the repayment terms of equity-based loans are usually more favorable, they may not be the loan of choice, particularly for smaller loan amounts. Historical data from over 150 loan programs run by states, utilities, and revolving loans funds indicate that for home improvements of less than \$12,500, consumers prefer unsecured loans to home equity lines of credit.⁴⁵ This implies that successful energy efficiency financing should offer both simple and convenient unsecured loans as well as long-term, secured loans, which allow for positive cash flow.

Although the long tenure of residential mortgages results in positive cash flow for financing residential energy improvements, Vermont lenders have found very little demand from homeowners to incorporate energy efficiency improvements at the time of home acquisition.⁴⁶ Similarly, Vermont lenders experience little demand for efficiency lending when homes are refinanced. Moreover, favorable loan terms do not appear to be a persuasive factor. For example, the NeighborWorks of Western Vermont energy efficiency program is offering financing at very favorable terms.⁴⁷ Although, as of May 15, 2011, more than 250 households have undertaken or are undertaking improvements since this program launched in late 2010, only 12 percent of the participating homeowners have borrowed through this program.⁴⁸ Similarly, the VHFA Energy Saver program – which had no origination fees and was offered at subsidized rates, usually reducing the rate to 0 percent – experienced so little demand that the program was discontinued within a year. These findings indicate that the availability of loans with favorable terms alone does not prompt people to borrow for energy efficiency improvements to their homes.

This finding is consistent with field results,⁴⁹ which demonstrate there are six key elements to an unsecured energy efficiency financing program design, all of which must be present for the program to be successful. These elements are:

⁴⁴ See VEIC Case Studies for cash-flow analyses of these various traditional financing options.

⁴⁵ Interview with Bob Barton, Chief Executive Officer, Catalyst Financial Group, Inc.

⁴⁶ Interview with Dave Adams, Chief of Program Operations, Vermont Housing Finance Agency.

⁴⁷ Terms include, among other things, unsecured loans at a fixed rate of 4.99% for up to 120 months as well as a six-month payment holiday, during which interest does not accrue. For more information, see *NeighborWorks Financing*, NEIGHBORWORKS OF WESTERN VERMONT (2011), <http://heatsquad.org/financing/application-checklist/>.

⁴⁸ Interview with Kimberley Bina, Mortgage Specialist, NeighborWorks of Western Vermont.

⁴⁹ See Kisner, *supra* note 36.

- The terms and conditions of the loan must be more attractive than standard loan terms for a comparable product (e.g., an unsecured loan at 6.99 percent for 10 years as compared to traditional unsecured loans at 12 to 16 percent for 5 years).
- The loan application must be easy to complete, with minimal information requirements.
- The application process must be easy and quick.
- The loan approval time must be fast (e.g. not more than a day).
- The closing documents must be easy to understand and minimal (e.g., 3 to 4 pages).
- The closing process must be quick and convenient (e.g., on-line, by fax, etc.).

Conventional loans are available to anyone who has qualifying credit. As cited earlier, this theoretically gives almost half of Vermonters access to funding for energy efficiency improvements. Nonetheless, some portion of this creditworthy sector may not choose to engage in home improvements because they are unsure they will be able to recoup their investment due to uncertainty about how long they will reside in their homes. Older

Anecdotal evidence suggests that homeowners choose quick and simple financing, through personal loans, for amounts under \$10,000.

homeowners, in particular, are likely to fall into this category. Similarly, Vermonters at the low-earnings tier of the creditworthy sector also may be unlikely to borrow, since they may be unable to arrange a loan that is cash-flow positive. Moreover, one Vermont lender shared the general observation that retired people are much more debt-averse than

those who are still actively employed. Therefore, even favorable conventional financing packages are unlikely to spur action from a portion of Vermont's creditworthy homeowners who are simply unwilling to create a short-term cash drain. This finding indicates that non-traditional financing mechanisms, such as PACE and on-bill tariffed financing (both summarized below), may be able to help overcome some of the barriers to action.

Lenders across the country have been experiencing heightened regulatory scrutiny since the financial meltdown in 2008. This is even the case in Vermont, where lending practices were generally conservative and sub-prime lending was rare. Heightened regulatory scrutiny has made Vermont lenders even more cautious. Nevertheless, some Vermont lending institutions expressed a willingness to stretch their loan criteria – particularly the debt-to-income and loan-to-value ratios – for energy efficiency financing. However, all who did were explicit that some sort of risk abatement would be necessary

in order for them to do so. From the lender's perspective, loan guarantees are an optimal form of risk abatement although many agreed that a loan loss reserve pool could also provide enough security to allow these loans to pass muster when reviewed by regulators. Organizations that have studied how to facilitate energy efficiency financing recommend funding a loan loss reserve pool based on the projected default rate times the total amount financed, not on the total financed.⁵⁰ Most energy efficiency financing programs in the U.S. fund their reserve pools at 10 percent while some fund as low as 5 percent. Notably, the Keystone HELP program's loan loss reserve pool was funded at 5 percent and its cumulative losses have been less than 1% total.

Vermont has experience with the creation of loan loss reserve pools. One lender discussed participation in the Financial Access Program created through the Vermont Economic Development Authority to provide access to commercial credit for small businesses in Vermont.⁵¹ This program involved the state providing loan loss reserve pool of \$1 million, of which \$50,000 was allocated to each participating lending institution. Thereafter, loan fees funded the reserve. The availability of this reserve served as a credit enhancement that allowed the lender to make unsecured loans it otherwise would not have approved.

Risk mitigation is necessary but not sufficient to broaden the reach of traditional financing. In order for lenders to consider incorporating the savings from energy efficiency upgrades in the debt-to-income formula, lenders also need reliable savings projections based on home energy assessments as well as verifiable data as to the savings that can be realized from specific measures.⁵² In addition, because loans of this size do not warrant the expense of home inspections, a third-party certifier would also be needed. Most lenders identified Efficiency Vermont as the likely contender for this function.

Capturing the value of energy efficiency improvements in appraisals will both make the benefits of improvements more concrete to homeowners and allow lenders to factor the savings into loans. Currently, Vermont appraisal forms provide a line item about energy efficiency but this calls for only the appraiser's subjective opinion. Because this is not standardized, it is not factored into underwriting decisions. Mandatory efficiency

⁵⁰ See, e.g., Sonja Persram, *Property Assessed Payments for Energy Retrofits*, DAVID SUZUKI FOUNDATION 31 (Mar. 2011), <http://www.daidsuzuki.org/publications/downloads/2011/.Property%20Assessed%20Payments%20for%20Energy%20Retrofits.pdf>.

⁵¹ For more information, see *Financial Access Program (FAP)*, VERMONT ECONOMIC DEVELOPMENT AUTHORITY, <http://www.veda.org/interior.php/pid/1/sid/55> (last visited Jun. 16, 2011).

⁵² The VEIC Case Studies provide information about the cost savings realized for the efficiency measures undertaken for the properties studied.

disclosure would facilitate the valuation of efficiency improvements in appraisals, which is needed for lenders to factor savings from efficiency upgrades into their loan assessments. A related issue is that most Vermont lenders make their loan assessments using software that does not consider energy efficiency savings. All of these issues need to be addressed for Vermont lenders to stretch their lending criteria to reach a broader swath of homeowners.

While traditional, disaggregated lending provides an obvious, ready source of funds, it poses some challenges to financing energy efficiency improvements. One reason is that, as explained above, it is only an option for a portion of creditworthy Vermonters. Even for creditworthy borrowers, the lengthy, complex borrowing process – particularly for equity-based loans – creates a barrier to action. Furthermore, because many homeowners do not act until they are in an emergency – for example, because they need to replace

Although desirable as borrowers, some of the elderly, Vermont's retirees, and those who earn close to the low end of the bankable bracket may be unwilling or unable to borrow.

their furnace – quick loan approvals are a key to driving action. Moreover, experience with energy efficiency lending in other states has shown that any approval delay or added step the homeowner must undertake decreases the likelihood homeowners will choose to engage in energy efficiency upgrades. Furthermore, because this type of lending is not centralized, customers feel

the need to shop around for the best deal. Finally, disaggregation also makes it harder to raise customer awareness through centralized branding, to monitor program results, and to make the loan application and approval process uniform, quick, and amenable to the optimal use of incentives. These concerns aside, it is possible to design a state-wide financing program that relies on a network of local banks and uses a centralized marketing plan with consistent document requirements.⁵³

Although traditional lending has its drawbacks, it is a ubiquitous form of funding that will always have a role in financing for energy efficiency improvements. Two mortgage financing mechanisms, in particular, enable borrowing for major energy efficiency improvements at points where homeowners are entering into long-term loans: energy efficiency refinancing and energy improvement mortgages. These loans can be attractive and beneficial to borrowers because the long-term nature of the repayment obligation results in a positive cash flow.⁵⁴ While there has been little demand for energy efficiency borrowing at these junctures, if an effective program is implemented to drive demand,

⁵³ See, e.g., the Mass Save HEAT loan program at <http://www.masssave.com/residential/>.

⁵⁴ FULLER, *supra* note 5, at 6.

this could change. In particular, a time-of-sale energy rating or disclosure mandate could increase the demand for these loan options. Homeowners who have undertaken energy efficiency upgrades should benefit at the time of sale from these improvements, which lowered operating costs of the home. This could be done through series of policies that get implemented over time to move toward mandating that existing homes get upgraded to meet energy codes at the time of sale.

