VERMONT
CLEAN ENERGY DEVELOPMENT FUND

Vermont Clean Energy Finance Report
Report #3
Focus on: High Impact, "Ready-to-Implement" Financing Opportunities During COVID-19

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1. Executive Summary

Vermont's clean energy and economic success are closely intertwined. Almost 6% of Vermont's workforce is in the clean energy sector. An economic downturn can have significant impacts on the status of Vermont's clean energy goals. Supporting this component of the state's economy requires a robust set of finance options that complement regulatory and policy tools.

The emergence of the novel coronavirus pandemic has led to substantial drops in employment in Vermont, including the clean energy industry. Estimates show that over 2,600 clean energy positions have been lost in the state since April 2020.[1] Previously, the nation faced economic downdrafts following the 2009 financial crisis, which led to federal stimulus programs in support of the energy industry (i.e., American Recovery and Reinvestment Act of 2009). At that time, "shovel ready" projects were deemed high priority to get people back to work. Similar circumstances prevail in the COVID-19 era, with the need to identify areas of economic activity amenable to re-opening in the context of social distancing and health concerns.

While there may still be some restrictions with regards to undertaking construction work due to COVID-19, many energy efficiency and renewable energy projects have now resumed following the initial March stay-at-home order. Evidence gathered for this report indicates that some consumers remain interested in financing their energy efficiency upgrades and renewable energy installations, in part due to near historically low borrowing costs.

In response to the COVID-19 pandemic, the Clean Energy Development Fund (CEDF) has directed the focus of the *2020 Clean Energy Finance Report* to financing programs and products that could have high impact and be relatively quick to execute. Recent discussions with a set of Vermont financial institutions revealed that they can move more quickly to launch products with which they are already familiar. While there are numerous helpful financing options, the products in this report were highlighted by lenders and implementers as tools and programs that could be brought to scale swiftly. This document is intended as a high-level review (not an exhaustive research project) of these opportunities, with recommendations for future consideration.

This report focuses on four key opportunities: interest rate buydowns (IRB), loan loss reserves (LLR), "payment coverage" offerings, and the expansion of the State Energy Management Program (SEMP) through Revolving Loan Funds (RLF). Except for the SEMP, these options are currently available through at least one if not many lending institutions, thereby offering the potential for a broad geographic reach. Furthermore, participation rates and other key data points that assist in determining potential impact, are also available. Key findings include:

- Lenders and program implementers have multiple clean energy financing opportunities available for a variety of customer types (homeowners, businesses, schools, town and cities) that *are* ready to be scaled up swiftly to ensure high impact, thereby assisting in reinvigorating Vermont's economy.

[1] *2020 Vermont Clean Energy Industry Report*. Conducted and written by BW Research Partnership, Inc. under commission by the Clean Energy Development Fund (CEDF) of the Vermont Department of Public Service (PSD). Montpelier, Vermont. July 28, 2019. https://publicservice.vermont.gov/sites/dps/files/documents/Renewable_Energy/CEDF/Reports/2020%20VCEIR%20Final.pdf

- Recent data from one of the state's energy loan programs, the Home Energy Loan program, shows that more Vermont homeowners are choosing to invest in clean energy projects that require financing: Q1 of 2020 saw a 67% increase in activity from Q1 of 2019 and Q2 of 2020 saw a 32% increase from Q2 2019 (even when all project work ceased due to COVID-19).
- Pairing interest rate buydowns with loan "payment coverage" offerings appears to significantly increase homeowner participation in completing clean energy projects that require financing.
- There is significant opportunity in supporting business owners through increased marketing of the Business Energy Loan, particularly if the loan is paired with an interest rate buydown for businesses and a loan loss reserve for lenders.
- For state properties, schools and municipalities, there is a real opportunity to expand the successful energy and financial savings achieved since 2014 through the State Energy Management Program. Further support to existing revolving loan funds, or new support to funds that support municipalities and schools (in coordination with a statutory change in authorization) could very likely assist in saving Vermont taxpayers considerable funds.

2. Report Context and Purpose

This report is the last of three Vermont Clean Energy Finance Reports (VCEF). The first VCEF report, completed in 2018, articulated financing's role in the clean energy transition, established a broad snapshot of the clean energy finance market in Vermont, and identified potential areas of expansion and future research. The 2019 VCEF report focused on the clean energy market as it pertains to municipalities and cities. Due to COVID-19, this last report focuses on financing programs and products that could have high impact and be relatively quick to execute should Vermont receive additional funding.[2]

There are many reasons to support clean energy investments. For example, Vermont has statutory goals and requirements regarding the transition to clean energy.[3] While the state is making good progress in transitioning to renewable energy in the electric sector, the rates of adoption in the transportation and thermal energy sectors are not on track to meet its goals. On the thermal front, there have been efforts to increase weatherization activity, but the state is behind in meeting the building efficiency goals set forth in statute. With respect to greenhouse gas (GHG) goals, recent data indicates that Vermont is continuing to struggle to reduce carbon emissions, particularly in the thermal and transportation sectors.[4]

Besides the need to comply with statute and to reduce carbon emissions, there are potential economic benefits from transitioning to clean energy. In a recent analysis conducted by the Energy Action Network (EAN), Vermont currently sends an average of $1.5 billion out of the state each year to import fossil fuels (Figure 1). If Vermont achieves the emissions reductions required to meet the

[2] As stated in the previous two reports: The specific focus for future reports will depend on the interest of the CEFG, PSD and other interested stakeholders.
[3] See *Report to Vermont State Legislature, Act 62 – Preliminary Report on All-Fuels Energy Efficiency*. Vermont Public Utility Commission. Montpelier, Vermont. January 15, 2020. Pg. 7. https://puc.vermont.gov/sites/psbnew/files/doc_library/Act%2062_PreliminaryReport%201.15.20.pdf
[4] *2020 Annual Energy Report*, Vermont PSD. Montpelier, Vermont. January 15, 2020. Available at: https://publicservice.vermont.gov/sites/dps/files/documents/2020%20Annual%20Energy%20Report.pdf.

agreement resulting from the 2015 United Nations Climate Change Conference, Vermonters will experience considerable economic benefit (Figure 2).

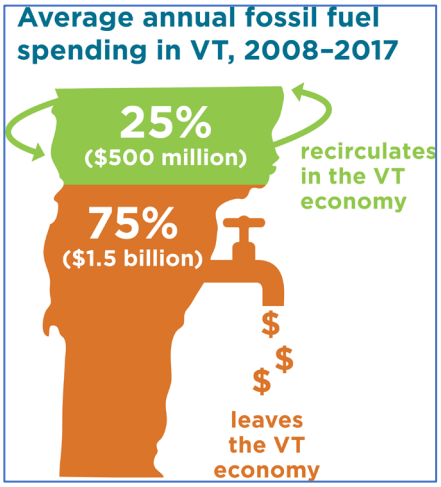

Figure 1. Fossil fuel spending in VT. 2008 - 2017[5]

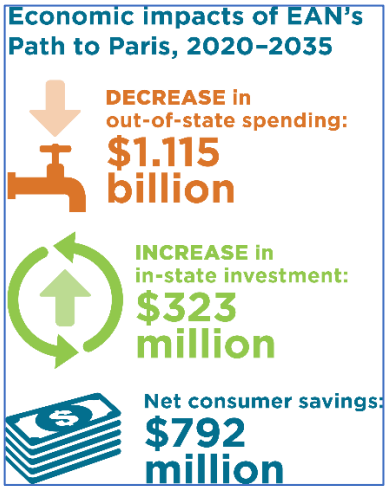

Figure 2. Economic impacts of Path to Paris[6]

Additionally, shifting to clean energy[7] results in job growth opportunities for Vermonters.[8] Beginning in 2014, the *Vermont Clean Energy Industry Report* (VCEIR) presented the findings of an annual clean energy job census, resulting in key insights and trends in Vermont's clean energy sector and how it compares to other states. The 2020 report portrayed CE employment as rising from 14.7 thousand workers in 2013 up to 18.9 thousand workers in 2020, and revealed that in 2020, "clean energy jobs in Vermont accounted for six percent of all jobs in the state—higher than the national concentration of clean energy workers, which was just over two percent.[9] However, with the onset of COVID-19, the state's clean energy industry experienced about a 15% decline in the number of jobs.[10] This data does not reflect those who are temporarily furloughed or underemployed due to reduced hours. Importantly, clean energy positions are generally "livable" wage jobs (Figure 3). As Vermont seeks to recover from COVID-19, re-igniting an industry that pays livable wages that cannot be outsourced and that also provides multiple other benefits as described above, would be a valuable use of stimulus funds.

