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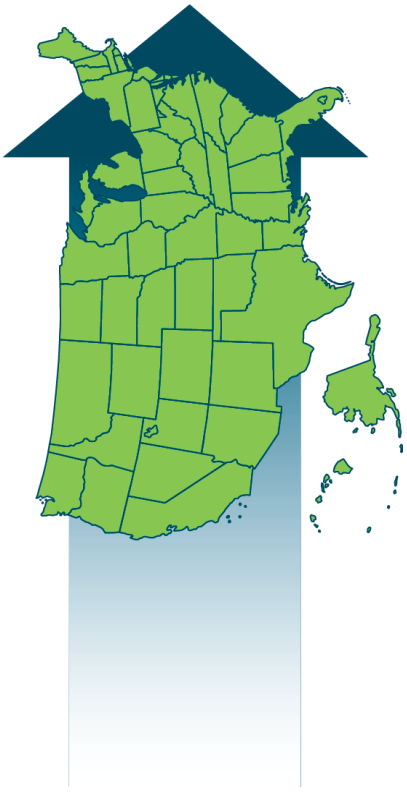

Accessing Secondary Markets as a Capital Source for Energy Efficiency Finance Programs: Program Design Considerations for Policymakers and Administrators

APPENDICES

Financing Solutions Working Group

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The State and Local Energy Efficiency Action Network is a state and local effort facilitated by the federal government that helps states, utilities, and other local stakeholders take energy efficiency to scale and achieve all cost-effective energy efficiency by 2020.

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Acronyms and Definitions

ARRA	American Recovery and Reinvestment Act of 2009
CDFI	Community Development Financial Institution
CEW	Clean Energy Works
DOE	U.S. Department of Energy
Keystone HELP	Pennsylvania's Keystone Home Energy Loan Program
HERO Program	Home Energy Renovate Opportunity Program
NYSERDA	New York State Energy Research and Development Authority
PACE	property-assessed clean energy
UCC	Uniform Commercial Code
WHEEL	Pennsylvania's Warehouse for Energy Efficiency Loans program

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Appendix A. Selling an Energy Efficiency Loan Portfolio in Oregon: Resale of the Craft 3 Loan Portfolio to Self-Help Credit Union

Under the Clean Energy Works (CEW) program, Craft3 developed a loan product that widened access to financing for homeowners, offered long-term funding, and collected repayments through the customer's utility bill. The program's success led Craft3 to pursue the sale of the loan portfolio to both mitigate its own risks and replenish funds for lending. This sale breaks new ground for energy efficiency finance and is notable as it was completed even with many novel program design elements. It replenished Craft3's program capital and uncovered some valuable lessons that may facilitate future transactions. However, the lack of data history and the unproven nature of the loan portfolio meant that Craft3 had to limit the risk of losses to Self-Help, the purchaser of the portfolio. It remains to be seen whether this experience will pave the way for more sales of on-bill energy efficiency loan portfolios. This case study illustrates how certain program design decisions can sometimes both facilitate programmatic objectives and possibly present challenges for the sale of a portfolio of energy efficiency loans.

Creating a Portfolio of Energy Efficiency Loans

Craft3 started lending in partnership with the Clean Energy Works (CEW) program in 2009, and by December 2013 had amassed a portfolio of approximately $21.3 million in loan assets. The loans were made to owner-occupied single-family homes for energy efficiency upgrades that met the CEW program requirements. The loans are collected through the homeowners' utility bill and secured with a subordinate mortgage lien on the property or a UCC 1-A filing on the improvements.[1] Loans in the portfolio vary in term and size, but Craft3 originally established a cap of $30,000 over a maximum of 20 years.[2] The program aims to expand access to capital, and therefore is open to customers with FICO scores as low as 590 who may not be able to obtain attractive financing elsewhere.[3]

KEY PLAYERS

Renewable Funding is a privately-owned finance company that focuses on finance and program design for building retrofits. Along with operating the WHEEL program, they also operate PACE, secured loans, and On-Bill Programs.

Pennsylvania Treasury is responsible for administering over $120 billion of public funds. They also operate some finance policy initiatives that benefit Pennsylvania residents (e.g., the Keystone HELP energy efficiency loan program).

Energy Programs Consortium includes a number of national associations that seek to coordinate state and federal energy policy and program development.

The on-bill repayment feature of the program is primarily used as a collection mechanism, as there is no threat of utility service termination should borrowers fail to make debt service payments.[4] Interest rates for the program are low (5.99%) despite the low credit thresholds and the long funding terms (e.g., consumer financing is rarely offered beyond 10-year terms without a first lien on a property). The program is supported by a loan loss reserve funded primarily with an American Recovery and Reinvestment Act (ARRA) grant received by the City of Portland through the Department of Energy's Better Buildings Neighborhood Program, which covers Craft3 for losses of up to 10% of its on-bill loan portfolio.[5]

[1] The loan is collected by the utility that provides the home's primary fuel used for space heating and cooling.

[2] Since March 2014, new loans have been restricted to 15-year terms and are only secured against the UCC 1-A filing on the improvements.

[3] The program uses a combination of traditional and innovative underwriting methods. A traditional credit score check is performed and utility repayment history is examined. For more information see the previous Clean Energy Policy Brief *Alternative Underwriting Criteria – Using Utility Bill Payment History as a Proxy for Credit: Case Study on Clean Energy Works Oregon*, LINK.

[4] When a loan becomes 90 days delinquent, the utility removes the loan from the bill and Craft3 is responsible for any future collections on that loan.

[5] The 10% loan loss reserve is funded from several sources: ARRA funds, utility customer funds, State and City funding, foundations, and other sources.

Motivation for the Sale

Craft3 had anticipated the need to eventually sell its loan portfolio when it started to lend under the CEW program. The long terms of the loans presented a risk for the organization, as its own funding sources (which it used to make loans to program participants) were typical of a CDFI (community development financial institution) with terms between 5 to 10 years. Offering 20-year loans from funding sources with much shorter terms created a mismatch in the terms of its assets and liabilities (see sidebar). Craft3 took a calculated risk in offering these long-term loans, anticipating that it would be able to refinance its current funding when necessary or sell its portfolio of loans and use the proceeds to pay any debt service due.

THE RISK OF ASSET-LIABILITY MISMATCHES

A material mismatch of the funding terms of assets and liabilities presents a risk for a lender when its own funding sources have a shorter term than the assets (here, the on-bill loans). Simply put, Craft3 was not scheduled to be paid back by borrowers in time to repay its own debts. For a CDFI, it is unusual to obtain financing beyond a 10-year term. In order to offer the most flexible options for customers and potentially match energy savings to repayment obligations, Craft3 chose to take a risk and offer loans that had longer terms than its own funding sources. To meet the obligation of its own debt, Craft3 needed to be able to refinance its own credit facilities, sell the loan portfolio, or manage any shortfalls from its equity.