Revolving loan funds

As the analysis of traditional lending indicated, disaggregated lending may not be optimal for energy efficiency financing, especially for those homeowners who need credit enhancements. Although all Vermont lenders interviewed thought that more involvement in energy efficiency lending would benefit their businesses, several of these lenders suggested that energy efficiency lending might best be managed through a revolving loan fund.

This recommendation was based on the general observation that, for consumers, greater parity of opportunity and terms might be achieved by lending through a revolving loan fund. In fact, one lender analogized centralized lending to needs-blind college admissions processes, since the ability to afford improvements would not be the basis for gaining access to fund. Revolving loan funds are not subject to the same regulatory scrutiny that applies to banks and credit unions. Therefore, different approval criteria could be used, allowing loans to be made to homeowners who might not qualify for a traditional loan. Revolving loan funds are also beneficial because incentives can be distributed to those most in need, who otherwise do not get to take advantage of them. Furthermore, lending through a revolving loan fund can easily be tied into the seamless path to efficiency, and its outcomes and effectiveness can easily be measured.

Revolving loan funds typically provide financing when credit access is limited and, in this way, can support socially desirable outcomes like meeting Vermont's Act 92 broad goals. A revolving loan fund is usually a self-replenishing pool of money that uses the interest and principal payments from current loans to replenish the pool and issue new loans. These funds can provide benefits to both borrowers and lenders. Borrowers can benefit from flexible and favorable terms.⁵⁵ At the same time, financial institutions can

⁵⁵ For a good overview of revolving loans, including links to other related resources, see *Revolving Loan Funds*, COUNCIL OF DEVELOPMENT FINANCE AGENCIES, <http://www.cdfa.net/cdfa/cdfaweb.nsf/pages/rfffactsheet.html> (last visited Jun. 16, 2011).

make relatively secure investments while fulfilling the community-service prong of their mission and their obligations under the federal Community Reinvestment Act.⁵⁶

Revolving loan funds are typically managed by a non-profit and funded by a combination of public sources – such as local, state, or federal governments – and private sources like financial institutions, philanthropic organizations, and high net-worth individuals. Funds for government capitalization can come from one or a combination of the following sources: tax allocations, general obligation bonds, direct appropriations from the state legislature, annual dues from participating counties or municipalities, funds from state, and funds directed from the state lottery.⁵⁷ Given the current fiscal situation, funding an energy efficiency revolving loan fund from the state budget may not be a viable proposition. However, because energy efficiency improvements support a public good and can help the state meet its Act 92 goals, this option should not be ruled out. Furthermore, a revolving loan fund can be set up to provide a set rate of return to its investors. In this case, a revolving loan fund could provide a revenue stream to the state or an investment opportunity for state retirement funds while supporting a public good.

Revolving loan funds could become an attractive investment opportunity especially if they are backed by a loan loss reserve pool,⁵⁸ which reduces the risks associated with lending to a broader range of homeowners. Creating a loan loss reserve pool may entice lending institutions to invest in an energy efficiency revolving loan fund, especially since the 2008 financial crisis when borrowing activity ground to a halt. This decrease in lending activity could prove advantageous for energy efficiency financing, because the current borrowing climate may have created conditions that make long-term investments like these more appealing. This is particularly the case because this kind of activity serves both the profitability goal as well as the community-service prong of lenders' missions. If other funding – through the state, philanthropy, or corporate community grants programs, etc. – were to step in and provide some sort of risk abatement, these types of programs could entice investment from Vermont lenders.⁵⁹ It is important to remember revolving

⁵⁶ The Community Reinvestment Act was designed to encourage commercial banks and savings associations to assist borrowers in their communities, including low- and moderate-income neighborhoods. For more information, see *Community Reinvestment Act*, FEDERAL FINANCIAL INSTITUTIONS EXAMINATION COUNCIL, <http://www.ffiec.gov/cra/> (last modified May 31, 2011, 3:53 P.M.).

⁵⁷ COUNCIL OF DEVELOPMENT FINANCE AGENCIES, *supra* note 55.

⁵⁸ It is important to note, however, that vast majority of existing revolving loan funds (probably greater than 95 percent) are backed by a loan loss reserve pools.

⁵⁹ COUNCIL OF DEVELOPMENT FINANCE AGENCIES, *supra* note 55.

loan funds have proven to be successful vehicles to do what conventional lending will not do.⁶⁰

Although some aspects of lending through a revolving loan fund may be preferable to traditional lending, it is not a panacea. It poses implementation challenges because the strategies would need to be agreed upon, developed, adopted, and implemented. For example, the fund would need to be designed and implemented to facilitate the equitable distribution of capital throughout the state. Furthermore, one lender thought regional management might be better in Vermont than state management. However, this is the kind of issue that can be addressed through careful program design. More importantly, it does not overcome the barriers to action caused by debt aversion.

Alternative financing

Energy efficiency financing programs that require people to pay for energy efficiency improvements up front limit participation to those who own their homes and are willing and able to increase their debt, which, as discussed earlier, is less than half of all

"It would be a 'game changer' if Vermont had both PACE and PAYS."

*- Chris Burn,
Burlington Electric*

Vermonters. Therefore, financing mechanisms that do not create traditional debt obligations may help overcome the first-cost barrier of financing energy efficiency improvements. Property-Assessed Clean Energy programs (PACE) – which ties the repayment obligation to the home – and on-bill tariffed financing – which ties the

repayment obligation to the utility meter – are two mechanisms that do this. Furthermore, specialty lending and/or vendor financing may augment or provide viable alternatives to traditional financing.

PACE

The Property-Assessed Clean Energy (PACE) financing model enables local governments to fund energy efficiency projects by raising money through the issuance of bonds. Homeowners who undertake energy efficiency improvements using PACE funding repay the bond through property assessments that are paid in addition to the property tax. A PACE assessment is secured by a lien on the property. This financing mechanism allows homeowners to install energy efficiency improvements without a large

⁶⁰ Vermont already has many RLFs - both active and inactive - many of which were funded with Vermont Community Development Program (VCDP) dollars. A discussion with VCDP could illuminate considerations of this option.

upfront cash payment. The time period for repayment can be long enough to ensure the investments at least break even over the course of the payoff period and is often extended for periods up to 15 years or more. Furthermore, PACE financing does not create a personal debt obligation in the traditional sense: if the home is sold before the assessment is fully paid off, the subsequent homeowner acquires both the energy improvements and the remaining repayment obligation. Finally, PACE financing generally does not require a credit check. Instead, property tax payment history is used for qualification.

While PACE has many benefits and has been the subject of much attention and enthusiasm, its applicability is limited to people who own their homes. Furthermore, PACE entails placing a lien on the property, which many homeowners may be reluctant to do, particularly before energy efficiency improvements have become more visible and are tied to home values.

As originally conceived, PACE liens had the same status as property tax liens and, therefore, took priority over mortgages. Fannie Mae and Freddie Mac – critically important quasi-governmental stakeholders because of their dominant role in the secondary mortgage market – balked at this aspect of the program. Recently passed legislation in Vermont – H.56 – will allow Vermont to get around Fannie Mae and Freddie Mac concerns about PACE by placing PACE liens behind mortgages. Although this should overcome the objections from Fannie Mae and Freddie Mac, some people conjecture it may inhibit the strength of PACE since it no longer provides the same security to investors, typically municipalities that issue the bonds used to underwrite the PACE loans. See Section 6 of RAP Report for more information about PACE, including an update about H.56 – which contains some legislation related to PACE.

ON-BILL TARIFFED FINANCING

On-bill tariffed financing provides a solution to two of the major energy efficiency improvement barriers: debt aversion and split incentives. The barrier caused by split incentives pertains to all rental properties where the tenant pays for the heat and utilities – including businesses, a sector that is notoriously difficult to engage in energy efficiency upgrades – as well as for the elderly, retired people, and other homeowners who are unsure whether they will continue to reside in their homes long enough to recoup their investment. Of the existing financing mechanisms, only on-bill tariffed financing can overcome these barriers by providing long-term financing that stays with the property (through the meter), does not add to personal debt, and reaches landlords.

On-bill tariffed financing allows the costs of energy efficiency improvements to be recovered through local utilities using tariffed charges that are tied to the utility meter rather than the customer.⁶¹ Although on-bill tariffed financing programs are relatively new, there is a growing body of evidence indicating these programs are both effective and inclusive.⁶² Several states have adopted on-bill tariffed financing mechanisms to support their energy efficiency programs.⁶³

With on-bill tariffed financing, payments are made through customers' utilities bills typically with the threat of disconnection for nonpayment. This facilitates both collections and enforcement and, therefore, decreases risk. This risk reduction makes on-bill tariffed programs an attractive investment to a wide range of investors, including, but not limited to, utilities. Perhaps most importantly, on-bill tariffed financing allows all utility customers – including those who do not qualify for traditional loans, landlords, and businesses – to install energy efficiency upgrades with no upfront payments and no personal debt obligation.

On-bill tariffed financing programs can be designed in different ways. For example, under the Pay As You Save (PAYS)⁶⁴ trademarked on-bill tariffed financing mechanism, only measures that have independent certification that the savings will exceed the payments can be installed. However, under PAYS, funds that are currently being used as rebates for efficiency upgrades can be used to support measures that are socially desirable but not cost-effective to the customer. Because the program requires tariffed charges to be lower than the estimated monthly savings from the efficiency improvements, Vermonters who are uncertain how long they will reside in their homes can install energy efficiency improvements with the assurance their savings will exceed their payments while they live there. Other on-bill tariffed programs do not guarantee savings but, instead, provide post-installation reviews to ensure the efficiency measures were properly installed.