Beyond state goals and economic benefits stated above, there are other considerations to account for as well. For example, some clean energy incentive programs can have the effect of transferring costs for technology deployment from one segment of society to another. Financing mechanisms can play an important role here in reducing cost shifts that can occur when non-

[5] *2019 Annual Progress Report for Vermont*. Energy Action Network. Montpelier, Vermont. https://www.eanvt.org/2019-progress-report/
[6] Ibid.
[7] The six *Vermont Clean Energy Industry Reports* define clean energy as including renewable electric power generation, clean fuels, clean transmission, distribution, storage, energy efficiency and clean vehicles.
[8] The authors recognize that shifting towards clean energy may also result in decreased economic output from the fossil fuels industry.
[9] *2020 Vermont Clean Energy Industry Report*. https://publicservice.vermont.gov/sites/dps/files/documents/Renewable_Energy/CEDF/Reports/2020%20VCEIR%20Final.pdf
[10] Ibid.

participating customers provide funding (such as through increased electric bills) for incentives that help other customers install clean energy products. Customers with the means to participate in the programs who take advantage of such incentives are the primary economic beneficiaries of such programs. COVID-19 has disproportionately impacted lower income Vermonters who typically have a high energy burden and typically are not installing clean energy products. Financing mechanisms provide an opportunity to reduce cost shifts by helping certain customers who otherwise could not install a clean energy product to gain access to financing at beneficial terms.

	RENEWABLE ENERGY			ENERGY EFFICIENCY		
	Entry	Mid	High	Entry	Mid	High
Electricians	$13.57	$19.43	$28.89	$18.91	$25.47	$32.95
HVAC Workers	$13.10	$20.77	$32.66	$18.43	$25.15	$35.05
Installation, Maintenance, and Repair Occupations	$13.10	$20.77	$32.66	$14.84	$20.72	$30.23
Sales Representatives	$17.60	$28.71	$56.74	$30.55	$39.57	$68.70
Engineers	$24.99	$37.21	$56.61	$23.78	$39.38	$57.98

Figure 3. Vermont median hourly wages for clean energy jobs[11]

As presented in the 2018 CEFR, there are a variety of different financing products and programs available in Vermont and elsewhere. However, given the current unique economic environment, this report focuses on Vermont clean energy financing programs and products that would be relatively easy to implement (or augment) and would have the greatest impact and potential market adoption.

To assess which programs and products might fit these two primary goals (ease/speed of implementation and impact/reach/uptake), the report authors interviewed various clean energy finance lenders and program implementers in the state on May 6, 2020. These conversations ultimately directed us to highlight four primary opportunities in this report: interest rate buydowns, loan loss reserves, "payment coverage" and the expansion of the SEMP. Additionally, we briefly mention a few other opportunities that could be utilized but did not rise to the same level of identified opportunity as the four highlighted options.

The ***2020 Vermont Clean Energy Finance Report*** focuses on which financing programs and products would be relatively easy to implement (or augment) and have significant impact and market adoption.

The next section of this report presents one of the four specific products or programs, then reviews the survey results conducted in 2018 to assess whether the suggested product or program was

[11] *2019 Vermont Clean Energy Industry Report*. Conducted and written by BW Research Partnership, Inc. under commission by the CEDF of the Vermont PSD. Montpelier, Vermont. May 30, 2019. https://publicservice.vermont.gov/sites/dps/files/documents/Renewable_Energy/CEDF/Reports/VCEIR%202019%20Final%20Signed.pdf

What is meant by "***Clean Energy Project"*** for this report?

- A building retrofit that includes air sealing, insulation and/or duct sealing
- An upgrade to a more efficient heating system, a purchase of a renewable heating system such as a pellet boiler, or the installation of a heat pump
- The installation of more efficient windows (lower U value) and doors (with a weather strip)
- The installation or replacement of a water heater
- The installation or replacement of more efficient commercial kitchen equipment
- The installation or replacement of an efficient washing machine, dryer, or dishwasher
- Upgrades to motors, manufacturing equipment and system designs, and more efficient heavy machinery
- The purchase of a renewable generating system (e.g. solar array)
- The purchase of an electric vehicle or installation of an electric vehicle charging station

"Small ticket" items such as the purchase of highly efficient lightbulbs are not considered a "clean energy project" due to the unlikelihood of obtaining financing to complete the purchase.

identified as being helpful by the entity who would be taking out the loan (e.g., homeowner or business). The report also discusses the financing product's ease of implementation and potential impact.

This report was developed quickly on a limited budget and is not a rigorous analysis of finance options and activity in the state. Rather, this report provides a snapshot to gain insights from individuals engaged with clean energy financing during the COVID-19 pandemic. Some of the products covered in this report—generally known as credit enhancements—are designed to reduce inherent risks in lending to retail and commercial customers. While financial institutions typically carry loan loss reserves as required by regulations, the tools listed in this section provide an added layer of protection, without which the financing offered by the lender may prove beyond the reach of the borrower. A degree of certainty provided by credit enhancements allows lenders to accept borrowers whose credit ratings may be below their thresholds or extend the term of loans beyond their normal range. Together, they help customers access energy upgrades that reduce expenses, and in some cases, can be cash-flow positive.

3. Selected Clean Energy Finance Programs and Products

To identify the financing products and programs most likely to have high impact and be quick and relatively easy to implement, the CEDF and report authors discussed various options with a set of Vermont lenders. The outcome of that discussion included (3.1) interest rate buydowns, (3.2) loan loss reserves, (3.3), "payment coverage", (3.4), the expansion of the SEMP for schools and municipalities, and (3.5), a variety of other potential products.

3.1 Interest Rate Buydown

3.1.1 Product Overview

A lower interest rate can make a clean energy project more attractive by making it more affordable. Interest rate buydowns lower customer interest rates through modest public investments that leverage lender capital. The amount of the payment is based on the difference between the sum of the principal and interest payments that a lender would receive at the market rate and the sum of the payments the lender would receive at the target rate. Lenders may determine the cost of this difference by using a net present value calculation

with a market-based discount rate to make the most efficient use of public funds.[12] By making an upfront commitment to the lender—an important factor in gaining lender participation—public entities can use funds to help bridge the gap between market and target interest rates.

3.1.2 Serving Homeowners through IRBs

As part of the 2018 report, Efficiency Vermont surveyed approximately 12,000 Vermont homeowners on behalf of the CEDF via email. Of those surveyed, 910 individuals or 7.5% of the sample pool responded.[13] The survey provided a range of findings, but key to *this* report are the responses on what homeowners considered the greatest obstacles to undertaking a clean energy project utilizing financing, and what interest rate they considered to be "affordable".

For those who considered undertaking a clean energy project but did not, the survey asked which obstacles posed the greatest hurdle (Figure 4). Interest rate buydowns alone do not address every one of these issues; however, there are other indications of what can help drive borrower engagement.

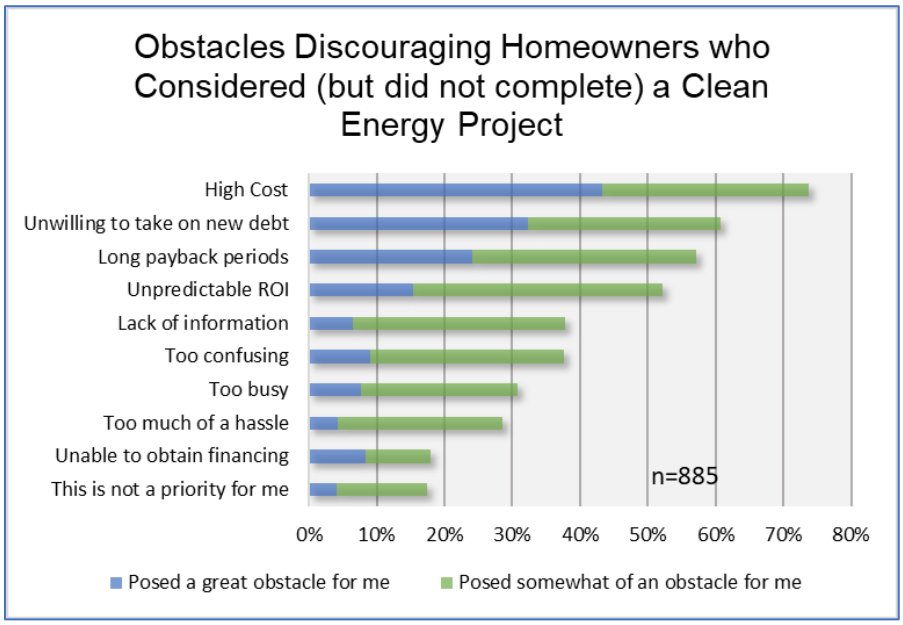

Figure 4. Obstacles discouraging homeowners who considered (but did not complete) a clean energy project[14]

For example, for some Vermonters[15] being "too busy" may not be as relevant now as it had been at the time of the 2018 study, as evidenced by increase in uptake of Efficiency Vermont's Home

[12] https://www.energy.gov/eere/slsc/loan-loss-reserve-funds-and-other-credit-enhancements

[13] The *2018 Vermont Clean Energy Finance Report* provides further detail regarding survey design, results, and methodology.