With limited available funds, Craft3 needed additional funding to meet future demand for the program and could have obtained additional funding on similar terms to its existing funds (5-10 years). However, this would have increased its exposure to the risks of mismatched assets and liabilities. For Craft3, selling the portfolio could replenish its funding for lending, ameliorate its asset liability mismatch risk, and help it establish a relationship with a longer-term capital partner.[6]

Finding a Secondary Market Partner

In early 2012, following a strong two-year period of demand for loans through the CEW program, Craft3 actively started to look for a financial institution to purchase the loan portfolio. Craft3 enlisted the help of several industry consultants to identify possible partners and quickly faced the reality that commercial banks had limited interest in purchasing the portfolio. The relatively young age of the portfolio, novel program design features, and a lack of property valuation data made the assessment of risk exposure challenging for commercial banks.[7] It became clear to Craft3 that it would need to find an organization with an aligned mission that was motivated to break new ground for energy efficiency financing, and willing to take on a considerable due diligence effort to complete this transaction.

In late 2012, Craft3 staff attended an industry conference looking to find an organization interested in purchasing the loan portfolio. They had previously had informal conversations with Self-Help about a possible sale of the loan portfolio, and discussions at the conference suggested that the timing might then be right as Self-Help was looking for opportunities to deploy capital. Self-Help found itself with additional liquidity following several acquisitions and mergers since 2008 and was also expanding its secondary markets programs. The environmental, job creation, and workforce benefits of the CEW program and Craft3's focus on making financing broadly accessible meant that a purchase of the loan portfolio provided an opportunity to deploy the available capital within the scope of Self-Help's mission. Furthermore, Self-Help was attracted by the unique opportunity to support the development of on-bill clean energy financing markets.

[6] CDFIs often raise capital from a mix of commercial banks, foundations, and public sources, typically with funding terms of less than 10 years.

[7] Novel design features included the on-bill collection mechanism and the longer term funding that was only secured by a subordinated mortgage lien. Craft3 also did not have information on the valuation of the property, nor the details of other liens on the property, which made it difficult to assess the value of the subordinated mortgage lien for potential portfolio purchasers. As such, Self-Help viewed these loans as essentially unsecured.

Self-Help is a regulated depository institution and the capital it was seeking to deploy was from its general pool of depository funds.[8] This meant that the deal had to meet the requirements of a regulated and federally insured depository institution. For Craft3, completing a transaction with a regulated depository institution provided an opportunity to: (1) understand the requirements and underwriting rigor associated with a market-rate transaction, and (2) demonstrate to other regulated entities the viability of investing in energy efficiency loans.

Structuring the Deal

Finding a motivated partner proved crucial for the ultimate success of this transaction as the deal took over a year to complete and involved significant time and staff resources from both parties. It took a significant amount of time to finalize the contractual agreements that governed the on-bill repayment mechanism because they involved multiple parties and impacted the ultimate flow of principal and interest payments.[9]

Another key challenge was the relatively short loan history for participants in the CEW program and the reality that there were few comparable loan portfolios from which to estimate likely performance. Self-Help had to find loan performance comparators from other industries to develop an expectation of loan performance for the portfolio. They used unsecured consumer loans as the comparable portfolio as they realized the limited value that subordinated mortgage liens would have in a foreclosure, and were unable to assess the potential value of the lien in the absence of property valuation data or first mortgage amounts.[10] Furthermore, Self-Help was not able to quantify any additional value of the on-bill collection mechanism from a risk standpoint. Self-Help also excluded some portions of the portfolio from the transaction to mitigate risk and meet regulatory demands.[11] Exclusions included:

- Loans from borrowers with FICO scores below 620;[12]
- Any loan that had ever been more than 60 days delinquent;[13] and
- Loans repaid on the bills of one of the collecting utilities, with which a contractual agreement had not yet been finalized.

Following these exclusions, Self-Help agreed to purchase 74% of the total value (principal balance) of the loans in the Craft3 portfolio. The purchased portfolio included 1,251 loans with a total outstanding value of $15.7 million, which was approximately the price paid for the portfolio. Most loans in the purchased portfolio had 20-year terms and ranged in size from $769 to $29,761 with an average loan size of about $12,500. Self-Help also sought protection against the risk of portfolio losses, in view of its obligations as a regulated depository institution and in light of the loans being considered essentially unsecured.

[8] A regulated depository institution is a financial institution that is legally allowed to accept monetary deposits from consumers and provides insurance on those deposits, subject to regulation. Credit Union deposits, like Self-Help's, are insured by the National Credit Union Administration (NCUA).

[9] One challenge was that the loans used a simple interest calculation and followed the utility bill payment schedule, which was very different from standard mortgage loans that accrue compound interest. Since the utilities can change the due date of payments at will because of the contractual agreements, certain loans could look delinquent even if the customer had made the payment on time. Self-Help and Craft3 have had to accommodate for these significant differences in monthly principal and interest reporting and reconciliations.

[10] Craft3 did not collect information on the property value or the amount of the first mortgage; thus, Self-Help was unable to determine loan to value (LTV) ratios of the loans. It was therefore difficult to assume that there would be value in a subordinated mortgage lien. Where the subordinated mortgage lien does add value is that the note would appear in any future title searches. Any subsequent lender would see the loan on the property and likely ensure that it is paid off before providing a new mortgage.

[11] Some of the exclusions are similar to conditions that may be seen in related secondary markets, such as mortgage investments, where Self Help has experience.

[12] This minimum credit score is still low relative to standard loan product underwriting that often features a minimum credit score of 680.

[13] One challenge encountered from the on-bill repayment process is that, due to timing differences between the Craft3 administration system and the utility reporting cycle, loans can appear delinquent when they are not. Craft3 and Self-Help have come to understand this and adjusted the purchase exclusion as necessary. Typically, secondary market transactions for home lending exclude any loans that have been 30 days delinquent in the last 12 months.