⁶¹ On-bill tariffed financing is not the same as on-bill financing. Although the names are similar, they are different because the tariffed mechanism does not create personal debt while the regular on-bill financing simply provides a collection mechanism for personal debt.

⁶² Persram, *supra note 50*, at 24. *See also*, JAMES MCGUCKIN ET AL., THE CADMUS GROUP, INC. FOR OREGON DEP'T OF ENERGY, ON-BILL FINANCE FOR THE SMALL BUSINESS MARKET (2011); WORKING GROUP VI: ON-BILL FINANCING, NEW YORK PUBLIC SERVICE COMMISSION, CASE 07-M-0548: PROCEEDING ON A MOTION OF THE COMMISSION REGARDING AN ENERGY EFFICIENCY PORTFOLIO STANDARD (2008); INTERVIEWING SERVICE OF AMERICA, ON-BILL AND OFF-BILL FINANCING OPTIONS (2009).

⁶³ Most notable of these are the Efficiency Kansas and HowSmart loan programs in Kansas, the SolarSaver program in Hawaii, the Energy Right program in Alabama, and the Smart START program in New Hampshire.

⁶⁴ Pay As You Save (PAYS) was developed by the Energy Efficiency Institute in Montpelier, Vermont.

Another benefit of on-bill tariffed financing is the tenor of the repayment period can be tailored to attain savings, a feature that is challenging in traditional financing options other than those that use real estate as collateral. Most improvements funded through on-bill tariffed programs are paid off in ten years or less. While this is shorter than the tenor of PACE loans or energy efficiency mortgages, it can be substantially longer than what is typical for unsecured personal loans, thereby providing a means to attain break-even financing. Furthermore, on-bill tariffed financing generally does not require extensive credit checks; utility bill payment history is used for qualification. This potentially allows on-bill tariffed financing to be an option for Vermonters who might not qualify for traditional loans but have a history of timely bill payments.

In most parts of Vermont, unlike in many areas of the country, heat is not delivered by a regulated utility. Some feel it is a barrier to cross from the electrical sector to thermal energy with on-bill tariffed financing. However, energy efficiency does not only make a house more comfortable in the winter. It also keeps the house cooler in summer, and most cooling is provided by electricity. In fact, in recent years, Vermont's peak electrical demand has been in the summer.⁶⁵ The line between thermal and electric energy is not as stark as it is sometimes characterized.

In 2007, Efficiency Vermont commissioned a legal analysis of the implementation of PAYS in Vermont. Pace Law School Energy Project conducted this analysis. It concluded: "The Vermont Public Service Board's broad regulatory authority, together with the Legislature's specific directions regarding energy efficiency programs, supports approval of a PAYS tariff, fuel-blind, with disconnection of utility service for non-payment of PAYS charges. Disconnection would be pursuant to existing procedures with precise notice requirements for successor customers to be determined by the Board."⁶⁶

On-bill tariffed financing has the potential to be superior to disaggregated lending for the same reasons that lending through a revolving loan fund is; implementation, branding, promotion, and monitoring are all simpler and more efficient on a unified basis. Furthermore, because on-bill tariffed financing is enforced through the threat of utility disconnection, there is a very low delinquency rate. This eliminates much of the risk

⁶⁵ Email from Chris Burns, Director of Energy Services, Burlington Electric, to Marianne Tyrrell, Global Energy Fellow, Institute for Energy and the Environment, Vermont Law (Jun. 9, 2011) (on file with author).

⁶⁶ THE ENERGY EFFICIENCY INSTITUTE, INC., WITH PACE LAW SCHOOL ENERGY PROJECT, VERMONT PAY AS YOU SAVE (PAYS) RESEARCH PROJECT, PREPARED FOR EFFICIENCY VERMONT 6 (2007).

associated with funding broad energy efficiency improvements. On-bill tariffed financing, therefore, has the potential to attract a broad range of investors and provide an attractive investment opportunity for Vermont lenders. Finally, because on-bill tariffed financing obligations are unsecured, it does not create the lien priority issues PACE did so it should not encounter any implementation barriers from Fannie Mae or Freddie Mac.

On-bill tariffed financing overcomes many of the challenges of traditional financing, such as, monitoring program results, creating demand through branding and promotion, and optimizing the use of financial incentives among other things. More importantly, however, because on-bill tariffed financing does not create traditional consumer debt, it has the potential to overcome most of the first-cost related barriers to investing in energy efficiency upgrades and it can reach a majority of Vermonters, including low-income homeowners as well as landlords. Even though on-bill tariffed financing is a relatively unknown energy efficiency financing tool – because it is designed to overcome most of the first-cost, financing barriers to energy efficiency, including reaching landlords and Vermonters who are not creditworthy – it should be seriously considered for implementation in Vermont.

SPECIALTY LENDING

Financing through specialty lenders has been particularly successful at funding broad energy efficiency programs, particularly unsecured personal loans. With over \$400 million of financing for energy efficiency programs in the past 20 years, specialty lenders are believed to have provided more unsecured financing for residential energy improvements than all other conventional lenders combined.⁶⁷ The three leading energy efficiency specialty lenders include Viewtech Financial Services,⁶⁸ Energy Efficiency Solutions (EFS),⁶⁹ and AFC First Financial.⁷⁰ Specialty lenders “warehouse” loans and then sell their loan portfolio to secondary investors such as foundations, state treasury

⁶⁷ Barton, *supra* note 45.

⁶⁸ Viewtech Financial Service, Inc., is a California-based company, which has been in operation for over 20 years. Since its inception, it has provided over \$250 million of funding for residential energy efficiency improvements. *See, About Viewtech*, VIEWTECH FINANCIAL SERVICES, INC., <http://www.viewtechfinancialservices.com/aboutviewtech.htm> (last visited Jun. 16, 2011).

⁶⁹ EFS is a non-profit organization offered by the Wisconsin Energy Conservation Corporation. Since its inception, approximately 10 years ago, it has provided approximately \$65 million of funding for residential energy efficiency improvements. *See, ENERGY FINANCE SOLUTIONS* (2011), <http://www.energyfinancesolutions.com/>.

⁷⁰ AFC First Financial, Inc., is a Pennsylvania-based company, which has been in operation since 1947. Since it became involved in financing residential energy efficiency improvements, less than 10 years ago, it has provided more than \$75 million of funding. *See, AFC FIRST FINANCIAL, INC.* (2011), <http://afcfirst.com/index.php>.

offices, clean energy funds, pension funds, savings and loans associations, and other investors.

The key to the success of specialty lending appears to be their program methodology. In particular, specialty lending relies on trained contractors who provide homeowners both technical assistance and loan facilitation. Specialty lenders offer homeowners on-site and 24-7 phone or web-based loan processing, which makes loan application process simple and convenient for homeowners. Furthermore, specialty lenders finance using unsecured personal loans. This allows them to quickly approve loans (in 1 to 2 hours) and does not involve complicated loan documents or closing procedures. In this way, specialty lenders emulate the financing methods offered by many car dealers.

Specialty lending programs encourage both contractors and homeowners to engage in behaviors that advance energy efficiency improvements. For example, specialty lenders train contractors to participate in the financing process, provide them with a web site that shows the status of pending loan applications, and call the contractors when loans have been approved. This allows contractors to be responsive to homeowners when they are primed for action. With homeowners, specialty lenders offer several tiers of interest rates based on the depth and breadth of efficiency commitments the homeowner chooses to make. Furthermore, specialty lenders try to offer loan terms that provide positive cash flow to borrowers, which is easier to do in states where energy rates are higher like the Northeast or Hawaii. This encourages homeowners to commit to deeper efficiency measures than they otherwise would without graduated rates.

Although all three specialty lenders can use Fannie Mae as a funder, they often elect to use other lenders to get lower rates. For example, the Commonwealth of Pennsylvania has provided AFC First funds at 5 percent interest, whereas Fannie Mae would be substantially more. Nevertheless, even when specialty lenders offer financing at higher rates, their overall success far exceeds what is achieved through conventional lending because the loan process is simple and accessible.

VENDOR FINANCING

Energy efficiency equipment manufacturers are a long-standing source for financing energy efficiency at the industrial and large-scale commercial level. Funding by manufacturers is often referred to as captive financing. At the residential level, vendor financing has generally not been used except to finance solar energy installations through solar power purchase agreements (see next section).

A benefit of funding through vendor financing is that its terms are often more lenient than traditional financing because the funding is used to promote equipment sales, thereby benefitting the funding provider. Accordingly, businesses that will be affected by, or stand to benefit from, increased efficiency improvements – such as fuel dealers, utilities, contractors, and efficiency-improvement-equipment manufactures – may find it in their interests to deploy capital by loaning it to their customers. An added benefit of bringing these entities into the mix is that they have regular contact with homeowners so are well positioned to be emissaries for efficiency. In other industries, entire businesses have been built on providing financing to underwrite consumer participation in purchasing a product line.⁷¹

Although these options have not yet been developed to promote energy efficiency at the residential scale, there may be a business case for developing these options. We, therefore, recommend that state energy officials and interested public citizens speak directly with senior management of companies that offer equipment sales in the energy efficiency field to explore the potential for vendor financing from those business entities that would benefit from increased installation of efficiency materials and equipment in Vermont residences.