[14] *2018 Vermont Clean Energy Finance Report*. Prepared by Energy Futures Group for the Vermont CEDF at the PSD. Montpelier, Vermont. June 12, 2018. https://publicservice.vermont.gov/sites/dps/files/documents/Renewable_Energy/CEDF/Reports/Vt._Clean_Energy_Finance_Rpt_2018.pdf

[15] Clearly, this statement may not be true for everyone, for example those who have lost predictable schooling or childcare.

Energy Loan (HEL).[16, 17] This could perhaps be a result of COVID-19 as many people are home all day and for many months were unable to take action on tasks outside of one's home. Additionally, the concern about an "unpredictable ROI" is currently being put to the test through two pilot programs that offer savings guarantees: a grant-funded pilot initiated by the Building Performance Professionals Association of Vermont and a residential savings guarantee pilot currently under development for residential customers via PSD and program partners.

The issue of "high cost" is being addressed by some contractors through optimization of the best energy solutions for a given property such that the dollars saved by reducing fossil fuel usage offset the monthly cost of the project (i.e., "cash flow neutral" or "positive"). And while for some Vermonters, unwillingness "to take on new debt" will never change, today's very low interest rates may be encouraging some customers to assume new debt, even though they may generally prefer not to do so.

While none of these obstacles will likely ever be fully addressed due to the complexity of identifying and choosing the most appropriate clean energy project for a specific site, broader trends in Vermont are beginning to address them in an incremental fashion. If each of these individual issues becomes less obstructive, the presence of low interest financing is likely to motivate more Vermonters to launch clean energy projects.

The 2018 survey also asked Vermont homeowners what financing rates they considered "affordable." (Figure 5). Two thirds of respondents deemed interest rates 4% or lower as affordable. Only 3% of respondents thought that interest rates at 5-6% were affordable. In contrast, many of the lenders interviewed for the Financial Institution survey (discussed below) viewed interest rates of 5-6% as "competitive".

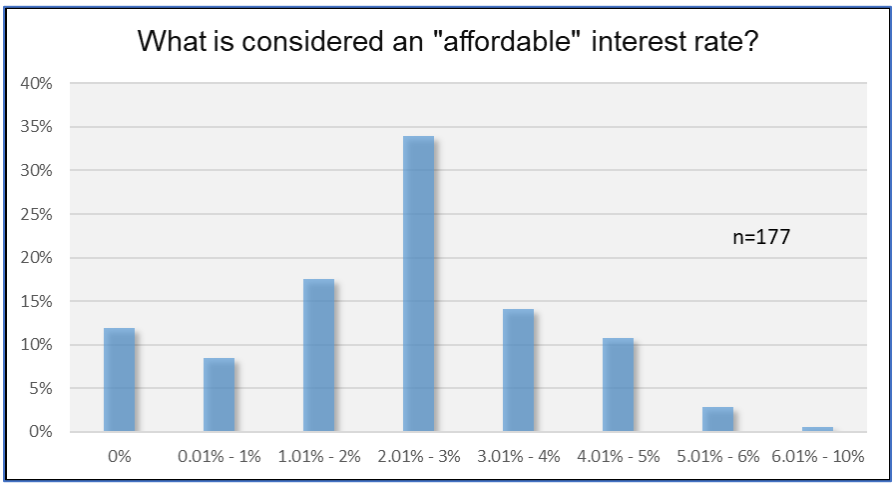

Figure 5. What is considered an "affordable" interest rate?[18]

[16] "Quite interestingly 2020 is proving to be a very busy year for the HEL, this despite COVID-19 and even before we launched the Coverage Payment Offer. Q1 in 2020 saw a 67% increase in activity from the same time period in 2019, for example, with Q2 showing a 32% increase." E-mail correspondence with Efficiency Vermont staff. July 10, 2020.

[17] See: https://www.efficiencyvermont.com/services/financing/homes/home-energy-loan

[18] *2018 Vermont Clean Energy Finance Report*

Today, Vermonters can participate in the Home Energy Loan program offered by Efficiency Vermont at interest rates that fall within the range, provided in Figure 5, of what survey respondents stated were "affordable", and are below what lenders consider "competitive" via an IRB.[19] However, the IRB forms a significant program cost and, due to limited funding, constrains overall program scope and scalability. This cost depends on the terms of the net present value calculation agreement with the lenders and it may be re-negotiated as market conditions change. Also, if lenders are experiencing positive results (program is relatively easy to administer with partner support, volumes are consistent, and loans are performing well), they may find that they have more margin to adjust the calculation to better leverage partner funding.

If Vermont were to receive stimulus funds, current interest rates could be lowered further to meet the threshold homeowners consider "affordable" or used to expand the program scope overall. This could result in significant market stimulus, thereby increasing job growth and progress toward state energy and climate goals, while also helping Vermont homeowners save money over the long term.

3.1.3 Ease of Implementation and Potential Impact

IRBs are a well-known financing tool in Vermont. For example, having implemented the Thermal Energy Finance pilot with its featured Heat Saver Loan (HSL) and other finance programs, the PSD now has staff, training, tools, and resources to implement IRB programs. The success of the HSL allowed PSD to transition the program to EVT, which it now manages as the Home Energy Loan with lending partners.[20] Results from the Thermal Energy Finance pilot are shown below (Figure 6). During this pilot, 558 loans valued at $6.05 million were generated, with $932,931 of IRBs for borrowers. The pilot program leveraged nearly $6.50 of private financing for each public dollar invested and only one loan defaulted before the end of the pilot in December 2017.[21] (Figure 7)

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

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

Figure 6. Heat Saver Loan rate structure

Thermal Energy Finance Pilot Program Summary 2014 to 2017	
Number of HSLs:	558
Value of HSLs ($):	$6,049,152
Amount of IRB Provided ($):	$932,931
Leverage (Private $ to Public $):	$6.48

Figure 7. Heat Saver Loan program summary

With an existing framework for IRBs in Vermont, it is relatively easy for some financial institutions to duplicate the process and make minor adjustments as needed. Three Vermont financial

[19] The Home Energy Loan is income-qualified with rates as low as 0%, up to 100% financing. More information is available at https://www.efficiencyvermont.com/services/financing/homes/home-energy-loan

[20] Inclusion of the Home Energy Loan and Business Energy Loan as examples of potential finance tools does not necessarily indicate a preference for these products or programs should Vermont receive new stimulus funds targeted at energy.

[21] Vermont PSD, Montpelier, Vermont. A second loan from the original portfolio of pilot loans defaulted after the program transitioned to Efficiency Vermont in 2019.

institutions—VSECU, Opportunities Credit Union, and NeighborWorks of Western Vermont—partner with EVT and the Burlington Electric Department to provide subsidized loans such as the Home Energy Loan, while other financial institutions such as Green Mountain Credit Union partner with Vermont Gas Systems to provide customers with favorable interest loans for upgrading to new, high efficiency heating systems. Furthermore, as IRB funds are committed and tracked monthly, funds can be infused swiftly into the state's economy.

Three factors are important to consider when designing buy-down programs with lenders: (1) program demand, volume, and scale; (2) simplicity and ease of implementation; and (3) mission alignment. Successful programs bring enough volume to the financial institution to justify the necessary resource investment; have a simple, replicable, and market driven program design with easy to understand products and qualifications; and leverage established partnerships that have common goals.

Indeed, the lender interviews conducted as part of the *2018 Clean Energy Finance Report* reinforce the concept implied above that the "behind-the-scenes" effort a financial institution must complete in order to provide a specific loan product is not insignificant. For example, of the 14 lenders interviewed (representing 34% of the 44 lending institutions in Vermont), 53% offered a specialized product while 47% did not. Of the 47% that did not offer a specialized clean energy loan product, nearly half (43%) of these had at one time done so but determined there was not enough demand to continue offering a separate, standalone product. Setting up energy-specific products takes time and resources; there must be a compelling reason to develop a niche product, such as mission alignment or obvious demand. Furthermore, all the lenders interviewed in 2018 felt they were meeting their customers' needs, whether through a specialized clean energy product or a traditional loan that was modified to meet specific customer requests.

IRBs for homeowners appear to offer real potential in meeting several objectives: job growth, assistance to the state's vulnerable citizens, compliance with energy goals and requirements, financial savings for homeowners, relatively easy and quick implementation, and alignment with what homeowners have said would help drive them to invest in energy projects: a lower interest rate on their loan.