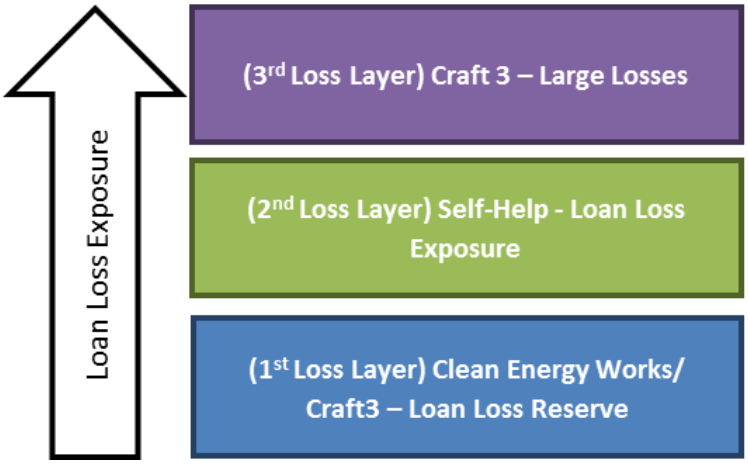


Figure A - 1: Hierarchy of Loan Risk Following the Transaction

The final transaction was structured to mitigate those risks by transferring all existing loss reserves to Self-Help and layering on several additional elements described in more detail below. In exchange, Self-Help agreed to pay approximately the face value (or "par value") of the loans.[14] Craft3 agreed to purchase back any loans that became delinquent within the first 12 months of the loan being originated, which helped mitigate any risks associated with its original underwriting and address Self-Help's concern that loans that became delinquent in this period would be more likely to default in the future.[15]

The transaction can be thought of as a hierarchy of loan loss exposure (see Figure A-1):[16]

1. Initial losses are covered by a loan loss reserve (LLR) held in a cash account by Self-Help. The reserves are comprised of the original loan loss reserve provided by CEW for the program from ARRA funds, and an additional amount provided by Craft3 to facilitate the transaction. The additional reserves consist of proceeds from the sale that were essentially held back to cover losses.[17] Together, these reserves are pledged as loss protection until Self-Help becomes comfortable that the risk of losses is sufficiently low for the funds to be released.[18]
2. Self-Help is then exposed to loan losses as owners of the portfolio. However, their losses are limited in scale by the third loss layer.
3. Craft3 has provided a full guarantee against losses that exceed a certain level (large losses) through full recourse to its balance sheet. This was provided to mitigate the risk of major shifts in performance of the portfolio arising over time from catastrophic events (e.g., a major economic downturn). It also served to mitigate a specific legislative risk identified by Self-Help: the obligation on the utilities to collect the repayments was created through state legislation and not contractually with Craft3. This lack of contractual control over the collection mechanism presented a remote, yet material, risk to Self-Help that a legislative change might alter collection payments.[19] The protection against large losses proved to be critical to enable the transaction to go ahead from Self-Help's perspective.

[14] By purchasing the portfolio at face value, or "at par", the purchase price is equal to the principal outstanding on the loans and Self-Help is scheduled to get a return equal to the interest rate on the loans. This interest rate (5.99%) is low for unsecured consumer credit. The layers of risk mitigation reduced the risk of loss to a level where Self-Help was satisfied with the balance of risk and return and agreed to purchase the portfolio "at par". Without the risk mitigation, Craft3 may have had to sell the portfolio at a discount to the "par value" to increase the scheduled return to a level typically seen for unsecured consumer credit.

[15] Repurchase clauses are common for certain other types of secondary market transactions, such as mortgage sales. Originators may be required to repurchase underperforming loans that do not meet certain representations and warranties regarding due diligence during underwriting. Typically, originators are protected from repurchase risk after a fixed period, such as 12 or 36 months.

[16] While the parties were willing to share the overall structure, they refrained from disclosing certain details of the risk mitigation structure (e.g., specific dollar amounts) due to proprietary considerations.

[17] These proceeds are held in an account at Self-Help, though they are treated as part of Craft3's balance sheet.

[18] Self-Help expects to review the status of these reserves with Craft3 approximately every two years. Craft3 and CEW have agreed independently from Self-Help that the CEW funds would be released first.

[19] In 2009, the Oregon Legislature passed HB 2626, known as the Energy Efficiency and Sustainable Technology Act (EEAST). The legislation compels investor-owned utilities (IOU) to offer On-Bill Repayment. An IOU that wants to opt out of the program needs a waiver from the Oregon Public Utilities Commission (PUC). While this risk is remote, a legislative change could alter collection payments.

Finally, Craft3 made changes to its portfolio administration to meet the requirements necessary for a regulated financial institution. Those included, but were not limited to, shortening the transition of a loan from delinquency to default status and ensuring that data collection standards were sufficient to provide reports on a monthly basis.

Conclusions

Craft3 developed an innovative financial product designed to overcome the perceived barriers to financing energy efficiency measures. It widened access to financing for homeowners, offered long-term funding, and collected repayments through the customer's utility bill. The program's loan volume led Craft3 to pursue the sale of the loan portfolio to both mitigate its own risks relating to mismatches of assets and liabilities and replenish its funds for additional lending. The successful sale breaks new ground for energy efficiency finance and is notable as it was completed with many novel program design elements. Table A-1 describes how some of the program design features impacted the transaction and may be relevant for other program administrators considering the impact of design features on their own program.

Table A - 1: Analysis of how Craft3/CEW design features impacted the transaction

On-bill collection of the loans	The on-bill repayment of the loan was a key factor in attracting Self-Help to this transaction. Self-Help was interested in assessing (and hopefully demonstrating) that on-bill loans with long-term performance data represent a low risk and can be re-sold. However, for the purposes of this transaction, Self-Help was unable to quantify any credit-enhancing benefit of the on-bill collection mechanism, and the loans were thus assessed as being unsecured loans. The complex and novel contractual framework of the on-bill repayment mechanism added additional time and due diligence costs to the transaction.
Subordinate mortgage lien	The subordinate mortgage lien provided little financial value to the portfolio purchaser, as Self-Help assumed that it was unlikely to ever be exercisable. The lack of current property value data and the amount of the first mortgage also meant that they were unable to establish loan-to-value ratios and assess the potential residual value in the case of a property foreclosure.[20] However, Self-Help would not have been able to purchase these loans without the security provided by the UCC 1-A fixture filing, which ensured that the loans would show up during a title search and therefore have to be paid or modified at the time of a refinance or property sale.
Loan loss reserve	The transfer of the existing loan loss reserve, along with additional reserves from proceeds held back, helped facilitate the sale of the loans at par value. However, the transfer also prevented Craft3 from using the existing loan loss reserve to cover additional originations until the funds are released by Self-Help.
Long-term loans	The long-term lending presented Craft3 with a risk of mismatched asset and liability terms. To Self-Help, this presented a greater risk of default as the loans may be outstanding through a number of economic cycles. Additional credit enhancements were needed to execute the transaction due to this risk. Craft3 has since modified its loan terms, offering a maximum 15-year term in order to facilitate future secondary market transactions.
Loan terms and alternative underwriting criteria	The program used a combination of traditional and innovative underwriting methods. Craft3 then provided loans at low interest rates over a long term with only a subordinated mortgage lien. These program design decisions were made to attract customers and expand the customer base in a market that has struggled to drive demand. However, Self-Help assessed the transaction as the purchase of an unsecured loan portfolio that would typically have a higher level of return. Self-Help required a significant amount of risk mitigation from Craft3 and CEW in order to purchase the portfolio at approximately par value and mitigate risks in accordance with its status as a regulated depository institution.

[20] In March 2013, Craft3 made the decision to switch from securing the loans with real property liens to UCC 1-A fixture filings, which have much fewer regulatory requirements (e.g., no need for documentation of flood insurance on the property).