Non-Traditional Financing Drivers

The financing options listed above may be sufficient to fund a broad energy efficiency plan in Vermont. However, other non-traditional mechanisms – such as the formation of a residential energy-service company, a energy efficiency cooperative, or a publicly owned green bank – could help make this happen by leveraging funding available from private-sector lending institutions, mitigating lender risks and, thereby, reducing the cost of borrowing.

ENERGY SERVICE COMPANIES (ESCOs)

Although it is not typically thought of as a financing option *per se*, the creation of one or more energy service companies (ESCOs) has the potential to stimulate investment in residential energy efficiency by mitigating the financial risk incurred by property owners. At the heart of the concept is the notion of “performance-based contracting.” ESCOs market and install energy efficiency (and other energy-related) measures using third-party funding. Where they differ from conventional providers of these services is that they stay

⁷¹ A well-known example was GMAC, founded by General Motors early in its existence to finance consumer purchases of the auto company’s products.

involved; for example, their profit is derived, at least in part, from the actual performance of the measures they sell and install.

This concept offers several benefits beyond the possibility of helping to overcome homeowners' reluctance to invest in energy efficiency. The performance-based contracting model disciplines the marketing process because an ESCO has a powerful disincentive to sell property owners energy efficiency measures when their effectiveness is uncertain. The model also leads inevitably to – indeed, requires – rigorous verification of actual savings achieved. Finally, it creates an ongoing business relationship between the ESCO and its customer. This business relationship is conducive to good customer confidence because the homeowner is not left to “go it alone” and to good performance because the ESCO is there to correct, improve, and refine the efficiency measures as necessary.

The ESCO concept traces its roots to the 1970s and the OPEC oil embargo, but in the U.S.⁷² the concept has, to date, been applied in the commercial and industrial sectors given the relevant economies of scale. The question of whether it would be economically feasible to promote performance-based contracting for energy efficiency measures on a home-by-home basis deserves exploration. In particular, the question of whether smart meters will provide enough granularity of information to facilitate monitoring efficiency improvements, should be explored. In the near term, fertile ground for the ESCO concept would appear to be multi-family rental housing developments or condominiums.

COOPERATIVES

Another idea that is not usually considered a financing option – but one that is firmly rooted in Vermont – is the notion of forming cooperatives to marry the entrepreneurial spirit to social objectives in sectors where market forces do not do the job naturally. A number of Vermont industries benefit from the cooperative business model. For example, the state's cooperative grocery stores are collectively the State's 25th largest employer⁷³ and marketing cooperative, Agri-Mark, is a mainstay of the dairy farming sector. Additionally, cooperatives have a vibrant presence in banking in the form of credit unions and, in the energy industry, two utilities are cooperatively owned: the Vermont and Washington electric cooperatives.

⁷² Sweden has some residential ESCOs but no research was done to explore their models.

⁷³ DOUG HOFFER, UNIV. OF VT., THE ECONOMIC AND FISCAL IMPACTS OF FOOD COOPERATIVES IN NORTHWESTERN NEW ENGLAND (2008).

The essence of a cooperative is the lack of profit-maximizing investors who have no other stake in the business. A consumer cooperative is owned by its customers, a worker cooperative is owned by its employees, a credit union is owned by its depositors and borrowers, and a marketing co-op like Cabot is owned by the producers of the goods marketed by the co-op. However, cooperatives are not charities. While they often share certain tax advantages with charities, they are free to pursue net gains through their business activities, returning them not to shareholders as profits but to their member-owners as patronage refunds.⁷⁴

Other essential and relevant attributes of cooperatives are: their democratic control based on one-person-one vote, as opposed to voting in proportion to one's investment; membership education that discourages passivity by educating members about the business; member economic participation; and cooperation among cooperatives, which fosters a market of sharing best practices and efficiencies rather than a culture of trade secret protectionism.⁷⁵

The possibilities that such a business model raises for achieving the aggressive Act 92 goals are well worth exploring. In particular, there are precedents that deserve some study by Vermont policymakers.

A much-heralded example of nascent cooperative enterprise in the current economy is taking shape in Cleveland. There, a consortium of major nonprofit institutions (e.g., the Cleveland Clinics and Case Western Reserve University), foundations, and governmental entities came together to seek ways to promote economic development and autonomy in economically challenged areas of the inner city. The project they ultimately undertook – the Evergreen Cooperatives – is an affiliated network of worker co-ops that, to date, has included: the Evergreen Cooperative Laundry, intended to serve hospitals and other industrial customers; the Green City Growers' Cooperatives, which is building greenhouses to grow agriculture in urban settings; and, of special relevance for present purposes, Ohio Cooperative Solar.

⁷⁴ Largely for historical reasons, “patronage” is a term of art in the law of cooperatives. It refers not simply to purchases (which is the relevant concept in a consumer or electric cooperative) but also to labor inputs in the case of worker co-ops, and goods produced at wholesale in the case of marketing co-ops.

⁷⁵ See *Statement of Cooperative Identity*, INTERNATIONAL COOPERATIVE ALLIANCE, <http://www.ica.coop/coop/principles.html> (last updated May 26, 2007) for the articulation of the official cooperative values and principles of the International Cooperative Alliance, the globally recognized steward of these concepts. State cooperative laws, including those of Vermont, are consistent with these values and principles.

In essence, Ohio Cooperative Solar is a worker-owned, cooperatively organized ESCO. The co-op installs, owns, and maintains solar panels installed on the buildings of the healthcare facilities and educational institutions that were involved in the creation of the Evergreen cooperatives. In addition, the co-op conducts energy assessments for residential buildings and installs weatherization measures at those premises using federal LIHEAP funding. Among the sources of capital for Ohio Cooperative Solar is a local, investor-owned bank, which was brought to the table by the federal New Markets Tax Credit program. As a worker cooperative, Ohio Cooperative Solar is immune to wealth extraction (by shareholders who would not necessarily make a priority of strengthening Cleveland or improving the energy efficiency of its building stock) and, as such, can attract investment capital from financial institutions that are either naturally inclined and/or subsidy-motivated to deploy resources in a manner calculated to benefit local economies.

Another example of this business model is Co-op Power – based in nearby Greenfield, Massachusetts. The cooperative is already beginning to extend its service territory into southern Vermont. Like Ohio Cooperative Solar, Co-op Power is in the business of building and operating small-scale renewable energy facilities. Co-op Power also partnered with nonprofit organizations in Holyoke, Massachusetts, to form Energia LLP, which is a provider of energy efficiency upgrades for residential properties in low-income areas.

A consumer co-op would instill consumer confidence, credit any surplus to customers rather than as profit to investor-owners, promote communitarian values, and be transparent. A worker co-op would be especially effective in creating a trained and motivated workforce, thus promoting economic development. Co-ops are fairly ubiquitous in Vermont, so the concept is familiar. Cooperatives are not without their challenges, however. For example, as businesses that do not pay dividends in the traditional sense, they are reliant on lenders, governmental loan guarantors, and grantors for capital. But, as such, they can be desirable partners for financial institutions that want to deploy their resources to promote energy efficiency but have difficulty in attracting qualified homeowner-borrowers.

PUBLICLY OWNED GREEN BANK

A classic public response to the inability of financial institutions to make certain socially desirable loans because borrowers lack creditworthiness is for the state either to provide the service directly or indirectly through a quasi-governmental financial institution.

The basic concept is well-established. The State of North Dakota has owned and operated the Bank of North Dakota since 1919. Its initial purpose was to provide needed credit to farmers. Recently, twelve states⁷⁶ have begun to consider establishing state banks; the state of Connecticut passed legislation that, among other things, creates the Clean Energy Investment and Finance Authority, a quasi-public authority – similar to a green bank – that will, among other things, expand financing for energy efficiency projects;⁷⁷ and Great Britain announced the creation of a Green Investment Bank.⁷⁸ In the context of green energy, recent discussion has also been focused on possible federal initiatives.

The Bank of North Dakota is not insured by the Federal Deposit Insurance Cooperation. Instead, it is backed by the full faith and credit of the state itself. All instrumentalities of state government are required to use the bank as their depository institution. Since its early years the bank has broadened its mission to support commerce and industry in addition to agriculture. The state bank's current business strategy involves primarily serving as a participating lender in loan packages for which a private financial institution serves as the lead lender. In this way, the Bank of North Dakota is not supplanting the private sector as much as it is helping to support socially desirable lending that would not otherwise take place.

In May of this year, the Center for State Innovation released a report concluding that a state-owned development bank in Maine capitalized at \$100 million could, in light of the private sector bank loan participation it would facilitate, generate some \$1.1 billion in total new lending activity and \$220 million in small business loans, creating or retaining some 3,500 jobs at small businesses.⁷⁹ Even assuming these findings are optimistic, they arguably should not be dismissed.

⁷⁶ See, Kelly McCartney, *Report: Public Banking Can Democratize the Economy*, COMMONDREAMS.ORG (Jun. 12, 2011), <http://www.commondreams.org/view/2011/06/12-3>. These states include: California, Oregon, Washington, Massachusetts, Arizona, Maryland, New Mexico, Maine, Illinois, Virginia, Hawaii, and Louisiana.

⁷⁷ Connecticut SB 1243, An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future. A summary of SB 1243 is available at http://www.brownrudnick.com/.../Brown_Rudnick_Connecticut_Energy_Reform_Legislation__Summary_of_SB_1243_6-11.pdf.

⁷⁸ See update on the design of the Green Investment Bank, <http://www.bis.gov.uk/assets/biscore/business-sectors/docs/u/11-917-update-design-green-investment-bank.pdf>.