To assess the potential impact of an IRB, the results of the residential Heat Saver Loan and its successor, the Home Energy Loan offer insights. As presented earlier, the Heat Saver Loan generated 558 loans between 2014 and 2017. The subsequent HEL, which launched in January 2018, has seen participation increase steadily over the past three years (Figure 8). For example, Q1 in 2020 saw a 67% jump in activity from the same period in 2019, with Q2 showing a 32% increase. Interestingly, the first two months of Q2—even with COVID-19—still saw more loans close than in 2018. It should be noted, however, that the Q2 increase was largely a result of program participation in the month of June, which followed the decision by Efficiency Vermont to offer "Payment Coverage" beginning on May 22, 2020 (Figure 9).

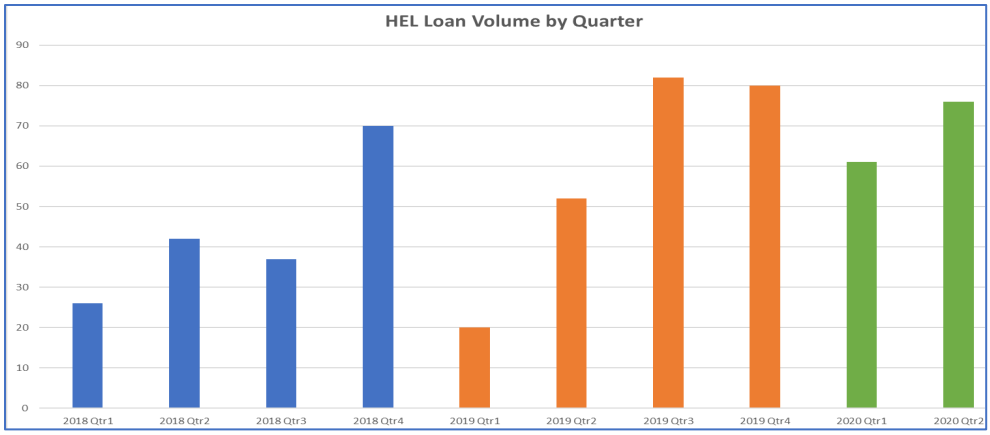

Figure 8. HEL loan volume by quarter[22]

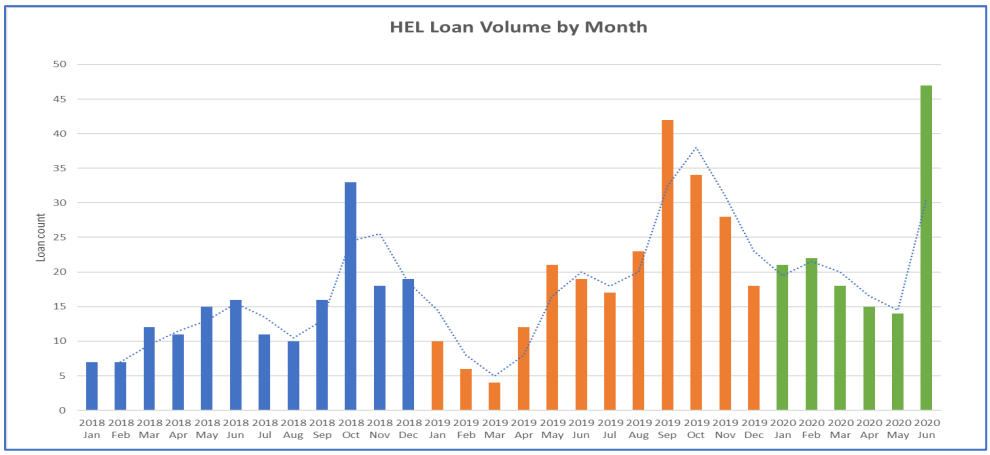

Figure 9. HEL loan volume by month[23]

Figures 10 and 11 show the statewide distribution of HEL's in every Vermont county, as well as to borrowers with a wide range of incomes.

[22] Data provided by Efficiency Vermont via e-mail. July 10, 2020.
[23] Ibid.

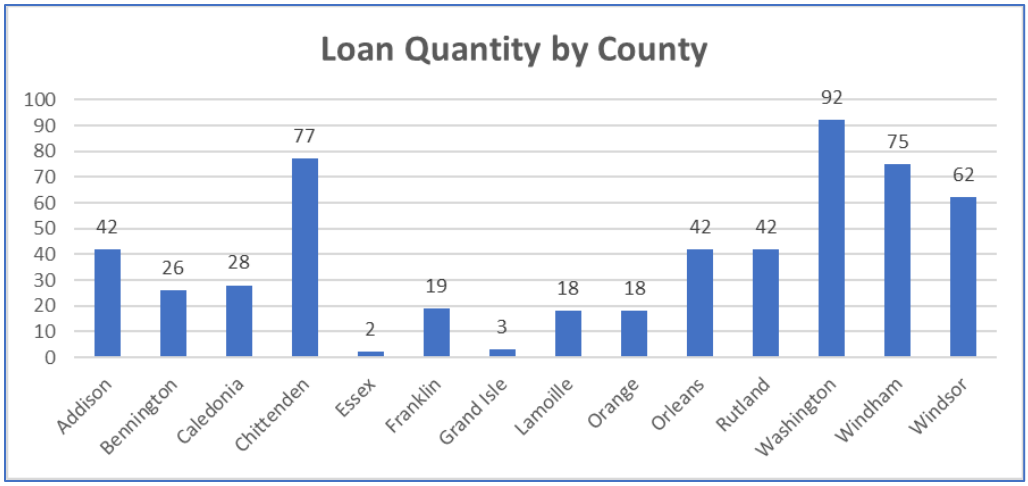

Figure 10. HEL quantity by county 2018 - 2020[24]

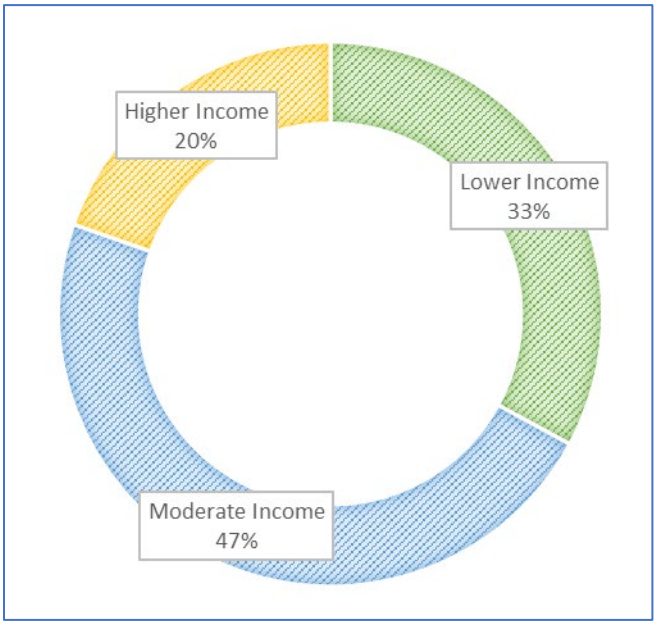

Figure 11. HEL results by income category 2019 - 2020[25]

Customer utilization of the HEL is increasing and reaches broadly across economic demographics and geographic areas. One could surmise that the IRB component of the HEL is helping to drive this market uptake, since it directly addresses homeowner feedback regarding loan rates, as shown in Figure 5.[26] If

[24] Data provided by Efficiency Vermont Staff via e-mail. July 10, 2020.
[25] Ibid.
[26] It should be noted that, during the tail end of Q2 and into Q3 of 2020, other incentives were also increased. This report does not parse out which incentive and loan offers were the primary driver to increased customer uptake as it is outside the scope of work. However, following up with homeowners after or during construction with a survey to ask whether any specific offer was the key item that motivated them to move forward with a project, or

Vermont were to receive stimulus funds or if other funding were to become available, some portion of this could be added to existing IRB reserves to increase the loan volume or be used to decrease rates even further (for example, for certain populations based on equity concerns), or some combination of both. The data presented above indicates strong interest in current offerings; additional funding support could potentially see swift uptake, resulting in significant impact.

3.2 Loan Loss Reserve

3.2.1 Product Overview

Loan loss reserves (LLR) are a way to use public funds to help lenders manage their credit risk. A loan loss reserve is a pool of funds that lenders can draw from to cover a portion of loan defaults or losses. Lenders manage their loan loss reserve allowances based on their structure, loan portfolio types and concentrations, and local and national economic and market conditions. With an additional loan loss reserve pool for a specific program, public funds can be used to encourage lenders to take on more risk with certain loans, like clean energy loans, or use alternative underwriting criteria.