Craft3's engagement with the administration systems of a regulated depository institution provided them with valuable experience and prepares them for future portfolio sales. Exposure to the data collection standards, reporting systems, documentation, and servicing platforms facilitated changes to their own processes that will make any future transactions easier. Craft3 has also started to adapt their loan product to the needs of their customers and with a view to further loan portfolio sales in the future. Subsequently, they reduced the term of their loans to a maximum 15-year term. This has, in part, been due to the strong demand for the 10-year loan product from other lenders in the marketplace. Reducing the maximum loan term allows Craft3 to make future loan portfolios more attractive for sale while still offering a financial product that overcomes financing barriers for energy efficiency. Craft3 also ceased filing subordinated mortgage liens, based in part, by their experience in this transaction.

Self-Help's experience helps prepare it for on-bill loan portfolio purchases going forward. Spending time understanding the relationship between all the actors in the on-bill mechanism and the contractual agreements that govern their roles and obligations was critical as these could impact the monthly loan payments or a workout situation in some way. Finding a mission-oriented counterparty proved critical to the success of the transaction. However, it does highlight a challenge for other program administrators as these willing counterparties may be difficult to find until the risks and long-term performance of on-bill loans are well understood by the financial community.

The details of the deal itself reflect the reality that the on-bill repayment mechanism and long-term loans not secured by a first mortgage lien are considered by many lenders to be novel assets with uncertain value. The lack of performance history data for this loan type and the unproven nature of the portfolio meant that Craft3 and CEW had to limit the risk of losses to Self-Help in order to complete the transaction. It remains to be seen whether this experience will pave the way for further sales of on-bill energy efficiency loan portfolios with a more complete transfer of loan loss exposure. Program administrators may find that they need to take significant, and potentially costly, steps to mitigate risks in these transactions until the risks and returns of energy efficiency loans with on-bill repayment are better understood by financial institutions through demonstrable performance data.

It is clear from this experience that efficiency program goals may not always overlap with the interests of prospective purchasers of loan portfolios. For example, program administrators may place value on offering long-term, on-bill unsecured loans with expanded underwriting criteria. Potential financial partners may perceive additional risk in these features, and either seek a discount in the purchase price or require the seller to mitigate the risk of losses. Some program design decisions may not fit into a "standardized" loan product that is currently well-understood by the financial market; however, it may be important for program administrators to take these risks in order to create new products that better enable the deployment of energy efficiency. In doing so, they will start to develop the performance data needed for financial institutions to properly assess the impact of these program features on the risk and performance of the loan assets. These tradeoffs need to be carefully considered as policy makers and program designers contemplate both the ability of program features to attract customers and meet program goals, and also the viability of longer-term sources of capital for efficiency financing programs.

Appendix B. Reaching the Bond Market with Energy Efficiency Loans: The Warehouse for Energy Efficiency Loans[1]

Accessing the bond market may offer energy efficiency finance programs a reliable, scalable, and low-cost source of capital. The Warehouse for Energy Efficiency Loans (WHEEL) is a public-private partnership that is working to overcome the challenges to accessing the bond market by standardizing loan features and aggregating loans across multiple states and programs. Program administrators that wish to participate in WHEEL can either align an existing program, including the loan product, to the WHEEL requirements or they can support the launch of a new program administered directly by the WHEEL partnership. In either scenario, the participating program administrator must commit to providing a credit enhancement in the form of subordinated capital. Those program administrators that are considering participation in WHEEL should evaluate whether the standardized loan products (3-, 5-, 7- or 10-year unsecured loans) meet the needs of their stakeholders. They should also evaluate alternatives that may provide sufficient scale for their needs at lower or equivalent cost. Even if alternative approaches can offer outcomes that have comparable or lower costs in the short term, program administrators and sponsors may choose to participate in the WHEEL initiative because they want to support WHEEL's long-term vision and objectives (to provide access to low cost private capital and the ability to scale to meet almost any level of demand).

Accessing the Bond Markets?

Accessing the bond market offers energy efficiency finance programs the possibility of a reliable, scalable, and low-cost source of capital. This may become important if energy efficiency finance programs grow to the point of needing large volumes of private capital to support their activities. Established credit products (e.g., home mortgages, car loans, and credit card debt) use bond markets to supply the funding capacity needed to meet demand. Banks and finance companies originate these loans and then package them as secure, low-risk debt assets (bonds) that pay a moderate return over time. This is known as securitization. Assets backed by energy efficiency loans should be well suited to the needs of large bond investors such as pension funds and insurance companies, as these loans tend to be short to intermediate in tenure, and the assets can be structured to be low-risk. By replicating the securitization model used by established credit products, a sustainable source of capital could be made available to energy efficiency programs.

However, using the bond market as a source of capital is challenging for a new and developing class of debt. Bond investors are looking for assets with well-documented performance so they can calibrate and price the riskiness of those assets. A lack of performance history for energy efficiency loans will, in itself, represent a risk to investors. Furthermore, while the financing costs (i.e., interest rates) from bond issuances may be low, the transaction costs and ongoing servicing costs of securitized loans can be high. A large volume of loan-backed assets with similar characteristics needs to be generated to ensure that those fixed costs can be spread to minimize the impact on the overall cost of capital. The Warehouse for Energy Efficiency Loans (WHEEL) is designed to provide programs with a route to the bond market by standardizing loan features, aggregating loans across multiple programs, and collecting data on loan performance. WHEEL's first securitization, which according to WHEEL administrators is anticipated in Q2 2015, will provide valuable feedback from investors and may reveal lower investor interest rate requirements than originally anticipated.

The Warehouse for Energy Efficiency Loans (WHEEL)

WHEEL has been set up to act as a loan aggregator that 'warehouses' loans until they can be securitized and sold to secondary market investors (see sidebar). The WHEEL concept can be traced back to the Pennsylvania Treasury's efforts to attract private capital to their unsecured residential energy efficiency loan program (i.e., Keystone HELP). The Pennsylvania Treasury had initially funded Keystone HELP with treasury funds supported by a

[1] This case study reflects information available as of Q4 2014. The WHEEL program is actively developing in response to program and investor reception; for the most up-to-date information, see www.renewfund.com/wheel.

loan loss reserve from the Pennsylvania Department of Environmental Protection. The low cost of treasury funds, along with the loan loss reserve, enabled the Keystone HELP program to provide inexpensive unsecured loans to their customers.

The program proved popular, with approximately $40 million of projects funded in three years. In order to continue to offer the program, the Pennsylvania Treasury decided to look for a more sustainable source of capital that could expand beyond investments of public funds. They saw loan portfolio sales as a possible opportunity to access private funds to replenish their program capital. The program achieved an initial sale of a portfolio of 4,700 loans for $31.3 million to a consortium of local banks (Fox Chase Bank, WSFS Bank, and National Penn Bank). However, in the long term, the Pennsylvania Treasury wanted a model that could be replicable and scalable and decided that accessing the bond market would meet these objectives.