⁷⁹ See, *Maine State Bank Analysis*, CENTER FOR STATE INNOVATION (May 2011), <http://www.stateinnovation.org/statebanks.aspx> (scroll down to Maine and then click on "CSI Maine Bank Analysis" link).

In Washington, Reed Hundt, former chairman of the Federal Communications Commission, has led an effort to create a public, nonprofit financial institution that would function as a national “green bank” by providing loans and/or credit support to a broad spectrum of initiatives – everything from large-scale renewable energy generation facilities to energy efficiency assessments for residential properties. In 2009 and 2010, this took the form of a proposed federal “green bank” agency, the Clean Energy Deployment Administration.⁸⁰ More recently, Hundt’s group – a broad coalition of private green energy-related firms known as the Coalition for Green Capital – has been urging the creation of a nonprofit lending institution, the Energy Independence Trust (EIT). According to the coalition, the EIT would “support near-term and widespread deployment of proven clean energy projects and technologies and bring to scale energy efficiency projects in the residential, small business, and commercial markets by providing a wide range of low-cost financing, including loans, loan guarantees, support for tax equity financing, and other financing arrangements for qualified, credit-worthy clean energy and energy efficiency projects.”⁸¹

As proposed, the Energy Independence Trust would not technically be a bank, despite having authority to borrow money from the U.S. Treasury and private sources of capital. Instead, the EIT would seek qualification as a Community Development Financial Institution (CDFI), a type of financial institution authorized by the U.S. Treasury for the purpose of deploying capital in communities and population segments where traditional loans are in short supply.⁸² A state bank, as in North Dakota, or a quasi-governmental community development financial institution such as the Energy Independence Trust proposed at the national level, could be beneficial to energy efficiency lending in Vermont. It would leverage lending dollars from private-sector lending institutions, thereby reducing the cost of borrowing and mitigating risk undertaken by the private-sector lenders. Rather than await the creation of an institution at the federal level – an

⁸⁰ See Press Release, U.S. Senate Comm. on Energy & Natural Res., Support for Clean Energy Plan in Jobs Bill (Jan. 21, 2010), available at http://energy.senate.gov/public/index.cfm?FuseAction=PressReleases.Detail&PressRelease_id=f1f6482c-53d4-4cf9-8cf7-2cd648a65585&Month=1&Year=2010&Party=0, describing letter to President Obama from leading entrepreneurs urging insertion of the program into then-pending jobs legislation.

⁸¹ *Project 2011: Cutting the Cost of Green Capital (Version 2.0)*, COALITION FOR GREEN CAPITAL 4 (2011), www.coalitionforgreencapital.com/uploads/2/5/3/6/2536821/project_2011_v2.0.doc.

⁸² The Opportunities Credit Union (which qualifies as a CDFI), CDFIs serving Vermont include Community Capital of Vermont, the Vermont Community Loan Fund, NeighborWorks of Western Vermont, the Northern Community Investment Corporation, and the Cooperative Fund of New England. All are eligible to seek funding and technical assistance from the U.S. Treasury’s CDFI Fund. See *Community Development Financial Institutions Fund*, U.S. DEPT OF TREASURY, www.cdfifund.gov (last updated Jun. 6, 2011).

uphill struggle in the current fiscal and political climate – the creation of some kind of “green bank” at the state level is worth exploring.

Similarly, a modestly scaled, state-owned banking institution, whose purpose is limited to supporting energy efficiency investments by participating in loan packages put together by the private sector, is worthy of consideration.

Other considerations

Although these financing options offer potential benefits, they also present challenges. For example, some of the challenges of creating a publicly owned green bank include the difficulty of capitalizing the bank and the lack of FDIC insurance, which places the risk of failure directly on the state. Furthermore, if Vermont were to emulate the North Dakota policy of capitalizing a state bank with state funds, without careful implementation, a short-term effect could be a decrease in the availability of loans. Similarly, the fact that most thermal heat is provided by non-regulated entities in Vermont could, among other things, make adopting on-bill tariffed financing more challenging. Moreover, the state’s small population may limit its attractiveness to specialty lenders.⁸³

Benefits and challenges aside, because of limited funds and manpower, the state needs to determine whether it can meet the needs of all three sectors of Vermont homeowners: (1) homeowners who can afford to make energy efficiency improvements but need to be catalyzed into action through an effective marketing program, (2) homeowners who do not qualify for traditional lending so need credit enhancements or access to preferred lending programs, and (3) low-income homeowners who need direct subsidies to improve their homes. After making this determination, the alternative financing methods reviewed here can be analyzed to decide which can best serve the chosen sector(s). A phased-in approach may make sense. For example, it may make sense to begin by focusing on the first sector of homeowners.⁸⁴ This could be done by working with trade allies and community groups to improve the marketing of energy efficiency, streamlining the financing process, and exploring PACE and on-bill tariffed financing as ways to

⁸³ However, it is worth noting that Delaware, with a population slightly larger than Vermont’s recently launched a very successful energy efficiency financing program with AFC First.

⁸⁴ It is worth noting that a program that effectively catalyzed action from this sector of homeowners, theoretically, could allow the state to attain its Act 92 goals since more than 25 percent of the state’s homeowners fall into the sector. Furthermore, creating momentum in this sector could help produce awareness of the benefits of energy efficiency improvements and, thereby, help generate momentum for this work generally.

overcome concerns that homeowners will not realize the benefits of their energy efficiency investments. This could be followed by a program that focuses on providing financing options for homeowners who do not qualify for traditional loans and/or funding the Weatherization Assistance Program.

VIII. MAJOR MONETARY MISCONCEPTIONS AND WHY THEY MATTER

In the process of interviewing people for this report, we repeatedly encountered commonly held assumptions that proved false. Though there are undoubtedly other misperceptions about residential energy efficiency, the list below encapsulates some of the most salient assumptions we encountered and the lessons to be learned from them.

#1: MYTH: Lenders do not want to make loans for energy efficiency improvements.

Some observers believe lending institutions are part of the problem because they make it difficult for homeowners to obtain loans for energy efficiency upgrades. However, our interviews disclosed that lenders rarely, if ever, inquire into the purpose of a loan unless the borrower is only marginally eligible to borrow. In fact, executives at lending institutions typically understand that energy efficiency upgrades can generate positive cash flow for homeowners and all lenders indicated their enthusiasm for increasing lending for energy efficiency upgrades. Lenders regarded lack of borrower participation as the biggest barrier to energy efficiency loan programs.

FACT: Every lending institution interviewed expressed a keen interest in increasing lending for energy efficiency upgrades; however, opinions differ as to their effectiveness at achieving that goal.

#2: MYTH: Most Vermonters do not make energy efficiency improvements because they cannot afford them.

Vermont lenders unanimously reported that many of their customers have ample credit available on their credit lines or in savings yet are not choosing to make energy efficiency improvements.

FACT: Lack of demand is the biggest barrier to achieving Vermont's Act 92 goals. To increase demand will take more than a well-designed financing program; it will take a seamless path to energy efficiency that includes a powerful marketing component.

#3: MYTH: Make low-cost, low-hassle financing available and people will leap to borrow.

While low-cost and conveniently available financing terms are a necessary part of an energy efficiency program, favorable financing terms alone are not enough to broadly drive demand. Homeowners considering home energy renovations are weighing many factors when they make this decision. Ease and accessibility of undertaking the work are certainly factors, but there are others. For example, homeowners may find the energy assessment confusing, or may find it difficult to find qualified contractors, or may find it difficult to take time away from work to apply for a loan. All of these issues, and more, can stop people from moving forward with energy efficiency improvements. Therefore, favorable financing that is brought to the customers as part of coordinated process is essential for residential energy improvement programs to succeed.

FACT: In 2008, the VHFA introduced an energy efficiency financing program offering markedly favorable terms, including no fees and state-subsidized interest rates that brought rates to close to 0%. Even with these favorable terms, the program was canceled within a year due to lack of demand.

#4: MYTH: Debt aversion will always be a barrier to action.

Although debt aversion is one of the key barriers, financial issues are not the only barriers to action. Currently there are too many ways people can get sidetracked or diverted by inconvenience, confusion, uncertainty, and upfront costs.

FACT: Non-debt options – such as PACE and on-bill tariffed financing can directly overcome the debt aversion barrier. However, even if these measures are an option, effective EE programs must address both the financial and behavioral aspects of decision-making. Vermont, therefore, needs a “seamless” path to homes that as less expensive to heat.

#5: MYTH: When energy prices increase, people will rush to get retrofits.

Not since the oil embargoes of the 1970s have U.S. consumers responded to high fuel prices by taking significant steps to reduce their home energy use. In recent years, consumers have generally responded to jumps in prices with incremental measures, such as lowering the thermostat a few degrees in the winter or installing weather-stripping around doors and windows. Though this response suggests an awareness of energy use, homeowners today do not tend to undertake significant efficiency improvements. Moreover, with higher fuel prices, Vermonters of modest income will be even more financially stretched. They, therefore, are likely to find it even more challenging to commit limited resources to investing in home energy efficiency measures. Simply put, with increased spending on fuel, homeowners may not view taking out a loan to make home improvements as an additional cost they can afford.

FACT: Experience shows that when people are too focused on how they are going to pay for their food and fuel they can't think about investing in home improvements, even if those improvements could lead to lower operating costs.

#6: MYTH: Homeowners can figure this out without paying for an audit.

When most people think about what is required to make a home more energy efficient, the first thing that comes to mind is replacing windows. However, even though windows are a source of energy loss in most Vermont homes, replacing windows is not near the top of the list of cost-efficient improvements that can be made to a home. Instead, sealing leaks in the home envelope is the first improvement that is recommended and this can be done in any season—including winter, when homeowners are most aware of their home's inefficiency. Without a home energy assessment, there is a substantial risk that a homeowner, with interest but lacking expertise, will spend improvidently.

FACT: Most homeowners think of heat loss occurs through windows, walls, and doors, while more energy efficiency professionals think of heat as being lost through roofs, eaves, and ridge poles. In other words, homeowners think "sideways" while auditors think "vertically."

#7: MYTH: Utilities won't get involved with on-bill tariffed financing because they don't deliver heat.

Energy efficiency is not just about keeping a house warm. It makes a home more comfortable in summer too, with less reliance on air conditioning. Air conditioning is primarily powered by electricity and has been Vermont's fastest growing electricity-demand sector. Additionally, there's a growing realization that if Vermont is to reduce the economic and environmental cost of its energy consumption, we need an all-hands-on-deck approach, where we use all available means to move forward.

FACT: According to Chris Burns, Director of Energy Services at the municipal utility Burlington Electric, "It would be a 'game changer' if Vermont had both PACE and PAYS" because this combination overcomes the barrier caused by debt aversion and reaches renters.

#8: MYTH: The scrutiny of Fannie Mae and Freddie Mac prohibits lenders from recognizing cost savings from EE upgrades.

Vermont lenders were generally under the impression Fannie Mae and Freddie Mac prohibit the recognition of cost savings associated with energy efficiency upgrades in their loan evaluations. In reality, as of December 1, 2010, Fannie Mae provided a special feature allowing new and refinanced mortgages to factor improvement values from energy efficiency investments into standard lending criteria.

FACT: The Energy Improvement Features is described in Fannie Mae Announcement SEL-2010-15.

IX. RECOMMENDATIONS

For more than twenty years, on their own and in conjunction with efficiency experts, lenders have offered different incentives and programs for financing efficiency upgrades. Nonetheless, to a large extent, the results of these efforts have been disappointing. Those who have participated in residential energy improvements generally have been Vermonters who have the least financial need of the savings that result from these improvements. Therefore, reaching a broader range of Vermonters is critical to attaining the Act 92 goals and moving Vermonters from living in expensive, leaky houses into comfortable, affordable homes. This report recommends expanded financing for energy efficiency improvements aimed at the entire range of Vermonters who do not qualify for low-income Weatherization Assistance Program, including both homeowners and, potentially, renters.

As previously discussed, the challenge of moving homeowners to action is closely linked to debt aversion and the complexity of the process coupled with the invisibility of the benefits. What is needed is: (1) a financing mechanism that overcomes the barriers caused by debt aversion and (2) a seamless path to help move people from living in cold, expensive homes to living in comfortable, affordable homes, including public policy changes that make energy efficiency more visible. Delivering both of these in unison has the potential to make energy efficiency broadly available, and appealing, to most Vermonters. In doing so, Vermont residents could move from living in uncomfortable leaky homes while saving operating expenses and being protected from volatile energy prices. Furthermore, the state would benefit by meeting its Act 92 goals and, thereby, reducing its greenhouse gas emissions while increasing revenues due to the job creation brought about by the expansion of the energy efficiency industry. Because driving demand for energy efficiency improvements is at the heart of moving forward with broad improvements, demand-related recommendations are presented first. These are followed by financing-related recommendations.

Driving demand recommendations

As discussed in Section VI, the challenge of moving homeowners into action is closely linked to the complexity of the process coupled with the invisibility of the benefits. Therefore, Vermont needs policies that make the value of energy efficiency improvements evident and makes the process of engaging in energy efficiency improvements “seamless.” Recommendations to address each of these needs are as follows:

MAKING ENERGY EFFICIENCY MORE “VISIBLE”

- Consider phasing in a requirement that existing owner-occupied homes and rental properties get upgraded to meet energy codes at the time of sale in three stages.⁸⁵
 - First, establish a home energy rating system that creates a simple standardized system to compare the energy efficiency in different homes (e.g., like MPG labeling on vehicles).
 - Second, require sellers to disclose to buyers how the condition of their home compares to the energy code.
 - Third, require homes to be brought up to code at the time of sale.
- Train appraisers how to incorporate the value of home energy improvements in appraisals.
- Adopt legislation similar to that passed in Louisiana requiring appraisers to take energy efficiency into account when determining market value.⁸⁶
- Develop standardized guidelines Vermont appraisers can use to include energy efficiency improvements in market values.
- Conduct post-improvement reviews to enhance homeowners’ understanding of the benefits of their efficiency investments, which supports peer-to-peer promotion. Evaluate the cost effectiveness of different ways of this delivering this service to determine how to best implement it.
- Provide a property tax exemption for energy efficiency equipment and machinery,⁸⁷ including insulation and passive solar.
- Require sellers to disclose and buyers to explicitly accept the status of properties in regard to the Residential Building Energy Code.
- Encourage Vermont lenders to work with their customers who have funds available on lines of credit or home equity loans to engage in energy efficiency upgrades. These customers generally fit the “early adopter” demographic and can help add momentum to drive demand.

⁸⁵ See COWART ET AL., *supra* note 2, at 73 for more details about time-of-sale efficiency reviews.

⁸⁶ See S.B. 648, 2010 Leg., 36th Reg. Sess. (La. 2010), which amends LA. REV. STAT. ANN. § 37:3392 (2010), by requiring appraisers to consider the energy efficiency of a property when estimating the property’s value.

⁸⁷ See, e.g., Province of Ontario Assessment Act, R.S.O. 1990, c. A.31 (Can.), available at http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90a31_e.htm#BK2.

MAKING THE HOME IMPROVEMENT PROCESS MORE “SEAMLESS”

- Create a seamless process to build demand for home energy assessments by:
 - recruiting program participants,
 - assessing the improvements that should be made,
 - matching homeowners with the right contractors,
 - connecting homeowners with appropriate financing, and
 - verifying the work was performed correctly.
- Create a “one-stop-shop” to help homeowners with every aspect of the energy efficiency upgrade process including getting an energy assessment, selecting contractors, and offering simple financing options that provide incentives to engage in deeper efficiency measures.
- Train contractors, fuel dealers, and efficiency vendors how to promote energy efficiency upgrades and more effectively “close the deal.” Perhaps, enable them to process loan applications on the spot.
- Coordinate the activities of Vermont’s broad energy efficiency professionals and advocates,⁸⁸ including: Efficiency Vermont, weatherization, climate action, poverty alleviation, and housing groups that all have a stake in home energy improvements. This should include helping these groups develop and use materials and strategies that support effective and consistent, peer-to-peer, community-based social marketing for home energy upgrades that is consistent with Efficiency Vermont’s program marketing, advertising, and administration.
- Train and maintain a pre-approved, dedicated network of qualified contractors and auditors.
- Involve fuel dealers, efficiency supplies vendors, and contractors in promoting energy efficiency upgrades.

Financing recommendations

As discussed at the end of Section VII, it is essential to recognize that different financing options will serve the varying needs of the different homeowner sectors. This section,

⁸⁸ Funding to make this coordination role possible could be derived by: (1) directing the funds saved by increased program marketing efficiencies, (2) redirecting budget redundancies that are created through multi-partner collaboration, and (3) charging energy efficiency contracting firms a modest fee for promoting their own services. Initial funding provided by the State could serve as seed money to attract community partners and stakeholders, resulting in more rapid implementation and greater program effectiveness, closer collaboration, and consistent state-wide results.

therefore, opens with some general recommendations and then identifies recommendations targeted to each homeowner sector.

FACILITATING ENERGY EFFICIENCY FINANCING GENERALLY

- Work with the Department of Public Service to incorporate key recommendations in the 2011 Comprehensive Energy Plan.
- Monitor the implementation of the 2011 energy bill (H.56) to ensure the PACE program becomes an option in Vermont.
- Address lender risk by:
 - Using federal and state funding to create an energy efficiency loan loss reserve pool at 5 to 10 percent on a portfolio basis for creditworthy customers. The reserve amount would need to be adjusted for programs that serve Vermonters who are a credit risk. Vermont lenders, foundations, and philanthropists could also help fund these pools. Efficiency loans could include a fee that would be paid into this fund to sustain the fund.
 - Requiring efficiency improvement planning to be based on home energy assessments to provide lenders reliable savings projections and to help ensure that funds are used to achieve maximum efficiency.
 - Providing funding to Efficiency Vermont so it can track improvements to home efficiency after upgrades are complete and, thereby, create verifiable savings data lenders can factor into loans.
 - Having a third-party certifier provide a seal of approval when improvements are complete.
- Consider implementing an on-bill tariffed financing mechanism by:
 - Enrolling utility participation.
 - Exploring whether any federal funds are available to underwrite a program.
 - Working with the state's Department of Public Service to get approval from its Public Service Board.
- Provide funding to Efficiency Vermont so it can track improvements to home efficiency after upgrades are complete and, thereby, create verifiable savings data lenders can factor into loans.
- Require efficiency improvement planning to be based on home energy assessments to provide lenders reliable savings projections and to help ensure that funds are used to achieve maximum efficiency.