This reserve of funds covers a pre-specified percentage of loan losses as agreed to between the financial institution and the entity providing the funding for the LLR. Funds are obligated to support a portion of a loan portfolio and in the event of a charge-off the institution is made whole for the agreed upon proportion of the loan amounts. The terms of these reserve funds are determined by agreement between lender and partner, funds are accessed according to the arrangement following standard recovery procedures, and funds that are not used may be returned to the partner or remain with the lender.

Ultimately, loan loss reserves incentivize financial institutions to provide financing for clean energy projects.[27] The PSD currently provides $250,000 in an LLR for the Business Energy Loan (BEL), implemented by Efficiency Vermont with VSECU as the lender with funding from the U.S. DOE State Energy Program.

Efficiency Vermont's Business Energy Loan (with VSECU)

- Low interest rate (currently 3.5% - 5.5%), no closing costs, $50,000 loan cap
- Option to defer up to first 4 payments
- Flexible terms of up to ten years, 100% financing available
- Streamlined application process, no business financials required
- Available to businesses, nonprofits, multifamily rental housing, and others
- Credit score must be 660 or higher

3.2.2 Serving Businesses through LLRs

The ultimate impacts of COVID-19 on Vermont businesses remain to be seen but the damage from the pandemic is evident by, for example, a seven-fold increase in unemployment from March 14, 2020 to July 18, 2020.[28] Nevertheless, some businesses may be in a position to invest in a clean energy

whether it was the final "package" of all of the offers that motivated them, could be helpful in identifying more effective program offerings to be used in the future.

[27] https://www.energy.gov/eere/slsc/loan-loss-reserve-funds-and-other-credit-enhancements

[28] Vermont Continued Claims for Unemployment Insurance. Vermont Department of Labor. https://labor.vermont.gov/sites/labor/files/doc_library/ContClaimsBySector08062020.pdf

project now. For financial institutions interested in lending to businesses that might be struggling during these challenging economic times, an LLR can provide an additional credit enhancement to encourage the lending institution to assist these businesses.

Commercial lending is significantly different than consumer lending. Businesses tend to have established relationships with lenders including pre-existing lines of credit. Unless a finance deal from a new lender is "too good to pass up", business owners are more likely to tap their existing relationships and resources when needing to finance a project. While the response rate to the business survey conducted as part of the *2018 Clean Energy Finance Report* was too low to provide significant findings, data from other reports support the initial findings from the 2018 survey.[29]

The two primary survey findings related to this discussion include (1) the obstacles businesses identified in moving forward with financing clean energy projects, and (2) options that might potentially motivate a business owner to move forward with financing a project. The primary obstacles for business owners, as shown in Figure 12, resemble those facing homeowners (e.g., reluctant to take on new debt, cost is too high, payback periods are too long). During the pandemic, these obstacles have heightened in significance. On the other hand, obstacles such as "too much of a hassle" could be improved upon if LLRs were offered to more lenders; an LLR that guarantees repayment for a portion of a loan portfolio can provide an opportunity for the lender to streamline underwriting procedures, thereby saving time and simplifying the application and review process.[30]

While none of the respondents stated that obtaining financing was extremely difficult, one respondent stated: "Time consuming and intricate, but readily do-able, if one puts their mind to it." For this reason, to the extent that lenders are able to make the loan process less burdensome (combined with general contractors providing clear and convincing information to the business owner as to which energy project is the most likely to meet his/her goals), LLRs may yield the highest and quickest impact across *several* lenders thereby potentially reaching *more* business owners (since business owners tend to utilize the institution with which they have a pre-existing relationship).

[29] *2018 Vermont Clean Energy Finance Report*

[30] Per written communication with VSECU. July 2020.

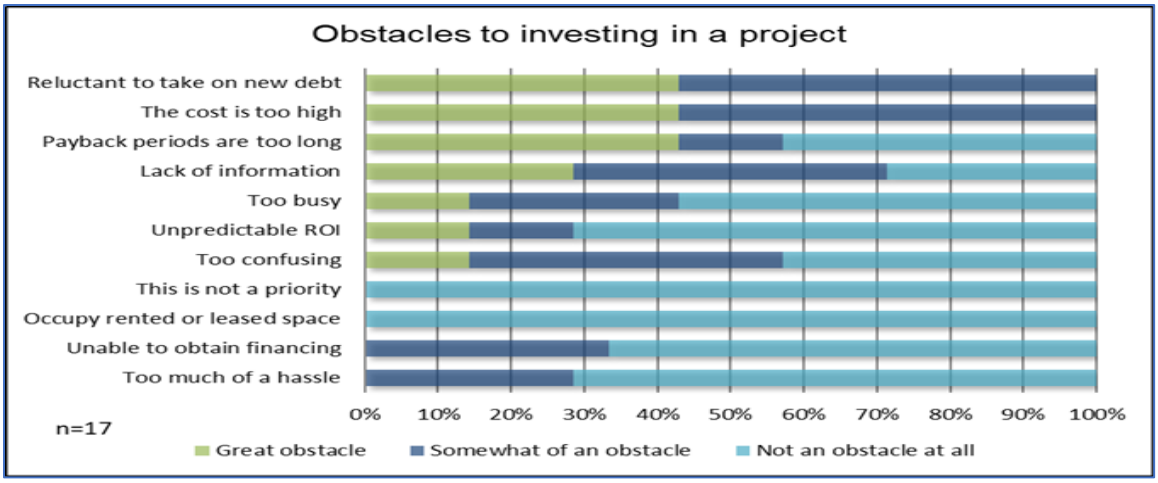

Figure 12. Obstacles to investing in a project[31]

A range of potentially motivating factors may encourage a business owner to move forward with financing a clean energy project (Figure 13). As described earlier regarding homeowners, there are various new initiatives underway that could help address some of these obstacles. For example, the PSD is currently working with Vermont Gas Systems, in their role as one of Vermont's energy efficiency utilities, to assess the opportunity to provide an energy savings guarantee. This potential pilot would be geared towards homeowners initially, and success in that sector could lead to expansion of this pilot into the business sector.

While this section of the report focuses on LLRs to assist lenders in increasing business loans in clean energy projects, an IRB would also be of assistance. In contrast to an LLR, an IRB directly reduces the cost of borrowing. Therefore, as described for homeowners, an IRB could also be considered for the use of potential funds, to assist with achieving "financing payments lower than the energy savings" and a "low cost loan", or, even to provide "0% financing". Depending on the buydown, the result could be "very motivating" for more than 70% of business owners surveyed in 2018.

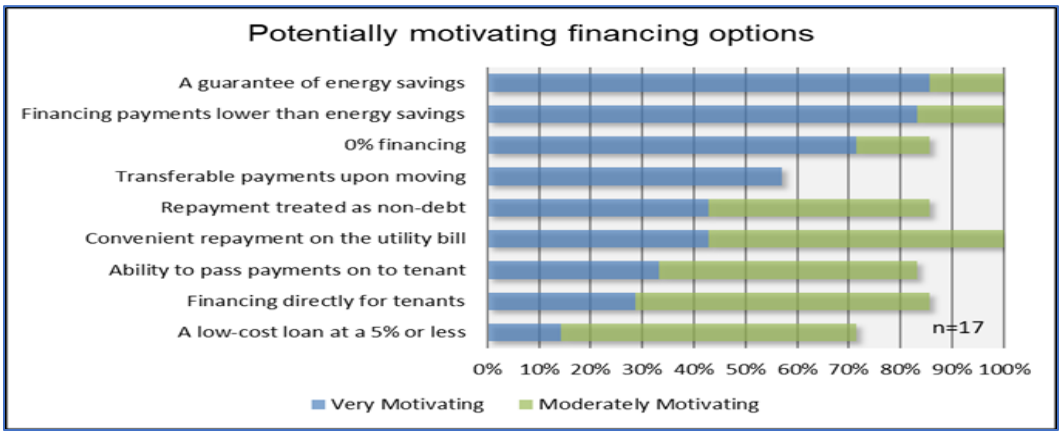

Figure 13. Potentially motivating financial options for businesses[32]

[31] *2018 Vermont Clean Energy Finance Report*
[32] Ibid.

3.2.3 Ease of Implementation and Potential Impact

LLRs can reduce the "hassle factor" for a business as well as support lenders in providing loans to businesses with a potentially higher credit risk. This is achieved because an LLR allows a lender to stretch its' underwriting terms, for example, to allow some businesses that would not otherwise qualify to be able to access capital, or to attain lower rates. Through their normal operations, financial institutions have direct experience with loss reserves, and many have worked with funding partners to create additional third party LLRs.

Like IRBs, LLR funds are committed or 'spent' and tracked monthly as loans close. This amount is held on reserve to 'back' the loans should they default. The funds are technically 'spent' monthly as they are obligated to the loans that close each month, but the total amount may remain in an account for a long time (e.g., the term of the loan) until all loans are paid off.