Together with the National Association of State Energy Officials (NASEO) and Energy Programs Consortium, the Pennsylvania State Treasury developed the WHEEL concept as a way to recapitalize their Keystone HELP program. WHEEL would need an administrator, and in 2011 Renewable Funding, a finance company based in Oakland, California, specializing in energy efficiency financing models, took on the task of developing WHEEL. Renewable Funding worked with Citigroup Global Markets (Citi) and the Pennsylvania Treasury to structure a warehouse facility that would provide administrators of energy efficiency loan programs with the ability to leverage their funds with private capital and ultimately securitize the loans funded by the warehouse line.

LOAN AGGREGATOR/WAREHOUSE

A loan aggregator uses an available capital source such as a line of credit (a warehouse facility) to fund loans with similar characteristics and hold them temporarily in a warehouse. The purpose of the aggregator is to generate a portfolio of sufficient scale to make securitization and sale to secondary investors cost-effective. Scale is desired for several reasons:

a. Transaction costs of securitization are significant. Ratings agency, legal, and banking fees add a material cost to transactions. Spreading those costs over a larger asset pool reduces the impact on overall interest rates offered to consumers.

b. The cost of ongoing servicing of securitized assets can be material so is better spread across a large pool of assets to reduce the impact on the overall interest rates.

c. A degree of scale is needed to attract bond investors in order to minimize the administrative costs per loan of analyzing the investment and to create familiarity with the asset amongst bond investors to make trading of the assets easier.

How WHEEL Works

WHEEL is designed to enable multiple programs to participate; and the more programs that participate, the more cost effective the securitization becomes. Program administrators that wish to participate must align their program to the WHEEL requirements and commit to providing credit enhancement in the form of subordinated capital. Participating programs must offer an unsecured loan product with maximum repayment periods of ten years. This straightforward product type is required by WHEEL as it enables investors to easily and accurately assess risk and avoid uncertainty associated with novel program design features (e.g., collecting the loans on utility bills). Along with prescribed loan parameters, programs must align their underwriting processes, minimum eligibility criteria, and data collection protocols to the WHEEL requirements. Consistency is needed to enable rating agencies and investors to assess the loan portfolio and reduce the variability in expected performance.

WHEEL's standardized data collection protocols are designed to capture the information needed to establish energy efficiency loans as a stand-alone asset class. WHEEL collects loan performance data that is familiar to investors as well as two key pieces of information that identify the loan as an energy efficiency loan. First, they record the energy efficiency measures that are being funded, ensuring that they are on an approved list. Second, they check that the installation has been performed by a contractor qualified by the program. Building off the existing Keystone HELP portfolio, it has been possible to compare the performance of the WHEEL loans to other forms of consumer finance. If the loans do out-perform other consumer loans, this pattern could ultimately lead to

lower financing costs to consumers and to participating programs (in the form of reduced program credit enhancement contributions).

The investment of program funds into subordinated capital in the WHEEL funding structure represents a minority of the total WHEEL loan funding (approximately 20%). This investment is designed to be repaid to the participating program with a moderate return if the loans perform as anticipated. However, as a junior investment, it is exposed to the most risk, and any losses experienced by the portfolio will reduce the amount of program funds that are returned. The program funds act as a credit enhancement for the remaining funding in the portfolio (i.e., the senior funding), as the full value of the program contribution must be exhausted before senior lenders are affected by loan losses. [2]

Figure B-1 illustrates how WHEEL will operate over time, as summarized below:

A - Loans are originated. Programs that participate in the WHEEL platform must use lending partners that have been vetted by capital providers and Fitch Ratings. Financial partners must be vetted to ensure that both the origination and servicing are performed to the standards required for securitization. To date, program administrators in Pennsylvania and Kentucky have chosen to use AFC First as the originator and servicer. AFC First and any future lending partners are responsible for underwriting the loans, including the application of WHEEL's eligibility criteria. The lending partner will initially fund the loans before selling the loans to WHEEL. Before WHEEL purchases the loans a series of checks are performed to ensure that the eligibility criteria have been correctly applied and documentation standards are met.

B – Loans are securitized. Once the pool of loans in WHEEL has reached critical mass, Renewable Funding will securitize the loan portfolio and sell the bonds to investors. Proceeds from the sale will be used to pay off the line of credit provided by Citi and the Pennsylvania Treasury, with the bonds taking on the senior position in the funding stack.[3]

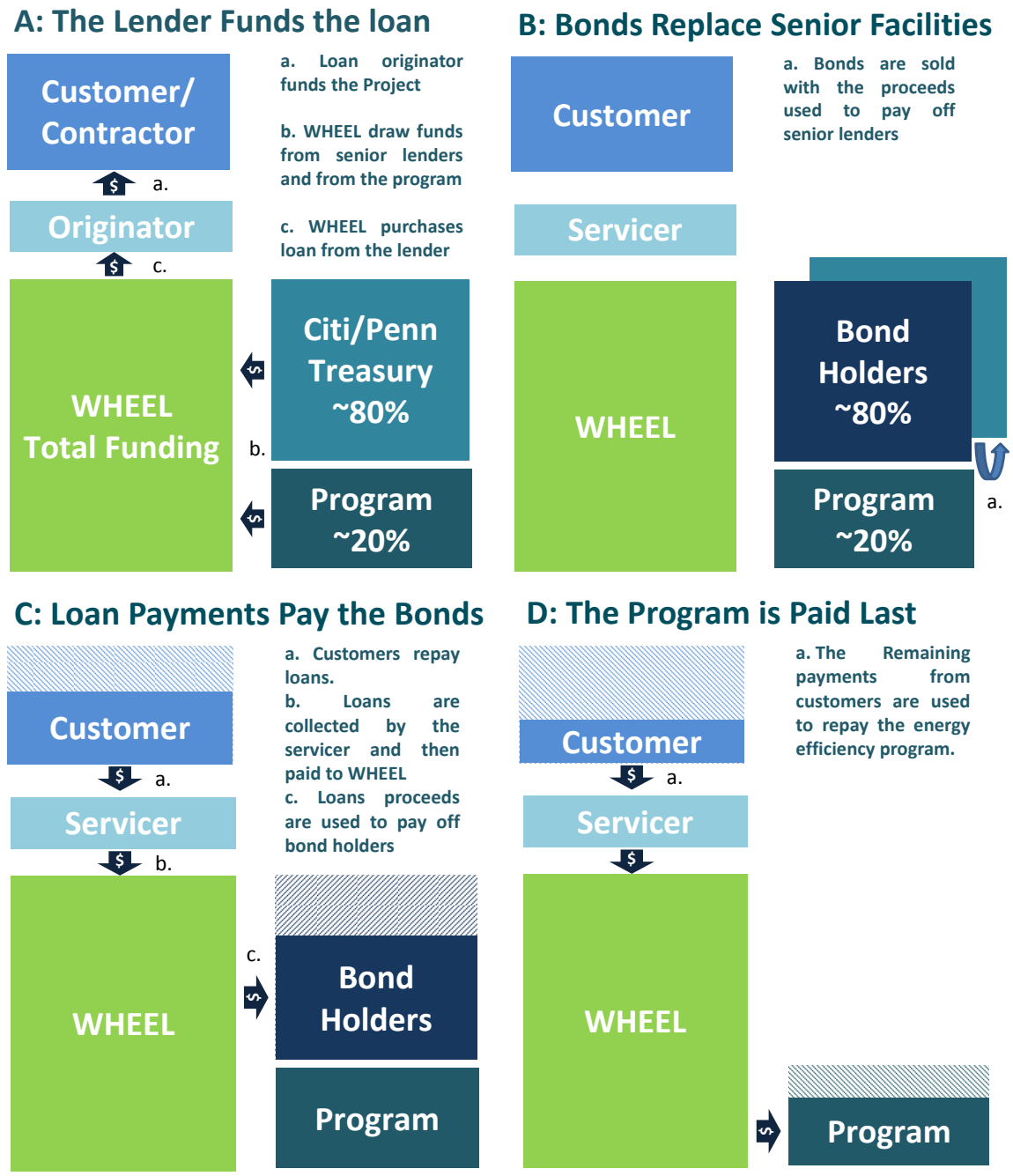
C – Loan repayments are used to pay down the bonds. The bond sale will be over-collateralized. Specifically, Renewable Funding will only sell bonds that are worth about 80% of the loan portfolio's outstanding value but will apply all of the asset repayments (after administrative costs) towards paying the bonds while the bonds are outstanding. Loan defaults would therefore have to be extraordinarily high (over 20%) for bond holders not to receive repayment. Overcollateralization is intended to help the bonds achieve a strong rating, which is expected to lower the cost of funds to WHEEL.