CREDIT WORTHY HOMEOWNERS

- Launch a statewide marketing campaign that primarily focuses on the financial benefits of energy efficiency improvements, decreased dependence on foreign oil, and protection against both uncomfortable homes and the cost of fuel and other volatile energy costs.
- Consider engaging a specialty lender to administer a residential energy efficiency program.
- Support secured lending for energy efficiency upgrades by:
 - Providing funding to reduce closing costs or interest rates for homeowners who undertake improvements at the time of purchase or refinancing.
 - Implementing time-of-sale requirements (see Driving Demand Recommendations above).
 - Work with lenders to motivate borrowers to include energy efficiency improvements at key points in existing transactions, especially during refinancing and initial home purchase.
- Emulate best practices used by other successful programs, such as Pennsylvania's successful Keystone HELP⁸⁹ program of providing:
 - on-site, while-you-wait loan application and approval, and
 - reduced rates and other incentives to promote progressively deeper efficiency improvement commitments.
- Initiate conversation with senior management of companies that offer equipment sales in the energy efficiency field to explore the potential for vendor financing from those business entities that would benefit from increased installation of efficiency materials and equipment in Vermont residences.

HOMEOWNERS WHO DO NOT QUALIFY FOR TRADITIONAL LOANS

- Consider targeting existing and future incentive funds to this sector.
- Collaborate with Opportunities Credit Union to expand their reach to high-risk homeowners.

⁸⁹ See *infra* Appendix B for more information about this program.

- Consider creating or expanding an existing statewide revolving loan fund of sufficient scale to finance major residential improvements for homeowners who do not qualify for traditional loans.
- Capitalize the revolving loan fund by:
 - Encouraging the investment of state funds, such as the state pension fund, in the revolving loan fund.
 - Getting authority from the Vermont Public Service Board for utilities to invest in the revolving loan fund on terms that assure borrowers, rather than ratepayers, ultimately cover the costs.
 - Seeking patient capital from financial institutions, philanthropic organizations, and high net-worth individuals.
- Weigh the cost effectiveness of implementing a revolving loan fund against the cost of directly subsidizing energy efficiency improvements for this sector.
- Encourage a cooperative model of ownership for mobile homes in Vermont, which could lead to their treatment as real property for financing purposes.⁹⁰

Non-traditional financing driver recommendations

- Conduct a detailed feasibility study about creating alternative entities that could make energy efficiency measures easier for homeowners to adopt and finance affordably. Such entities could include one or more ESCOs, consumer cooperatives, worker cooperatives, and even a publicly owned green bank.

⁹⁰ This report does not address, in detail, mobile homes used as primary residences. Such homes constitute a small but meaningful portion of Vermont’s housing stock. *See, supra* section IV. They are generally treated as real property for purposes of town and state taxation but are usually treated as personal property by the banking and investment community. We welcome suggestions for addressing them in more detail (for example, should PACE, on-bill tariffed financing, or energy code status requirements apply to such properties?).

X. CONCLUSION

In 2008, Vermont set an aggressive goal: to substantially improve the energy efficiency of 25 percent of its homes by 2020. Although much has been accomplished toward that goal, with the Regulatory Assistance Project projecting a shortfall of 28,000 homes, Vermont is not yet on track to meet this important target. Fortunately, this is an opportune time to confront this issue because:

- Governor Shumlin will be issuing a new Comprehensive Energy Plan.
- The 2008 financial crisis and the attendant economic recession created renewed interest in stimulating economic activity through socially beneficial lending programs.
- Residential energy efficiency improvements are cost-effective for borrowers.
- Improving the energy efficiency of homes reduces greenhouse gas emissions.
- Reducing the energy load produced by Vermont's homes could mitigate the need for new power plants.
- The state's financial institutions are eager to increase lending for energy efficiency improvements.

The upfront costs of residential energy efficiency improvements and poor access to capital are deterrents for homeowners who want to invest in improving the efficiency of their homes. Thus, providing financing for energy efficiency improvements is an important step toward advancing the energy efficiency of Vermont's homes. Yet, this research has shown, the availability of financing with favorable terms does not, by itself, cause people to borrow for energy efficiency. Therefore, the lack of demand for energy efficiency upgrades must also be addressed. Just as a bird requires two wings to fly, effective energy efficiency requires both adequate financing and strong customer demand.

This lack of demand appears to be due to a combination of debt aversion, the invisibility of the benefits of improved efficiency, and the complexity of the upgrade process. Specific cures for each of these elements are necessary but not sufficient. What is needed is a seamless path to help move people from living in drafty homes to living in comfortable homes that are affordable to heat and cool. The appropriate initiatives will include financing mechanisms that overcome barriers caused by debt aversion, financing options that reach more Vermonters, and measures that will make the benefits of energy efficiency more visible.

This report recommends expanded financing for energy efficiency improvements aimed at both homeowners and landlords in Vermont. This will require: (1) significant flexibility on the part of lending institutions, (2) increased state funding for direct weatherization assistance, and (3) innovative financing mechanisms such as on-bill tariffed financing and PACE. Furthermore, given the State's aggressive energy efficiency goals, Vermont may need to offer a portfolio of loan products including a revolving loan fund as well as other non-traditional mechanisms, such as the creation of: a residential energy service company, an energy efficiency cooperative, and/or a publicly owned green bank. These issues deserve further study.

A successful financing program should support, and not be a barrier to, customer participation. Financing should be streamlined and accessible. However, it is important to remember consumers will not participate in a program simply because it offers good financial terms; rather, consumers are striving for lower utility bills and more comfortable living spaces. Thus, the key to successful energy efficiency financing is to provide simple and convenient borrowing as an integral part of a seamless efficiency improvement program.

To meet the ambitious goals of Act 92, equally ambitious policies and programs to increase the demand for energy efficiency improvements and expand financing to reach a broad range of Vermonters are needed. The benefits of ensuring energy efficiency upgrades are within the reach of all Vermonters are clear – improved quality of life and comfort for Vermont residents, reduced expenditures on imported energy, enhanced job creation, and reduced greenhouse gas emissions. Fortunately, the tools exist to make this happen and this is an opportune time to confront this issue. It is time to marshal the political will to implement these tools and, thereby, improve the lives and well being of all Vermonters.

APPENDIX A. VERMONT FINANCING PROGRAM DESCRIPTIONS

Programs to finance residential energy improvements are not new to Vermont. Three notable examples of past and existing programs include the VHFA Energy Saver Loan Program, the VEIC Energy Rated Homes of Vermont program, and new NeighborWorks of Western Vermont H.E.A.T. Squad program (H.E.A.T. Squad). With the exception of the new H.E.A.T. Squad program, these programs have experienced little traction. Understanding the factors that influenced these outcomes can help Vermont learn from its past failures and successes.

Vermont Housing Finance Agency – Energy Saver Loan Program

In July 2008, the Vermont Housing Finance Agency developed the Energy Saver Loan Program.⁹¹ In collaboration with Home Ownership Centers in the state as well as the Windham Housing Trust, the program provided a revolving loan fund and interest rate reduction to finance energy efficiency upgrades. The state appropriated \$750,000 to fund the program. The program included a \$150,000 loan loss reserve fund.

VHFA offered loans, based on income, at interest rates ranging from zero percent to market rate.⁹² The program was organized under the Home Performance with ENERGY STAR program, which provided loan eligibility criteria and other guidelines. To begin the loan program, a certified contractor conducted an energy assessment and recommended upgrades. Costs associated with the assessment could be financed as part of the loan.

Loans were made through revolving loan funds established at six lending institutions. Loans were available for up to \$10,000, at zero percent interest, with terms of 7 years; all loans in excess of \$3,500 were secured. Interest rates were calculated based on income and household size. Unlike many newer programs, the VHFA loan program did not include an independent inspection. Rather, upon completion, the lender issued a check to the borrower, who then endorsed the check to the contractor.

Over the course of a year, only 12 loans totaling \$103,000 were issued. Due to lack of demand, the program was suspended.

⁹¹ Memorandum of Understanding, State of Vermont and Vermont Housing Finance Agency, Jul. 1, 2008 (on file with author).

⁹² VT. ENERGY SAVER PRG., CONSUMER FACT SHEET 2 (2008).

Vermont Energy Investment Corporation – Energy Rated Homes of Vermont

In the mid-1980s, the Vermont Department of Public Service received funding through the petroleum violation escrow funds.⁹³ The Department engaged the Vermont Housing Finance Agency to take the lead on developing an efficiency financing program. Vermont Energy Rated Homes of Vermont began in 1987. Using a multi-star rating system, the program relied on HERS assessments to identify needed energy upgrades. The rating system allowed homebuyers and homeowners to qualify for loans to purchase more efficient homes or make energy efficiency upgrades to existing homes.

Based on a comprehensive energy assessment, the program provided homeowners with a Home Energy Rating Certificate documenting the home's energy performance. Between 1993 to 1998, the Energy Rated Homes of Vermont program served as a pilot program for the U.S. Department of Housing and Urban Development and the Federal Housing Authority.⁹⁴ During this time, however, although the program rated more than 2,600 homes, only 20 homeowners went through with the renovations using an energy efficient mortgage through the Federal Housing Administration or the Department of Veterans Affairs. Nevertheless, the information from the home ratings was used to assist utilities' demand-side management programs.

In order to provide financing opportunities using the rating system, VEIC and the Vermont Housing Finance Agency collaborated to develop Home Energy Improvement Loans and the Yearly Energy Savings System (YESS) Mortgage Program, which provided reduced interest rates for first-time homebuyers who made energy improvements at the time of purchase.⁹⁵ YESS could finance up to 100 percent of the cost of an energy upgrade exceeding \$2,500. Energy Rated Homes of Vermont: provided the mortgage service, performed the HERS, recommended improvements, solicited bids from contractors, prepared documentation for the loan file, and scheduled a final review.⁹⁶ In order to be eligible, homeowners had to meet VHFA income requirements.

⁹³ FARHAR, *supra* note 31, at 23.

⁹⁴ *Id.*

⁹⁵ U.S. ENV'T'L PROT. AGENCY, CLIMATE CHANGE SOLUTIONS: VERMONT TRIMS ENERGY BILLS FOR LOW-INCOME FAMILIES (1998), available at <http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=40000PQ2.txt>.

⁹⁶ RICHARD FAESY, AM. COUNCIL ON AN ENERGY EFFICIENT ECONOMY, UNDERSTANDING AND OVERCOMING THE ENERGY MORTGAGE BARRIER: FINANCING ENERGY IMPROVEMENTS IN EXISTING HOMES (2000).

Although this early program has been touted as a successful model by federal agencies such as U.S. EPA, the program administrator reports that roughly 100 loans were made through the program. Each closed loan represented an \$800 loss for the program due to administrative costs associated with shepherding a homeowner to closing.

Do-It-Yourself (DIY) Home Energy Efficiency Pilot Program

A pilot program by Central Vermont Community Action Council (CVCAC) attempted to increase access to home energy upgrades by training homeowners interested in making energy efficiency improvements themselves. The Do-It-Yourself (DIY) Home Energy Efficiency Pilot Program paired homeowners with a certified energy auditor who oversaw the work and verified the expected energy savings. By conducting the work themselves, homeowners reduced the upfront cost of the energy upgrades to \$1,000, which paid for the auditor's time and expertise. This also covered the cost of materials, which were tax-deductible.⁹⁷ The program also allowed homeowners to access Efficiency Vermont's HPWES program rebates. With respect to heating fuels, the average energy savings for the DIY program were about the same as those achieved through the traditional HPWES program, while electric savings were only 30 percent of those documented by HPWES participants.⁹⁸ Although the full cost of a DIY energy retrofit was not reported in this pilot, the DIY approach presumably would reduce the cost of a home retrofit that would otherwise cost \$7,500.

NeighborWorks – H.E.A.T. Squad

In June 2010, NeighborWorks of Western Vermont (NeighborWorks) received a \$4.5 million grant from the U.S. Department of Energy to improve the energy efficiency of 1,000 homes in Rutland County, Vermont, over a three-year period. The H.E.A.T. Squad program is designed as a one-stop shop for homeowners interested in conducting a home energy assessment and upgrade. NeighborWorks is the main point of contact for the homeowner and offers services including scheduling assessment and improvement appointments, financing, and advocating for the homeowner. NeighborWorks subsidizes the cost of the energy assessment so the homeowner pays \$100 instead of \$400 to \$500 for the service. BPI-certified contractors perform the energy efficiency assessment and upgrade work.

⁹⁷ CENTRAL VERMONT COMMUNITY ACTION COUNCIL, EVALUATION REPORT: WEATHERIZATION SKILLSHOPS AND THE DO-IT-YOURSELF (DIY) HOME ENERGY EFFICIENCY PILOT PROGRAM (Mar. 2011).

⁹⁸ *Id.*

NeighborWorks provides financing for homeowners with a credit score of at least 640. Loans are available for a term of up to 10 years at a fixed interest rate of 4.99%. The maximum loan available is \$15,000. The project administrators generally attempt to achieve a positive cash flow through the financing. They report that this has not been troublesome.

Between September 2010 and May 2011, more than 515 energy assessments have been conducted and 250 homeowners have either completed a home energy upgrade or are in the process of completing one. These homeowners have averaged a 47 percent reduction in their home heating bills and are expected to save \$948 annually; the average cost for these improvements is \$6,200. Although NeighborWorks offers its own financing, only 12 percent of participants have taken a loan through the program. The remainder pay up front or obtain financing from another source.

Utilizing many of the best practices of community-based social marketing to market their program, NeighborWorks uses as the local news media as well as peer-to-peer outreach. This use of trusted messengers enhances community engagement, which is known to be one of the best means to drive demand for energy efficiency upgrades.⁹⁹ For example, the conservation commission in one town called local residents to inform them of the program and successfully reached half of the town's population. After a news story in the local newspaper described an energy assessment and documented the process in a local home, interest in the program grew dramatically.

Although the H.E.A.T. Squad program has only been in place since November 2010, it is currently the most successful program in the country at converting homeowners to move from audit to improvements and in overall penetration rate per capita. In fact, the H.E.A.T. Squad program is currently outperforming the top program in the country – the Clean Energy Accelerator program in Austin, Texas – by almost a factor of two.¹⁰⁰ The H.E.A.T. Squad program, therefore, should be watched closely to determine if its model can be cost-effectively expanded across the state.

⁹⁹ MERRIAN C. FULLER ET AL., LAWRENCE BERKLEY NATIONAL LABORATORY, DRIVING DEMAND FOR ENERGY EFFICIENCY IMPROVEMENTS 6 (2010), available at <http://drivingdemand.lbl.gov/>.

¹⁰⁰ NEIGHBORWORKS OF WESTERN VERMONT, *supra* note 18.

APPENDIX B. EXPERIENCE FROM OTHER STATES

Expanding Vermont's existing efficiency programs to reach the state's residential efficiency goal will generate new jobs, increase Vermonters' net cash flow, and keep more of the money spent on energy in the state. Programs and regulatory changes in other states provide creative examples that might apply in Vermont.

A few states have made statutory changes that direct appraisers to consider energy efficiency when evaluating residential property. For example, since 1990, Alaska has included "energy efficiency" in its statutory definition of what an appraisal must include.¹⁰¹ In 2010, Louisiana also defined "appraisal" to include energy efficiency in the assessment.¹⁰² Although the effect of such a change is unknown, some observers predict it will help standardize methods and criteria for evaluating the value of efficiency improvements.

Additionally, some states have initiated new programs and expanded municipality and state agency authority in an effort to spur demand for efficient homes or to provide funding. For example, in Minnesota, energy efficiency is one of the few types of residential improvement projects the Housing Finance Agency may support.¹⁰³ In New York, municipalities are authorized to establish loan programs for efficiency projects.¹⁰⁴ Some states and municipalities have gone so far as to require disclosure of a home's energy performance at time of sale. For example, in Austin, Texas, sellers must disclose a home's energy performance or demonstrate that the house has undergone a whole-house efficiency upgrade.¹⁰⁵

A few states or municipalities have created financing programs or loan products to support efficiency improvements. For example, working with Abundant Power, the City of Charleston, South Carolina, recently established an efficiency-financing program based on Qualified Energy Conservation Bonds.¹⁰⁶ State agencies issue the bonds, and

¹⁰¹ ALASKA STAT. ANN. § 08.87.900(2) (West 2010).

¹⁰² LA. REV. STAT. ANN. § 37:3392(1) (2010).

¹⁰³ MINN. STAT. ANN. § 462A.05 (West 2011).

¹⁰⁴ N.Y. GEN. MUN. § 119-gg (McKinney 2011).

¹⁰⁵ Webinar Presentation by Tim Kisner, Austin Energy: Energy Efficiency Services, for Regulatory Assistance Project's Whole House Retrofit Webinar: Austin's Early Experience with Time-of-Sale Ratings (Dec. 15, 2010).

¹⁰⁶ CHARLESTONWISE (2010), <http://www.charlestonwise.com/>.

Abundant Power originates the loans. The originator also provides underwriting standards and monitors the progress of funded projects.

Numerous states and the District of Columbia have enacted Renewable Portfolio Standards mandating that a particular percentage of a utility's electricity generation come from renewable resources. Of these, thirteen states either allow efficiency to satisfy part of the portfolio target for renewable energy or establish an independent target for energy efficiency. In addition, several states have enacted Energy Efficiency Resource Standards, mandating certain achievements in energy efficiency. The extent to which these utility obligations have led to expanded support for whole-house efficiency improvements or financing opportunities for interested homeowners is unknown. However, because the portfolio standards typically apply to a utility's service territory and exempt smaller cooperatives or municipal electricity suppliers, a state portfolio requirement seems unlikely to lead to a statewide energy efficiency upgrade or financing program. Energy efficiency projects may also have to be eligible for something similar to a renewable energy credit in order to generate a statewide market with capital to fund residential energy efficiency upgrades.

PENNSYLVANIA

In Pennsylvania, the Treasury developed the Home Energy Loan Project (HELP) to offer unsecured energy efficiency loans. Other state agencies established a 5 percent loan-loss reserve to safeguard state treasury funds. A Fannie Mae-approved energy lender, AFC First Financial, administers the program and originates the loans. Offering low-interest rates and a simple loan application process that is processed within a few hours, HELP has attracted a number of borrowers. However, the eligibility criteria may be too restrictive to provide financing for those who would not otherwise qualify for traditional loan products. For example, HELP restricts eligibility to those with a combined family income less than \$150,000.00, a credit score above 640, and a debt-to-income ratio below 50 percent. Although are standard criteria for traditional lending, many Vermont borrowers would be eligible under HELP's eligibility criteria. A program like HELP, which offers easily accessible, low interest rates to creditworthy borrowers, might influence a homeowner's decision to invest in a upgrade sooner rather than later. Therefore, offering a program like this could help Vermont reach its early-adopters while it is implementing programs designed make energy efficiency available to a broad range of Vermonters, including renters.