Since 2015, Efficiency Vermont has offered the Business Energy Loan (BEL) with 83 loans processed through June of 2020 (Figure 14). To date, no loans have defaulted.[33]

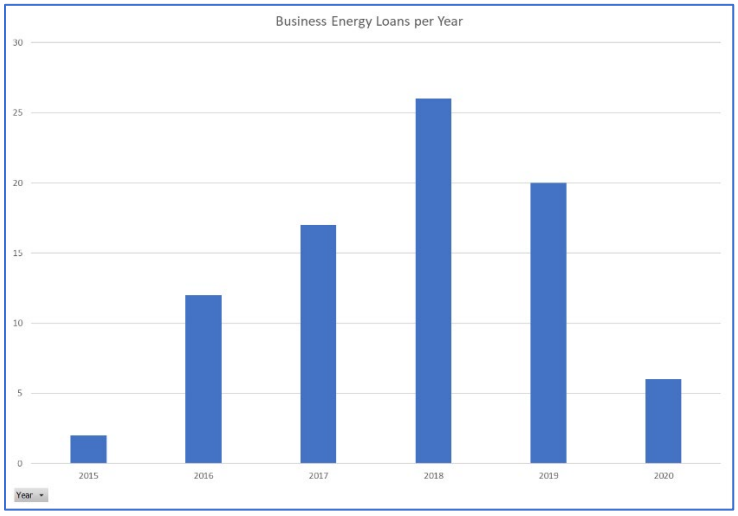

Figure 14. Number of Business Energy Loans per year; 2020 loans through Q2[34]

According to e-mail correspondence with Efficiency Vermont staff: "Our volume of loans for the BEL, for example, is much smaller than I would expect (great rate, super simple process, no financials needed). I believe this is due to not finding the right mechanism to promote it, since every customer that utilizes the BEL says it was great and they wonder why they didn't use it sooner."[35]

Providing funds for an LLR or an IRB would likely assist some business owners. However, as with HEL uptake by homeowners, if the goal is to see significant uptake of the BEL by business owners, it is likely that other steps or offers may need to be incorporated into the overall product offering. This may be additional incentives, as is currently true within the residential market, or it could be increased marketing of the BEL, based on the above quote, or it could require a mix of different ingredients. [36]

[33] Provided by e-mail communication from Efficiency Vermont staff. July 10, 2020.
[34] Data provided via e-mail by Efficiency Vermont staff. July 10, 2020.
[35] Information provided via e-mail by Efficiency Vermont staff. July 10, 2020.
[36] VSECU notes that the rates for the Business Energy Loan were lowered 25 bps effective April 2020 (to 3.5% for up to 3 years, 4.5% for up to 5 years, and 5.5% for up to 10 years).

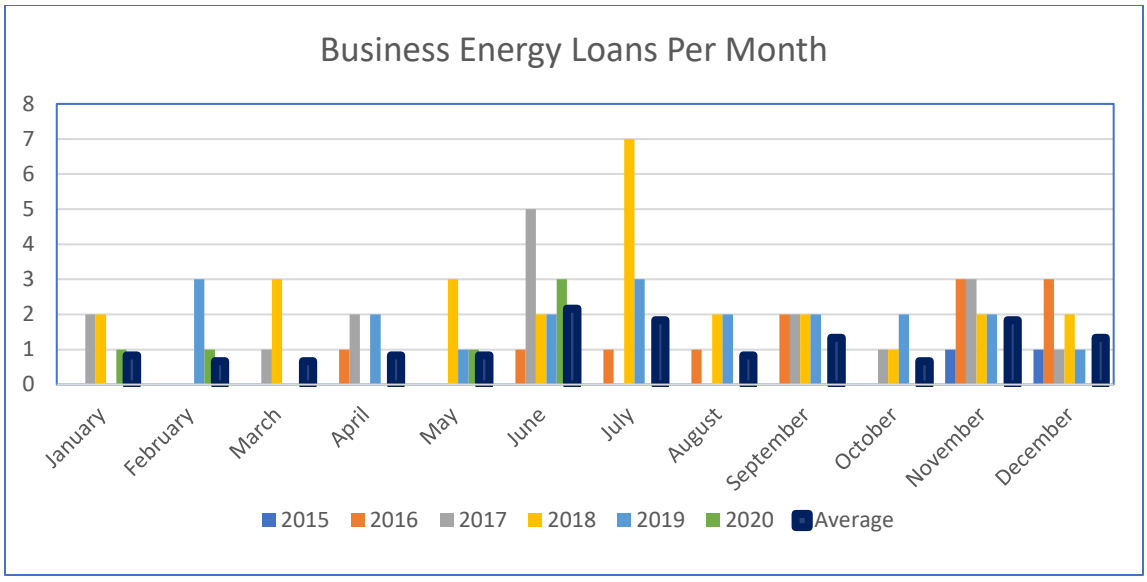

Figure 15. Business Energy Loans per Month[37]

3.3 Loan Payment Coverage

3.3.1 Product Overview

Loan payment coverage is the utilization of funds to make loan payments on behalf of the borrower. Loan payment coverage eliminates a barrier to initial participation, encouraging borrowers to invest in clean energy upgrades. A slightly different technique, in which payments are *deferred* for a set amount of time, has been used for years by auto dealers to sell cars (Figure 16).

Figure 16. Automobile advertisement of loan payment coverage[38]

3.3.2 Serving Homeowners through Loan Payment Coverage

Homeowners responding to the short-term benefits of relaxed payment requirements can reap the financial benefits of an energy upgrade while retaining their resources for other needs. This benefit

[37] Data provided via e-mail from Efficiency Vermont staff. July 10, 2020. Note that if there were no loan closures during a given month, this chart shows "white space" where the colored bar graph would otherwise be positioned.
[38] Advertisement example for information purposes only: no endorsement of this product is implied or expressed by the PSD or the State of Vermont.

is of particular interest during an economic downturn like the current pandemic, as it can help stimulate the local economy if homeowners spend more on local goods and services rather than the loan itself.

3.3.3 Ease of Implementation and Potential Impact

Efficiency Vermont and VSECU are currently offering a loan payment coverage program for clean energy upgrades for customers using the HEL beginning in the summer of 2020. Through this initiative, the first six months of HEL payments are covered by Efficiency Vermont through additional incentives, up to $900. The HEL is structured in three tiers with interest rates aligned with household incomes, which means that income-sensitivity is already incorporated into the product.

Payment deferment was also added to the BEL in response to COVID in spring 2020. VSECU will defer loan payment for approved applications received by 12/31/20. This is designed to mitigate concerns that business owners may have about taking on new debt in uncertain times, and gives time for the energy savings to begin to offset the monthly debt service and perhaps even build a savings cushion for when payments begin in January. According to VSECU, the deferment period structure depends on the loan size and term, but most loans can defer the first three loan payments, the fourth payment is interest-only, and beginning with the fifth payment both principal and interest are paid until loan is fully repaid.[39]

New loan payment coverage funding sources could potentially follow the same channel and process, either to extend the payment coverage beyond the current six-month offer or to increase the coverage provided for lower income Vermonters. With the approvals and mechanics already established between a funding source (e.g., Efficiency Vermont) and a financial institution (e.g., VSECU), this financing offer would be quick to implement.

3.4 Expansion of State Energy Management Program for Municipalities and Schools Using Revolving Loan Funds

3.4.1 Program Overview

The State Energy Management Program (SEMP) is housed within the Department of Buildings and General Services (BGS), in coordination with Efficiency Vermont. SEMP administers the interest of the State in all energy management measures, the implementation of energy efficiency and conservation measures, and the use of renewable resources in State-owned and -operated buildings and facilities, and space leased to the State. The SEMP is implemented through two revolving loan funds (RLFs) that are used to finance energy management measures in State buildings and facilities.[40]

As background, the SEMP model evolved from the energy services company (ESCO) form of energy performance contracting (EPC) employed by government and institutional customers across the US and internationally. The ESCO industry and EPC model represent an effort by companies like Siemens and Johnson Controls to identify and deliver energy services and efficiency improvements to institutional customers that are guaranteed to save more money than spent on improvements. Institutional customers are favored by ESCOs because they are stable, dependable organizations that

[39] Provided by email communication from VSECU staff. September 10, 2020. VSECU notes that despite the rate decrease and payment deferment, booked BEL volumes have been modest with six loans closed between May and August 2020.