D – The program administrators will start to receive repayments on their investment after the bonds are paid down. The length of time that program administrator must wait before receiving repayments depends on the average loan term of the portfolio. With 10-year loans, this could be up to eight years after origination. In reality, the average term of the loans across a portfolio may be lower and many loans will repay early. As a result, Renewable Funding anticipates that programs will start to receive repayments five to six years after contributing to the portfolio.

[2] A contributing program's funds are utilized to directly support loans originated in that program's jurisdiction (i.e., losses impact the program in which they occur). If losses exceed a program's contribution of subordinate funds, then losses would impact other participants; however, this would only happen in the case of much higher than expected losses.

[3] The Pennsylvania Treasury acts as a senior lender in the warehouse line that is available to all programs, which is distinct from Pennsylvania's own subordinate program contribution.

Figure B - 1: How WHEEL works



The Cost of Participation

Energy efficiency program administrators should weigh the overall costs and benefits of participation in WHEEL. In the long term, the ability to access the bond market with its low cost of capital and large volumes of available funding may provide WHEEL with advantages compared to other primary lenders. However, in the short term, there may not be a significant cost advantage compared to alternative approaches. For example, many programs have successfully achieved significant leverage on program capital and low funding costs by providing credit

enhancements to local or mission-based lenders. These programs have not necessarily found it a challenge to meet the current levels of loan demand in efficiency finance programs.[4]

The cost difference between alternative approaches that do not rely on secondary markets and WHEEL may be particularly pronounced for the period of time before WHEEL's first securitization. Once completed, the WHEEL securitization will provide valuable feedback from secondary market investors that may allow WHEEL to modify the credit enhancing features of the program and potentially reduce costs to program participants. As of this writing, according to program administrator Renewable Funding, WHEEL's first securitization is pending and the platform has expanded to include Kentucky, Florida, Virginia, and New York. As additional states participate in WHEEL over time, it is anticipated that all participating states will benefit from reduced costs.

Despite the costs of participating in WHEEL during its early stages, states may choose to take the long view and enroll in WHEEL today with hopes of ensuring that secondary market capital will be available and well-priced in the future.

Energy efficiency financing programs typically offer attractive financial products with the hope of increasing program participation or encouraging deeper retrofits for more energy savings. WHEEL's project partners are working together to address the challenge of allowing participating programs to offer attractive financing while also providing sufficient income to sustain commercial returns for investors and a high quality servicing operation suitable for securitization. Comparable indicators suggest that commercial interest rates for unsecured financing products similar to WHEEL can be priced in the range of 12-14% or higher.[5]

In evaluating the total cost of participation, the program administrator should consider the following;

a. The amount of required investment into subordinated funding to achieve the WHEEL base interest rate.

WHEEL currently offers a base rate of 9.99%,[6] of which an estimated 4% is attributable to servicing costs. The 9.99% rate is achieved by using subordinate capital that is supplied by program administrators rather than commercially sourced. The amount of subordinated funding required from the program is calculated on a loan-by-loan basis and varies depending on the credit score of the individual customer. The minimum credit score accepted is 640. In practice, this is expected to lead to average program contributions of around 20%. At the 9.99% interest rate, program administrators can therefore achieve leverage on their program capital that enables five times the number of loans from their available program funds.[7] The trade-off for this leverage is the subordination of the funding, which will not be returned to the program administrator until the senior lenders are fully repaid (see Figure B-1). If loans perform as expected, the program funds will earn a moderate return (low single-digit risk-adjusted yield). However, this moderate rate is only a fraction of the expected returns that a commercial investor would likely require for providing funding with a similar risk exposure and therefore the subordinate investment from the program can be considered subsidized funding.

b. Additional optional interest rate buy-downs to achieve low interest rates.

Program administrators that want to further reduce the interest rate of the loans available through WHEEL are given the opportunity to buy down the interest rate. Interest rate buy-downs have been historically used by program administrators to reduce financing costs; however, they can also be relatively expensive. When a program administrator provides a buy-down, it pays the lender the additional return it

[4] For example, in Massachusetts the HEAT Loan program now sources approximately $100 million annually through a local lender network, with a cost of capital of 4.99% over seven years. However, some participating lenders have recently reported constraints on their ability to fund additional HEAT loans.

[5] Fannie Mae historically offered a similar product to states in this range, while some products offered by vendors through a clearinghouse supported by the Electric and Gas Industry Association have carried even higher rates.

[6] According to program administrator Renewable Funding, the WHEEL base rate could fall as much as 200 basis points, to 7.99%, after the first securitization, which Renewable Funding anticipates in Q2 2015. The new base rate will be announced in the second quarter of 2015.

[7] The remaining 80% of the funding is sourced initially from a line of credit from Citibank and the Pennsylvania Treasury, and ultimately, is planned to be funded by bond investors. By investing on 20%, a program administrator can achieve a leverage ratio of 5:1. For example, if WHEEL has $100 million of loans funded, approximately $20 million will have been funded by program administrators with the remaining$80 million from senior investors.

would have received at a higher market interest rate. Participants in WHEEL reported that the current buy-down methodology used in these early stages of WHEEL led to particularly high contributions on their part. They explained that the reason buy-downs are more expensive under WHEEL is that the amount needed to pay the difference between the interest rate offered by the program administrator in the EE finance program and the 9.99% interest rate over the life of the loan must be set aside in a secure and liquid account. This account earns very low returns but can be drawn upon every month to fill the gap between the program's below-market interest rate offered to customers and a market-based interest rate. By contrast, other programs typically calculate interest rate buy-downs on the assumption that the money paid to the capital provider can be reinvested and grown at the capital provider's required rate of return. Setting aside funds that earn a near-zero percent return can be substantially more expensive than paying a smaller amount that is allowed to grow. For example, on a $10,000, 10-year loan bought down from 9.99% to 5%, the difference in methodologies could translate into more than $1,000.[8] The precise difference depends somewhat on the interest rates available on highly liquid accounts; however, a substantial gap between the two approaches for calculating the cost of interest rate buy downs is still likely in most reasonable scenarios.

It should be noted however that WHEEL draws on the buy-downs over time as the funds are needed, which does potentially save money in the case of prepayments or defaults. If individual loans are repaid early or a borrower defaults, WHEEL is able to return any excess funds set aside for the buy-downs back to the program that provided them. Other programs that pay smaller buy-downs up front may eventually lose money in the case of prepayments or defaults, but some programs have implemented buy-down return agreements in the case of prepayments or other solutions that avoid this problem.

The total amount of funding that must be provided by program administrators for each loan may be relatively high once you consider the contribution to subordinated funding and the addition of an optional interest rate buy down. For example a program wishing to provide a 5% loan product through WHEEL could end up contributing around 50% of the value of the loan when interest rate buy-down and subordinate capital contributions are totaled. In this case, the initial leverage of program funds would only be 2:1.[9] The level of program contribution may seem high; however, it reflects the reality of using large-scale commercial capital for long-term unsecured lending products, particularly at this early stage of development. In some cases, these high program contributions may limit a program administrator's ability to originate new loans. For example, in July 2014 Pennsylvania stopped originating loans destined for warehousing in WHEEL, citing limits on funding available for subordinate capital contributions.[10]

Alternatives that offer more competitive funding may ultimately be limited in the long run if energy efficiency investments begin to approach their full potential. Furthermore, Renewable Funding anticipates that the program's design will be modified over time as opportunities arise to optimize benefits to participants, and that the costs of participating in WHEEL, and using commercial capital generally as a source for energy efficiency investments, will come down over time as it begins to play a more significant role in funding efficiency projects.

Fitting Program Goals into WHEEL

Beyond the financial cost of participation, program administrators that are considering participating in WHEEL should assess their ability to meet program objectives using the WHEEL financial product. Traditionally, program administrators will analyze market barriers and needs, establish program objectives, and then design a program with the tools and funding that they have available. Table B-1 presents some of the important program design considerations that program administrators should bear in mind when evaluating WHEEL as a financing option.

[8] The buy-down cost using the program rate would be just under $2,000, or almost 20% of the loan principal, whereas the cost using a near-zero rate would exceed $3,000, or 30% of the loan principal.

[9] In this case the program would be required to provide around 20% of the value of the loan as subordinated funding, with interest rate buy-downs being approximately 30% of the value of the loan. While the subordinated capital will be recovered and can be recycled, funds used to provide interest rate buy downs will not.

[10] States will have different limitations and opportunities given their particular circumstances, which may vary year to year.

Table B - 1: Program design considerations for participation in WHEEL

Program Feature	Program Design Considerations
Interest rate	A low interest rate is often considered key for programs seeking to encourage deep retrofits or high program participation. The relatively high WHEEL interest rate (currently 9.99%) reflects the use of unsecured market rate capital sourced from large-scale commercial investors. Reducing the interest rate to a low level may prove costly for programs, at least in the short term. If program administrators want to encourage comprehensive retrofits, they may consider offering different funding terms depending on how deep the retrofits are. For example, they could offer interest rate buy-downs for projects with multiple measures that achieve a minimum savings threshold (e.g., 10-20%). They could also tier the funding rate (with buy-downs) depending on the anticipated energy savings.
Maximum Loan Term	One popular program design for energy efficiency loan program administrators is to extend the tenure of the loans to ensure that the impact of the loan is bill neutral—that is, the total cost of the loan payment and future energy bill payment in a given period does not exceed the previous energy bill payment for a period of the same length.[11] The WHEEL loan is limited to 10 years in tenure and therefore, in many cases, bill neutrality may not be achieved. However, the WHEEL loan term is long for unsecured consumer lending, and attempting to extend terms out to greater lengths could impact the potential to securitize the loans, as well as the cost of funding available.[12] Program administrators that would prefer to offer longer loan terms to achieve bill neutrality might consider using alternative program designs with some form of security, a very robust credit enhancement, or a more flexible capital source.[13]
Unsecured vs. Secured Lending	The WHEEL initiative uses unsecured lending, which is typically the most expensive form of lending. Energy efficiency finance programs could obtain lower lending costs by using secured lending products that have lower risks for lenders. One tradeoff with secured financing programs is that some customers are unwilling or unable to provide security, so the reach of the financial product may be limited. Obtaining the form of security from the customer can also add processing time and potentially dampen demand.
Eligibility Criteria	WHEEL is able to provide loans to customers with FICO scores as low as 640. Program administrators that want to serve participants with lower credit scores will have to contribute a larger amount of subordinate capital to the loan pool, reducing program leverage. The reality is that program administrators are unlikely to be able to offer loans to customers with FICO scores much below 640 without using public or ratepayer funding or charging higher rates to cover the additional risks. Some programs attempt to widen access to finance through the use of alternative underwriting criteria (e.g., historical utility bill payment history). These alternatives may have success in widening origination. However, it is unclear whether commercial capital would be willing to accept these alternative approaches without charging a premium.

Designing a program will always require trade-offs. WHEEL may be well suited for program administrators with a goal of accessing commercial and sustainable sources of capital that are able to scale as demand for efficiency grows. Program administrators that are focused primarily on providing low-cost loans to help build customer demand or on addressing specific market gaps may want to assess the pros and cons of participating in WHEEL in the context of a broad range of available options.

[12] See www.keystonehelp.com for more detail and updated information on availability of WHEEL loans in Pennsylvania.
[13] It has yet to be demonstrated that longer funding terms do result in increased participation or deeper retrofits.

Conclusions

WHEEL creates an opportunity for energy efficiency program administrators to leverage program funding and ultimately access the bond market. It is not the only route that program administrators can use to access private capital. For example, as an alternative, energy efficiency program administrators can establish a loan loss reserve that can be used by local lenders (e.g., Michigan Saves, Connecticut Green Bank). Program administrators also have used the credit standing of public bodies to raise low cost capital.