[40] ACT 178 of 2014 Sec. 41 § 168 and Act 58 of 2016 Sec. E. 112 ENERGY EFFICIENCY; STATE BUILDINGS AND FACILITIES outline the details of the SEMP program.

lend themselves to the longer time horizons required to achieve energy savings relative to commercial enterprises.[41]

As articulated in the 2019 CEFR, ESCOs bring a broad range of knowledge and expertise to the table but are also profit-driven entities with substantial overhead costs associated with each project. Unfortunately, the experience of the municipal/utility/schools/hospital (MUSH) sector in working with ESCOs in Vermont has demonstrated that most ESCOs are not interested in lower cost projects, and the larger energy retrofits that are attractive to ESCOs are limited by the financial model. To address this shortcoming, the SEMP includes key components of the EPC model, as shown in Figure 17. However, rather than contracting with an ESCO to implement the full project, state employees can oversee some or all this process.[42]

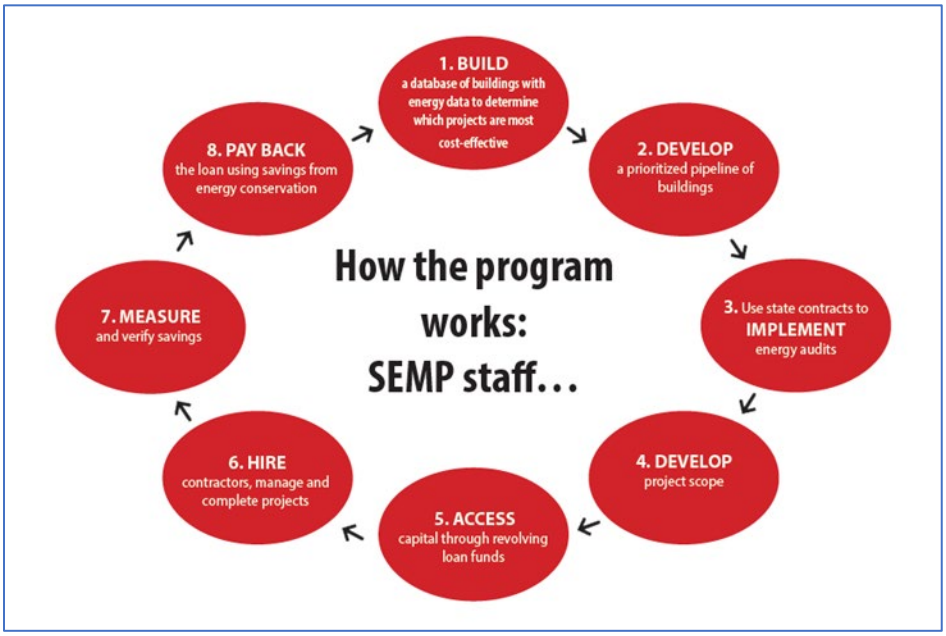

Figure 17. SEMP programmatic model[43]

Since the inception of SEMP, 57 projects have been completed with nine currently in process for a total of 66 projects. Projects range from building envelope improvements to central power/heating plants to lighting, metering and energy data monitoring, renewable installations, waste management, and equipment and appliances. (Figure 18) Total proposed costs for these projects is just under $9 million with annual savings of nearly $1.2 million and lifetime savings projected at $17.6 million. [44]

[41] This descriptive paragraph is provided by the Vermont Department of Buildings and General Services.
[42] See *2019 Clean Energy Finance Report* for details regarding SEMP mandate and management structure, including authorizing statute.
https://publicservice.vermont.gov/sites/dps/files/documents/Renewable_Energy/CEDF/Reports/2019CleanEnergyFinanceRpt_CEDF.pdf
[43] Ibid.
[44] Provided by SEMP staff via e-mail. July 30, 2020.

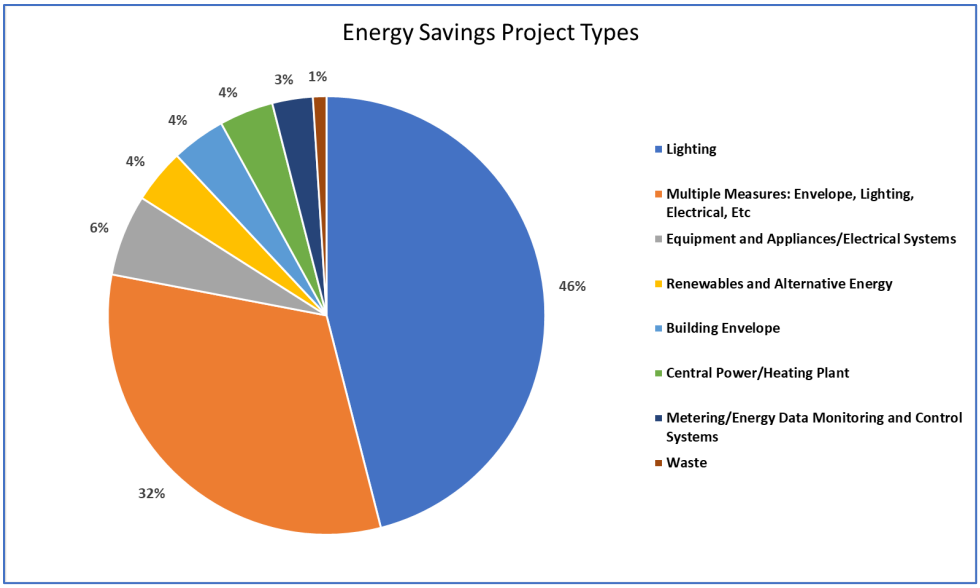

Figure 18. SEMP Energy Savings by Project Type as of July 2020.

This year, BGS initiated a process to extend the SEMP program model to serve municipalities and schools. Grant funding has been secured to support the pilot for a two-year period. This funding is intended to cover the costs associated with program staffing and some initial energy audits. The current model stipulates that construction project funding will be financed through the Vermont Municipal Bond Bank's *standard bond* process. If a *revolving loan fund* were made available specifically for municipalities and schools to implement energy efficiency projects (this would require a change in statute as well as additional funding), it would likely strengthen the program and increase uptake. The Bond Bank has experience operating the State Revolving Fund (SRF) Program, a similar revolving loan fund for green infrastructure loans related to drinking and wastewater infrastructure as well as natural resource conservation projects.

3.4.2 Serving Schools and Municipalities through SEMP

The *2019 Vermont Clean Energy Finance Report* focused on the clean energy financing needs for towns and cities. In this previous report, these entities indicated that additional funding to buy down project costs and support upfront energy audit costs would be one of the best ways to expedite projects and increase voter support for expenditure requests.[45] When asked about this opportunity, BGS staff suggested that a revolving loan fund could be created to support these projects. Additionally, staff identified that potential RLF funding requirements would need to be flexible enough to accommodate the varying agreements associated with municipal and school district owned or funded facilities.

With active engagement from BGS, a set of municipalities in the state would be offered the opportunity to pilot the SEMP model, shown above in Figure 17. As BGS qualifies projects for the pilot program, the selected municipalities would need financing. As described earlier, historically, the

[45] *2019 Vermont Clean Energy Finance Report*. Prepared by Energy Futures Group for the Vermont CEDF at the PSD. Montpelier, Vermont. June 30, 2019. https://publicservice.vermont.gov/sites/dps/files/documents/Renewable_Energy/CEDF/Reports/2019CleanEnergyFinanceRpt_CEDF.pdf

Vermont Municipal Bond Bank (VMBB) has provided access to financing through its regular bond issuances. However, for some towns and cities, the bond process can have a variety of barriers. For example, it is a lengthy process including a vote by the municipality on town meeting day that culminates with the bond sale (typically nine months later), there is no ability to refinance, and although origination fees are shared across a wide bond issuance, they can still be considered substantial by some. Furthermore, given the economic uncertainties resulting from COVID-19, it is likely that voters' hesitancy about increasing local expenditures may be heightened, even if done so through a very low interest bond. Therefore, access to financing through a new revolving loan fund dedicated to municipal projects in addition to or instead of bond financing would likely help projects progress faster.

3.4.3 Ease of Implementation and Potential Impact

SEMP has several years of proven performance (as articulated above), staff with expertise in identifying energy savings opportunities, project management and financing opportunities. Additional funding for SEMP through potential stimulus dollars could be provided to expand the SEMP staff or to augment available funds for project implementation or to enhance loan offerings to schools and municipalities.

Figure 19 below shows the current pipeline of projects in the queue for the SEMP. Funds could be used to increase capacity within the SEMP program to immediately address this backlog. Potential funds could, alternatively or additionally, be used to expand SEMP into providing municipalities and towns with project and financing support—although, as articulated earlier, this would require a statutory change to authorize SEMP to play this role. Furthermore, to achieve significant project uptake, the RLF should, ideally, operate with low- or no- interest with statute articulating that schools and municipalities can hold one vote to access these funds for their intended purpose at any time over a five or ten year period, rather than requiring a vote for each specific project.

Future Projects Under Development from Completed Energy Audits:

Site	kWh	MMBTU	$ Savings
Bennington District Court/Office (6080)	60,122		$3,802
Brattleboro State Office Bldg (6160)	29,218		$5,751
Burlington Zampieri Office Bldg (6174)	530,678	256	$74,227
Fair Haven Welcome Center (9250)	9,977	33	$1,985
Guilford Southeast Welcome Center (9734)	12,980	30	$2,346
Montpelier 2 Governor Aiken Ave	7,761		$1,507
Montpelier 4 Governor Aiken Ave (6002)	5,844		$743
New Haven Public Safety - CAMPUS	22,250	61	$4,349
Pittsford Admin Building (6288)	6,441	1	$1,290
Pittsford Firehouse (6272)	5,565	271	$4,906
Pittsford Warehouse (Behind Firehouse) (6284)	396	48	$859
Royalton Troop HQ - CAMPUS	5,087	65	$1,681
Rutland McKinley Ave - COMPLEX	14,213	17	$2,452
Rutland Motor Vehicles (6307)	6,374	36	$1,380
St. Albans District Courthouse (6321)	22,690	367	$7,471
St. Johnsbury State Office Building (6340)	12,925	58	$2,727
Montpelier 115 State St and Annex (6018)	93,403	12,399	$12,399
Montpelier 120 State St (6020)	133,331	1,032	$26,612
Montpelier 133 State St (6025)	48,712		$51,770
Montpelier 109 State St and Connector (6014)	273,377	718	$40,879
Totals	**1,301,344**	**14,675**	**$249,136**

Figure 19. Future SEMP Projects Under Development

Revolving loan funds are well-known finance tools for public entities and have been used in Vermont for energy projects since the American Recovery and Reinvestment Act of 2009 (ARRA).

According to the U.S. DOE, "Revolving loan funds are an excellent way to provide access to capital to borrowers who might not have other resources, reduce borrowing costs, and create jobs. States are encouraged to align the goals of their RLFs with overall SEP program goals."[46]

3.5 Other Products

The products and programs described above have been identified by lenders and program implementers as relatively easy to implement with the most likely market uptake, and therefore, overall impact. However, other opportunities are available, as described below.

3.5.1 Revolving Loan Fund

Revolving loan funds have been mentioned previously, as they pertain to SEMP. An RLF is a self-replenishing pool of funds that are drawn upon to lend money. The purpose of an RLF is to provide continuous support to new projects. The fund, which can easily be combined with other financing tools, is replenished as borrowers repay existing loans and those funds are then used to issue new loans. Ultimately, this means the management of the funds requires a long-term investment and commitment. The CEDF previously created a revolving loan fund with ARRA funds. However, CEDF ultimately found that other financial institutions were providing similar products and terminated its loan programs. Utilizing stimulus funds to augment existing programs such as SEMP would be easy to implement while ensuring repeated, long-term use of the funding dollars. RLFs could be set up via other governmental jurisdictions to facilitate energy financing depending on the capacity and interest of potential host institutions.

3.5.2 EV Charging Station Loans

There are multiple benefits to shifting willing Vermonters to "drive electric". Vermont's transportation sector is the largest emitter of greenhouse gases in Vermont (as compared to the thermal and electric sectors).[47] Furthermore, the dollar savings achievable by shifting from internal combustion to electric vehicles (EV) is well known.[48] These dollars could then be re-circulated within Vermont, rather than sent out of state. However, to increase purchases of electric vehicles, owners must feel confident that there will be charging stations available. While many EV owners charge their vehicles at home, increasing the number and access to charging stations throughout Vermont is a critical step to mass adoption to address issues such as range anxiety.[49]

Vermont Economic Development Authority (VEDA) currently offers an electric vehicle charging station loan funded through the State Infrastructure Bank (which is operated by VEDA in conjunction with the Vermont Agency of Transportation and the Federal Highway Administration).[50] Sole proprietorships, partnerships, corporations (for profit and non-profit) and municipalities can apply, with the one requirement that the station must be made available for use by the general public. The loan is

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[46] *Revolving Loan Funds and the State Energy Program*. U.S. Department of Energy. July 6, 2009 https://www1.eere.energy.gov/wip/pdfs/sep_rlf.pdf

[47] *2020 Annual Energy Report*, Vermont PSD. Montpelier, Vermont. January 15, 2020. Pg. 8.

[48] https://www.energy.gov/eere/electricvehicles/saving-fuel-and-vehicle-costs

[49] https://www.greenbiz.com/article/ev-adoption-grows-charging-infrastructure-needs-do-same; and 2020 Annual Energy Report, pg. 45.

[50] https://www.veda.org/financing-options/vermont-commercial-financing/electric-vehicle-charging-station-loan-program/

currently a 1% fixed interest rate up to $100,000, with the term dependent on the useful life of the asset.

However, VEDA has not seen significant uptake of this product.[51] There are a variety of reasons for this, not the least is that installing an EV charging station is expensive with little to no financial return, resulting in a lack of revenue to pay back the loan.[52] Pairing the VEDA loan with, for example, a discount or an incentive on charging stations could create a more compelling package. For example, if an entity (e.g., state government or utility) were able to receive a bulk purchase discount with a charging station vendor and then transfer that discount to the purchaser of the charging station, that could also assist in increasing uptake. While a 1% loan is highly competitive from a lender perspective, in the current lending environment, a 0% subsidized loan could also assist in driving adoption, at least for a limited period. All these opportunities could potentially benefit significantly from infusion of potential stimulus funds, particularly if the program offering were marketed more.

3.5.3 Energy Mortgage

The United States Department of Energy recently awarded a group of Vermont entities with a Small Business Innovation Research grant to develop a more-affordable, automated, replicable approach to incorporating actionable energy information into the mortgage process and finance energy improvements for existing homes. This "Energy Mortgage" program will flag inefficient homes in the mortgage underwriting and origination process and then encourage financing of energy improvements in the mortgage loan. As shown in Figure 4, the initial cost of larger energy projects impedes homeowners from undertaking the work. However, if the project cost is rolled into the overall initial mortgage, then this cost becomes a minor part of a monthly mortgage payment.

If more funding were to become available, it could be utilized swiftly to incentivize appraisers to undertake the training to become a "green appraiser" and to offer "green appraisals". One of the first identified impediments to ensuring an Energy Mortgage is available to the marketplace is not only a dearth of appraisers, it is a complete lack of "green" appraisers – individuals who are trained to identify energy savings investments and measures when appraising the value of a property. Providing incentives to current upcoming appraisers to invest in augmenting their skill set would not only help the Energy Mortgage program as identified here, it would also assist in ensuring that the value of new, "green" construction and retrofits is accurately captured by appraisers trained in determining this value. Ultimately, this could assist making energy improvements that are often "invisible" (such as weatherization or more efficient household equipment) more visible, and therefore more marketable, to the end consumer and the marketplace overall.

3.5.4 Interest Rate Guarantee

Interest rates are currently at an all-time low. This is helpful in the near term for borrowers who can obtain fixed rate loans, but for adjustable rate mortgages or commercial loans, interest rates will increase as the economy improves and demand in the market rises. The goal of an interest rate guarantee is to decrease interest rate risk for borrowers, by providing a guarantee to the lender that allows the lender to fix the rate for a longer term than they would normally.

[51] Communication with VEDA staff. June 7, 2020.
[52] E-mail communication with Burlington Electric Department General Manager. July 1, 2020.

The rate guarantee operates similarly to an interest rate buydown, except that in this case payments to the lender would not be required unless/until the underlying base rate (e.g., prime rate) increases. This structure may appeal to some lenders who can offer fixed-rate credit to borrowers only for short periods of time placing the risk/cost of increasing rates on the borrowers.

As with loan loss reserves, the funding partner must commit resources potentially for many years before any funds would be drawn. Unlike an LLR, however, funds would be drawn based on changes in base interest rates in the market—not defaults—and thus would apply to all loans in a portfolio covered by the interest rate guarantee. Ultimately, this type of mechanism is likely to be beneficial for commercial entities investing in higher cost projects, such as a new heating system.

4. Conclusion

Investment in clean energy projects does not need to come to a halt because of COVID-19. As safety guidelines foster re-opening of the economy, clean energy projects may be good candidates to help property owners save money, while simultaneously stimulating the economy. There may be additional funding via the federal government that allows for an expansion of current program resources. To capitalize on this opportunity, it is essential to focus on programs and tools that can be brought to scale quickly that leverage private resources.

As highlighted in this report, there are a number of products, including IRBs and LLRs, with which some Vermont financial institutions are already familiar and have processes in place to manage. By focusing on these existing frameworks, it is possible to make the best of the current situation and respond in a way that provides the maximum benefit for Vermonters in the shortest amount of time. If implemented successfully, funding invested in the programs and products discussed in this paper could result in a number of benefits: assisting Vermont with meeting environmental and clean energy goals, assisting Vermonters with saving on energy costs while also creating the need for many new clean energy related jobs.