WHEEL differs from these models in its potential to scale to almost any size on the basis of project revenue streams. It is not limited by the carrying capacity of primary lenders' balance sheets or by fiscal and policy constraints that may restrict general obligation bonds or other types of guaranteed securities. As such, it may be a first step in identifying a long-term solution to the potential capital supply constraints that may arise as demand for energy efficiency products and services grows. By securing secondary market capital from institutional investors, it may also provide one of the least expensive available private capital sources once it has matured. However, these potential advantages come with trade-offs in the short-term. The effort to securitize loans dictates that participating program administrators will have less leeway to develop financial products tailored to the needs of their customer base, and that costs of participation may, at least initially, be higher than alternatives.

WHEEL has successfully signed up programs in Pennsylvania and Kentucky, and, according to Renewable Funding as of this writing, at least four additional state programs will join in 2015. The addition of new participants would allow WHEEL to spread transaction and administrative costs more thinly, and the results of WHEEL's securitization, anticipated in Q2 of 2015, will potentially lower costs to consumers or to future program participants. Once completed, WHEEL's securitization will break new ground, as the first issuance of rated bonds backed solely by unsecured energy efficiency loan assets.

As WHEEL recruits additional programs and completes multiple securitizations, the costs of participation will likely come down over time. These cost savings could come from two sources: reduced administration and servicing costs, and lower required investor yields. Currently, the overall administration and servicing costs account for up to 4% of the interest rate. High volumes will allow WHEEL to operate more efficiently and spread these costs over a larger loan pool. Loan and securitized asset performance data may also demonstrate that energy efficiency investments bear lower risks than comparable consumer lending products, ultimately leading to lower funding costs that can be passed on to program administrators and participating customers.

Program administrators that are considering participating in WHEEL in its early stages should evaluate whether the WHEEL loan product is able to meet the needs of their customers as well as objectives of their state's policymakers and regulators. They should also assess alternatives that may provide sufficient scale at a lower cost.

Appendix C. Credit Enhancement Options for Asset-Backed Securitizations

Credit Features of an Asset-Backed Securitization

In this appendix, we describe internal and external credit enhancement options that are often required (or requested) by investors as part of an asset-backed securitization.

Internal Credit Enhancement

Certain types of credit enhancement in a securitization structure, such as subordination, overcollateralization, and excess spread, are considered "internal." These credit enhancements relate to the structuring of the transaction but do not involve layering on of an outside credit enhancement source like a reserve account or guarantee.

Subordination

In a securitization transaction, cash flows are divided and sold in layers called tranches. Each tranche has its own credit rating and is associated with a different level of risk and return. Different types of investors invest in these different tranches. Investors in the senior tranches are protected from losses by the tranches below them, which are the first to absorb losses. Loss protection for senior investors through subordination of additional tranches is a key form of credit enhancement in any securitization. In established markets, subordinated investors typically demand higher returns, given their increased exposure to risk. In an energy efficiency context, the program often plays the role of the subordinated investor, and the return received may be well below the market rate in order to increase the amount that can be transferred to senior investors. The Connecticut commercial PACE (property-assessed clean energy) sale and the WHEEL structure represent examples in which the programs act as subordinate capital providers.

OVERCOLLATERALIZATION AND SUBORDINATION

Overcollateralization and subordination typically play related roles in a single securitization structure. For example, if a sale is 10% overcollateralized, bonds equivalent to only 90% of the total underlying pool of loans will be offered. The seller or a third-party equity holder may provide 10% subordinate capital to achieve the overcollateralization.

Overcollateralization

Overcollateralization involves offering debt to investors in an amount that is less than the value of the cash flows of the underlying loans. This strategy ensures investors that the income received will be sufficient to cover the amount that they are owed, even if there are losses. The amount of overcollateralization will vary. For example, the WHEEL program features a 20% overcollateralization, while the HERO PACE sale was only 3% overcollateralized and Connecticut's PACE bonds were 4% overcollateralized. These differences may be due in part to the difference in the strength of security on the underlying loans. The loans in the WHEEL structure are unsecured while PACE loans are highly secured through a senior tax lien. Investors may be more concerned about losses on unsecured loans and demand additional credit enhancement, which can be provided in part through overcollateralization.

Excess Spread

Excess spread is an additional form of internal credit enhancement and represents the amount of interest income left over after senior investors and administrative expenses are paid. This amount can be diverted into a cash reserve account to cover future losses or simply diverted to senior investors after it is received in order to make the investors whole. Excess spread that is used for these purposes is typically diverted away from payments to the most junior subordinated investors, which in an energy efficiency context may be the sponsoring program.

Reserve Account

Reserve accounts are a related form of credit enhancement that may be created to cover the risk of losses and may be funded with an up-front set-aside from the loan originator or from an external source. Externally funded reserve accounts are sometimes referred to as cash collateral accounts.

External Credit Enhancement

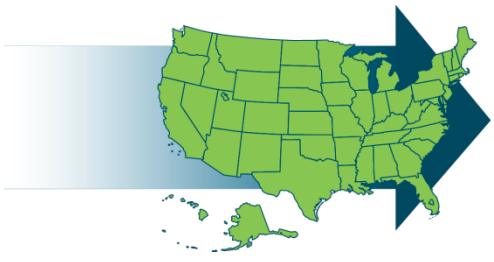
Credit enhancements that are funded from outside sources, such as cash reserves and guarantees, can be layered onto a securitization to further protect senior investors and are referred to as external credit enhancements. In a securitization transaction, externally funded cash reserves may represent a cost to the seller if the funds are used to protect senior investors from losses on existing loans rather than to cover losses of newly originated loans. While examples like this have not yet occurred in energy efficiency asset-backed securitizations, sellers such as Craft3 and NYSERDA have both pledged over externally funded reserve accounts in other types of secondary market transactions.[1]

Guarantees are one of the more common forms of external credit enhancement in the secondary market; Fannie Mae and Freddie Mac are the best known guarantors in the broader secondary market and provide guarantees on mortgage-backed securities. Guarantees have also been used in the energy efficiency loan context. For example, in the NYSERDA securitization, a separate state agency with a very strong credit rating provided a guarantee to investors that they would be paid regardless of the performance of NYSERDA's underlying loans.[2]

A number of other forms of external credit enhancement are possible and may be implemented in future securitizations of energy efficiency loans, such as insurance or letters of credit from a bank that can be used to reimburse investors in the case of any shortfalls.

[1] In NYSERDA's case, the external reserve account (funded by a federal Better Buildings grant) was actually pledged to the guarantor to cover any guarantee payouts, rather than directly to the investors.

[2] Unlike a cash reserve account, the guarantee to investors did not represent a direct cost to NYSERDA as it came from a state agency partner. However, the amount of collateral pledged by NYSERDA to the partner agency in order to obtain the guarantee was significant.



SEE Action

STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK