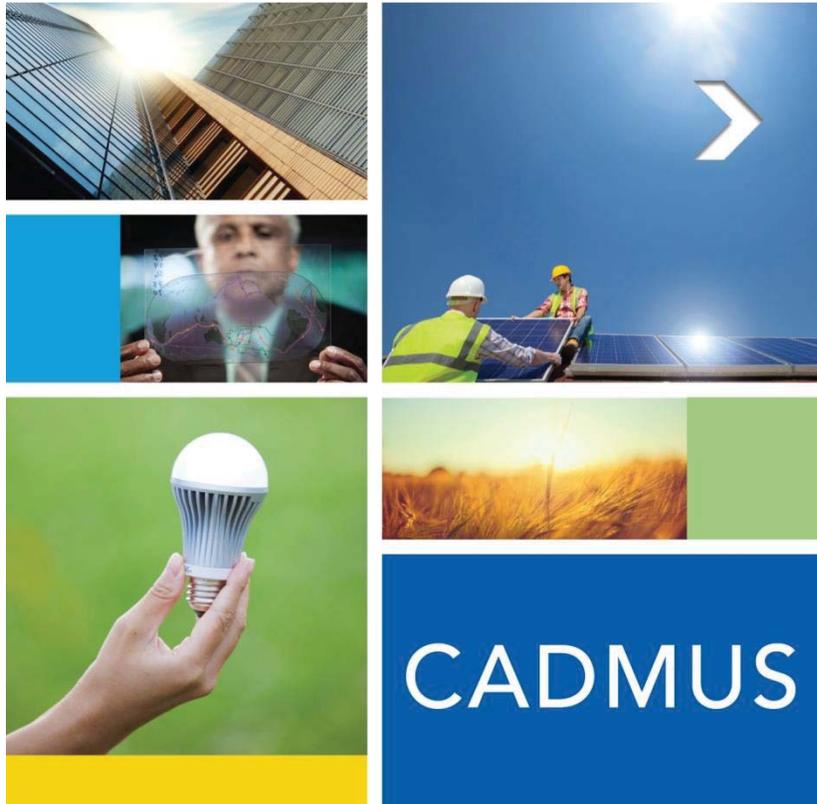


EVALUATION DELIVERABLES

Cadmus published three interim reports as part of the evaluation of the Illinois On-bill Financing Program. The table below indicates the status of each document. Interim reports #1 and #2 are included in the final report appendices as supporting detail. Cadmus received updated program costs after distributing the cost-effectiveness memorandum. Cadmus therefore retracts Memo #3, and instead submits the updated cost-effectiveness discussion in the main body of this report. The final status of each document is shown below:

Evaluation Interim Reports

Memo ID	Distribution Date	Description of Contents	Status
Interim Report 1	2/12/14	Participant survey results, net participation (net-to-gross) score	Adds detail to final report, included as Appendix
Interim Report 2	5/29/14	Partial participant survey results, retailer interview results, and contractor survey results	Adds detail to final report, included as Appendix
Memorandum on Cost-effectiveness Results	2/18/15	Cost-effectiveness results	Retracted in favor of updated results based on new information that are in main text of the final report



Illinois On-Bill Financing Program Evaluation

June 1, 2015

Illinois Energy Association

Ameren Illinois

Commonwealth Edison

Nicor Gas

Peoples Gas

North Shore Gas

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Executive Summary

In accordance with the amendment to the Public Utilities Act (PUA)¹ adopted by the Illinois General Assembly in 2009, the five investor-owned utilities (IOUs)—Ameren Illinois Company (AIC), Commonwealth Edison (ComEd), North Shore Gas (NSG), People’s Gas and Light (PGL)², and Nicor Gas—in Illinois have been offering the On-Bill Financing (OBF) Program³ since 2011. The program allows customers to finance the purchase of eligible energy efficiency improvements with no up-front cost and to repay the amount as a line item on their utility bill. The Illinois Energy Association, representing the IOUs, hired Cadmus and Research Into Action (Cadmus team) to conduct a process evaluation of the first three years of program implementation, from Electric Program Year 4 (EPY4) /Gas Program Year 1 (GPY1) through EPY6/GPY3⁴. The Cadmus team was tasked to provide information that would enable the Illinois Commerce Commission (ICC) to make a recommendation on whether the OBF Program should be discontinued, continued with modification(s), or continued without modification.

The OBF Program offers residential and small commercial customer loans of \$500 to \$20,000 for a tenor of three, five, or 10 years at a 4.99% fixed interest rate (5.99% for small commercial). To be eligible for the loan, customers must install an eligible high-efficiency measure. In addition, they must meet underwriting requirements, including a minimum credit score of 640. The OBF Program also offers a multifamily loan. The multifamily loan offers amounts up to \$150,000 and has different underwriting criteria depending on the loan amount.

Key Findings

Program Activity

From EPY4/GPY1 through EPY6/GPY3, the program reviewed 4,686 applications. Table 1 shows the distribution of applications over the first three years of program implementation. Because AFC First, the lender and program implementer, tracks the ComEd appliance program separately from the ComEd central air conditioner (CAC) program, we reported the results separately.

¹ Public Utilities Act (220 ILCS5/): <http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ChapterID=23&ActID=1277>

² PGL and NSG are owned by the same company, Integrys. In some cases data was reported for the two utilities jointly without disaggregation, and so that data is presented jointly in this report, and attributed to PGL/NSG.

³ The program is titled the On-bill Financing Program, however, the program design follows a model generally referred to as an on-bill repayment program, as the utility is not the lender.

⁴ These program years correspond to June 1, 2011, through May 31, 2014



Table 1. OBF Program Participation (EPY4/GPY1 through EPY6/GPY3)¹

Utility	Applications Declined	Applications Approved		Program Total
		Funded	Withdrawn	
AIC	802	940	206	1,948
ComEd – Appliances	665	124	128	917
ComEd – CAC	397	272	182	851
NSG	51	86	28	165
PGL	271	105	89	465
Nicor Gas	186	109	45	340
Grand Total	2,372	1,636	678	4,686
	51%	35%	14%	100%

¹Totals do not include applications that were pending as of May 31, 2014

Launch and Implementation

The program partners faced several obstacles during the start-up phase, which was staggered over two and a half years, from the first utility offering starting up to the last. AFC First reported that while their staff initially attempted to negotiate a joint contract among the participating utilities, ultimately the number of parties made the process too complex. Each utility thus negotiated a separate agreement with AFC First. Multiple participating utilities also complicated information systems development. To accommodate each utility’s system, AFC First built databases and data transfer systems that were unique to each utility. In addition, the early cost-neutral rules (requiring measures savings to equal the full measure cost) made it difficult to identify eligible measures. However, at the time of writing, these early obstacles have all been overcome, and staff expect to easily scale the program going forward.

Customer Eligibility and Attrition

The program has an overall 51% denial rate, though the utility-specific rates vary widely, from 31% for North Shore Gas (NSG) customers to 73% for ComEd customers applying to purchase an appliance.

Table 2. Denial Rate by Utility

Utility	Total Applications	Applications Denied
AIC	1,948	41%
ComEd – Appliance	917	73%
ComEd – CAC	851	47%
NSG	165	31%
PGL	465	58%
Nicor Gas	340	55%
Total	4,686	51%

AFC First used eight categories to track reasons for application denials. Table 3 ranks reasons according to the frequency with which they were used. Not meeting the minimum required credit score was the most common reason AFC First denied an application. Non-payment of other obligations reported in the credit report but not included in the credit score was the second most frequent reason for application denials, followed by a bankruptcy in recent years.

Table 3. Applications Declined

Decline Reason	Number of Denied Applications	Percentage of Total Denials
Credit score below minimum requirement	1,008	42.5%
Delinquent past or present credit obligations	894	37.7%
Bankruptcy past or present	255	10.8%
Program does not grant credit on the terms and conditions requested	101	4.3%
Excessive obligations in relation to income	68	2.9%
Per utility company, unacceptable payment history	16	0.7%
Type of equipment purchased does not meet the program requirement	15	0.6%
Customer does not own the property	9	0.4%
Total Denials	2,372	100%

Attrition also occurs after a loan is approved. Just over 28% of all applications that were approved were never funded because the recipient changed their mind. This “withdrawn application” rate was similar for all of the five utilities.

Measure Eligibility

Under the original Public Utilities Act (PUA) language, the law required the utilities to identify only cost-neutral measures to include in the program. This rule sharply limited the number of measures that the utilities could offer, and Nicor Gas was unable to identify any measures that satisfied the rule. After the law was changed to allow any measure approved for a portfolio program rebate, three of the utilities opened their OBF offering up to all measures included in their portfolio, including Nicor Gas. However, PGL and NSG continued to offer a more limited selection of measures.

The OBF Program funded a variety of measures during the evaluation period. AFC First provided detailed measure data for loans funded from EPY5/GPY2 through EPY6/GPY3 (June 2012 through May 2014). Table 4 shows the number of each type of eligible measure purchased as part of a program-financed project during this period. The most common measures are gas furnaces, central ACs, and insulation, in that order. A number of projects included multiple measures. Table 5 shows the number of projects with one, two, three, four, and five measures during the evaluation period (no projects had more than 5 measures). As a program, 64% of projects are single measure. However, this table also shows how each



of the three most common measures were distributed across each project size (size refers to the number of measures in the project). Over half of the three most popular measures were purchased as part of a multiple-measures project.

Table 4. Distribution of Measures Financed by Program Loans (EPY5/GPY2 through EPY6/GPY3)

Measure	Number Financed
Gas Furnace	844
Central AC	839
Insulation*	137
Air Source Heat Pump	83
Air Sealing	65
Refrigerator	64
Programmable Thermostat	39
Gas Boiler	16
Water Heater	15
Clothes Washer	12
Geothermal Heat Pump	11
Duct Sealing	9
Ductless Heat Pump	3

*Insulation represents number of projects containing any insulation measures, it is not a count of distinct types of insulation.

Table 5. Number of Multiple Measure Projects (EPY5/GPY2 through EPY6/GPY3)

Number of Measures per Project	Total Projects*	Percent of Total Projects	Projects Including Central AC	Projects Including Gas Furnace	Projects Including Insulation
1	956	64%	46%	44%	45%
2	502	33%	50%	52%	42%
3	34	2%	3%	3%	7%
4	6	0%	1%	1%	4%
5	4	0%	0%	0%	3%
OBF Program	1,502	100%	100%	100%	100%

*Cadmus had incomplete measure data for the 248 projects funded EPY4/GPY1 June 2011 through May 2012, so this data is not included in this table.

Tied-to-the-Meter Loans

Internal stakeholders were uniformly against the idea of tying the loan to the property, primarily in order to avoid having to try to collect on a loan from the person who moved in after the original borrower left. External stakeholders did not feel it was a priority and did not have a clear sense of the expected benefits. Just 8% partial participants (those that applied but did not close a loan) said if they

were selling a property with a tied-to-meter loan, that they would transfer the loan without reducing the sales price. Of the remainder, 12% said they would transfer the loan but reduce the sales price, 31% were unsure what they would do, and 49% indicated they would pay off the loan before selling the house. Participants had similar responses, though they were slightly more inclined to transfer the loan with sale and not reduce the price (17% selected this option). Seventeen percent said they would transfer the loan, but reduce the price, 33% said they were unsure, and 36% said they would pay off the remaining balance before selling the house.

Cost-effectiveness Analysis

To assess the program cost effectiveness, Cadmus calculated the program benefit/cost ratios according to the utility cost test, which measures whether the utility is covering its own costs for the incremental participation attributed to OBF. The statewide program and each utility offering were cost-effective both years. Table 6 shows the incremental utility cost test (UCT) benefit/cost ratios by year and utility.

Table 6. Incremental UCT Benefit/Cost Ratios by Year and Utility

Utility	EPY5/GPY2 (2012-2013)	EPY6/GPY3 (2013-2014)	Full Period (2012-2014)
AIC	3.56	2.65	3.13
ComEd	0.79	1.81	1.27
NSG	1.68	1.21	1.42
PGL	2.45	2.41	2.43
Nicor Gas	-	2.49	2.49
OBF Program	2.66	2.32	2.54

Net-to-Gross Ratio and Added Savings

There is evidence that the OBF Program added to the total savings achieved by the five utilities. Using participant survey data, the Cadmus team calculated a net-to-gross ratio (or better termed “net participation rate,” which assessed the percentage of energy efficiency installations attributed to the availability of OBF) of 0.87 at the statewide level. The survey did not receive sufficient responses to calculate a net participation rate for each utility. However, participants that purchased central ACs, refrigerators, and insulation indicated they had no plan to install the measures before they learned of the OBF Program. (Furnaces were more likely to be reactionary purchases due to failing equipment, and only 26% said they had no plan to purchase the furnace until learning of the OBF Program. In addition to the NTG, some contractors (6 out of 45) noted the OBF Program adds to savings by encouraging customers to install more measure than they otherwise would. Overall, 36% of projects included more than one measure. The net participation rate was over 50% for projects that included an HVAC or weatherization measure.

Repayment

The program had experienced seven delinquencies, resulting in \$12,151 (0.16% of loan volume) in loan losses as of May 2014. No utility has disconnected any accounts, though several accounts have been disconnect-eligible at various points. Several of the delinquent accounts are the result of a customer death, or customers moving out of state. This default rate is low, even relative to other energy efficiency financing programs. Based on our experience with other financing programs, Cadmus does expect the delinquency rate to increase slightly over time. The delinquency rate in five to eight years, after a majority of customers have experienced a full loan term, can be considered a stable rate.

Table 7. Defaults as of May 2014

Utility	Total Loans	Total Loan Volume	Delinquent Accounts*	Loan Losses**	Notes on Delinquencies
AIC	940	\$4,957,721	Four accounts	\$7,111 (0.14%)	Three loans were delinquent because the customer died, and one loan was delinquent because the customer moved out of state.
ComEd	444	\$1,459,379	Zero accounts	\$0 (0%)	N/A
NSG/PGL***	203	\$830,895	Three accounts	\$5,040 (0.61%)	Two loans were delinquent because customers that moved out of state, and one loan was delinquent because customer filed bankruptcy.
Nicor Gas	163	\$410,400	Zero accounts	\$0 (0%)	N/A
OBF Program	1,750	\$7,658,395	7 accounts	\$12,151 (0.16%)	

*The number of delinquent accounts refers to accounts sent to collections. This number is cumulative for each program through July of 2014. Staff reported these numbers during interviews.

**Loan losses refer to the period from June 2012 through May 2014. Staff reported these values during the cost-effectiveness evaluation. This table does not include accounts sent to collections before June 2012.

***NSG and PGL are operated by the same company, Integrys, and their accounts are managed jointly.

Key Conclusions and Recommendations

The primary objective of this evaluation is to provide information to help the ICC make a determination about continuing, discontinuing, or updating the OBF Program. The program has overcome initial obstacles and has arrived at a point where all program partners are engaged and supportive of program activities. Most notably, at the time of writing, two utilities have even filed requests for additional

funding that doubles the original allocation. Though the customer response varies by utility, overall the program appears to be meeting a need in the market and contributing to utility energy efficiency targets. According to the incremental UCT test, which the Cadmus team recommends as the best metric of the costs and benefits specifically attributable to the OBF Program, the program is cost-effective. Finally, this report presents evidence that by restructuring the underwriting criteria for the program, it could become a powerful tool for enabling less financially secure customers have access to energy efficiency upgrades. Given these findings, Cadmus recommends that the program should continue, with certain modifications.

We present additional conclusions and our recommendations for modifying the OBF program below.

Conclusion: Customer eligibility criteria currently exclude about 50% of applicants. These criteria could be altered to make more participants that are likely to be more in need of OBF eligible for the OBF program. Though not atypical for a residential energy efficiency program, the denial rate of program applications is just under 50%, thereby excluding a large number of customers that want to participate. The denial rate makes the program less attractive for contractors to use, as customer often drop the project if they are denied. The program could reduce the minimum credit score by 20 or even 40 points and still be within range of other energy efficiency financing programs across the country. This could decrease the denial rate by up to nine percentage points (51% to 42%).

Another alternative would be to use an underwriting approach based on utility bill payment history. This approach, if structured as proposed in this report, could lower the overall denial rate to 38% (a 12 point drop). It has the added benefit of granting access to more people with lower credit scores, who might have trouble finding an alternative financing product. It should also be noted that the program already has very low default rates, below 0.16%. However, as bill payment history is a less studied underwriting approach than credit scores, the impact of a bill-payment based underwriting approach on default rates is not known.

Recommendation: To better understand how a bill-payment underwriting alternative would impact the OBF program, the utilities should track bill payment history for current participants. Utilities should also consider offering a pilot program with a limited number of loans offered based on bill payment history. The pilot program should be structured to allow the utilities to monitor repayment for different customer types, such as high and low energy usage, and high and low credit score. (The credit score can still be monitored, even if it is not the basis for approving the loan. Utilities may want to consider limiting the loan size for this pilot, since the underwriting is based on the borrowers ability to make relatively small payments each month. Burdening customers, especially any who qualify for low-income assistance, with a large additional payment each month could overwhelm the borrower. A potential model for a pilot is the NYSERDA on-bill financing program in New York that offers customers a choice of underwriting based on bill payment history or credit score. The program pulls a credit score for each customer regardless of which option they choose in order to compare repayment rates between the two programs.



Conclusion: The incremental UCT test provides the best measure of whether the program is operating in a cost effective manner. The UCT incorporates all utility costs relative to operating the program, and all benefit derived from avoided energy use. When the net participation (net-to-gross) score is applied to the benefits and variable costs, the result is the incremental benefit to the utility from offering the program. A score of one or higher indicates that the marginal administrative cost is offset by the value of the additional energy savings due to the OBF option.

Recommendation: Adopt an incremental UCT test as the measure of whether the program is cost-effective. Since OBF by itself is not a program, traditional TRC analysis does not make sense. The incremental UCT is the most applicable method for determining if the additional service offering of OBF is cost effective. Investing in a more precise, albeit more expensive, methodology than the self-report survey to determine the net participation (net-to-gross) ratio will provide added confidence for the UCT score. Enhanced methods include, among others, a discrete choice model customer survey, or a quasi-experimental comparison of measure uptake in a test area (where financing is available) and use of a control group (where financing is not available), if other differences can be minimized or controlled.

Conclusion: Tied-to-the-meter loans offer little benefit and the potential for delay, expense, and confusion. Proponents of the tied-to-the-meter approach thought that it might overcome hesitation from customers concerned that they would need to move from their home before they had paid off the loan. However, nearly all (98%) of partial participants surveyed said that this was not a concern for them. In addition, utility stakeholders expressed concern that adding this feature could cause legal complication and had the potential to confuse customers. External stakeholders were generally ambivalent.

Tied-to-the-meter loans could overcome barriers for landlords that would prefer their tenants pay the loan cost, as they will directly benefit from the upgrades. Because renters are not eligible for the program, Cadmus did not survey them as either participants or partial participants. We do not have data regarding their attitudes about making an OBF Program payment.

Recommendation: Do not make the program loan a tied-to-the-meter loan at this time. There is not enough reason at the present moment to transition the program to a tied-to-meter loan. Illinois should monitor those programs that use this feature to see if the tied-to-the-meter design could be beneficial; in particular, if the approach is successful in attracting rental properties or younger lower-income borrowers (in other words, a market segment that participates less in the current program).

Conclusion: The multifamily loan requires improvements to the program process, as well as greater outreach and support in order to drive uptake. The multifamily program is relatively new. Based on our experience with other nonresidential financing programs, the Cadmus team agrees with utility staff that these programs can take much longer than residential programs to ramp-up. We have also noted that these programs often require a different approach to outreach and implementation to achieve significant uptake. However, in this case, stakeholders raised several issues with the current implementation that could be improved in order to make the program easier to use.

Multifamily projects will be more complex than residential projects, as will the loan application. Stakeholders have already seen that these customers require additional support to complete their applications. If they do move forward, the projects are likely to be larger and take longer than a residential project, which strains contractor's cash flow.

Recommendation: Refine the program processes for multifamily customers, then follow up with targeted mailings and other outreach to eligible customers. The Cadmus team supports Nicor Gas's plan to send targeted mailings to their multifamily customers. However, utilities and their implementers should also work to resolve existing issues in the program process.

Utilities and implementers should work together to define support roles for multifamily customers. To function well, the program must provide one-on-one support to potential customers to identify a project, understand and apply for available rebates, and complete an application for financing.

If they have not already done so, AFC First should work with utilities and their new partner CIC to establish staged distribution of funds for large-scale projects, to ease the cash-flow burden for contractors. This may require hiring a quality-assurance manager to review projects prior to disposition.



Introduction

The Illinois legislature adopted amendments to the Public Utilities Act (PUA) in 2009, which mandated the investor-owned utilities in Illinois to offer an on-bill financing (OBF) program for customers to enable greater investment in energy efficiency upgrades. As directed by the PUA, the five Illinois investor owned utilities, Ameren Illinois Company (AIC), Commonwealth Edison (ComEd), People’s Gas (PGL), North Shore Gas (NSG), and Nicor Gas—together the utilities—offer the OBF program to eligible residential, small commercial and multi-family customers for qualified energy efficiency projects. The Illinois legislature enacted the initial OBF provisions (Sections 16-111.7 and 19-140 of the PUA) as part of Senate Bill 1918 in 2009, mandating an OBF program for residential and small commercial customers. The PUA was later amended in 2011 by Senate Bill 1652 to allow on-bill financing for any electric measure included in the utility portfolio program. The Act was amended a final time by Senate Bill 2350 in 2013 to allow financing for multi-family customers and on-bill financing for any gas measure approved for utility portfolio programs. The program continues to operate under these rules at the time of writing.

Goals of the Evaluation

The OBF provisions require an independent evaluation of the OBF program and require the evaluator to issue a report to the Illinois Commerce Commission (ICC) on its findings within four years of the OBF Program’s commencement in June 2011.⁵ In October 2012, the Illinois Energy Association (IEA) and the utilities contracted with Cadmus and Research Into Action (the Cadmus team) to serve as the statewide evaluator of the OBF Program. This report provides the results of the Cadmus team’s evaluation of the OBF program at the state level, as well as at the utility-level. (The report refers to the utility level effort as the OBF offering, to distinguish it from the state-wide program.)

The goals for the evaluation, as determined by the enacting legislation, the RFP for the evaluator, and discussions with stakeholders to define the evaluation plan, are as follows:

1. Fulfill the Act’s requirements
 - a. Evaluate overall operations, eligibility and loan underwriting criteria, measures financed (measure eligibility criteria and associated savings), and whether payment obligation should attach to the meter
 - b. Solicit feedback from participants and interested stakeholders
2. Fulfill the ICC’s requirements
 - a. Assess OBF’s benefits and costs
 - b. Provide information to enable the ICC to make a recommendation on whether OBF should be discontinued, continued with modification(s), or continued without modification.

⁵ The ICC set this date to facilitate setting the end date for the program final report. Not all utilities began program operations on this date.

3. Address additional research topics identified from the RFP and during discussions with stakeholders
 - a. Assess participation attrition at each step of the application process, along with reasons for attrition
 - b. Assess additional measure installation enabled by financing
 - c. Analyze loan performance
 - d. Assess the potential to expand OBF to the small business market and whether the amount financed should exceed \$2.5 million per utility

The Cadmus team worked with the ICC, the utilities, and other stakeholders to determine the research objectives and research tasks for this evaluation. The evaluation addresses the effectiveness of program design and implementation in meeting the program goals described in the enacted legislation. In addition, as requested by the ICC, the Cadmus team conducted analysis of factors, such as cost-effectiveness and program impact on rebate portfolio participation, to consider whether the program should be continued, modified, or terminated and formulate a recommendation for the ICC.

The report presents an introduction to the design and operations of the OBF program, followed by a section detailing the research tasks and methodology for each task. Next, the report presents the detailed findings from the Cadmus Team's research and analysis. Finally, the report presents conclusions and recommendations for the program, based on the findings. This evaluation primarily addresses program operations from EPY4/GPY1 through EPY6/GPY3 (June 1, 2011, through May 31, 2014).



The OBF Program

The OBF Program offers customers of large investor-owned utilities the opportunity to purchase and install eligible measures with no up-front costs and repay the cost through a line item on their utility bill. The program offers convenient, affordable financing that is intended to complement existing demand-side management programs. AIC, ComEd, NSG, PGL, and Nicor Gas currently offer residential and commercial on-bill financing options, though the AIC program is fully subscribed at this time.

The PUA allowed the OBF program to offer \$2.5 million in financing per utility, per fuel. According to this formula, each utility offering could support up to \$2.5 million in loans with the exception of AIC, which provides two fuels (electric and gas), and therefore could support up to \$5 million. Table 8 and Table 9 show the timeline of program availability by utility and current status of original funding allocation. (The PUA modification to mandate that utilities offer commercial and multifamily loans did not increase the amount of available funding.) At the time this report was published, Ameren had filed a request for and received additional funds, and Nicor Gas had filed a request for additional funds.

The OBF program uses what is known as an “on-bill repayment” model. On-bill repayment signifies that the loan capital is provided by a third party, but repaid through the utility bill. The utility then remits the payments for all loans as a lump sum to the capital provider. In this case, the utilities actually guarantee the loans, up to the maximum amount allowed by the PUA. The utility remits the full lump sum due each month, regardless of whether the customer makes the payment. In the case that the customer fails to pay, the utility will engage in a collections process with the customer in the manner that it would if the customer failed to make their utility bill payment.

Table 8. Residential/Small Commercial Program Timeline

Utility	Date Launched	Status as of May 2014
AIC	June 2012	Fully subscribed as of December 2013
ComEd	June 2011	Funds available
NSG	December 2011	Funds available
PGL	December 2011	Funds available
Nicor Gas	January 2014	Funds available

Table 9. Multifamily Timeline

Utility	Date Launched	Status as of May 2014
AIC	Pending available funds	N/A
ComEd	January 2014	Funds available
Integrays (PGL/NSG)	January 2014	Funds available
Nicor Gas	March 2014	Funds available

Roles and Responsibilities

The IEA, which coordinates statewide efforts and advocates for the utilities’ interests, facilitated the hiring of Energy Efficiency Finance Corporation as the program design consultant, AFC First as the

implementer and financial institution, and the Cadmus team as the program evaluator. The utilities, along with AFC First and the approved program contractors, are responsible for implementing the OBF Program.

Table 10 summarizes the key activities required to implement OBF and the responsible party or parties.

Table 10. Program Implementation Responsibilities

Responsibility	Utilities and Implementers*	Financial Institution	Contractors Vendors
Determine eligible measures	✓		
Recruit and train qualified contractors and retailers	✓	✓	
Market and promote OBF	✓	✓	✓
Process loan applications		✓	
Lending QA/QC**		✓	
Release payments to contractors/vendors		✓	
Collect loan payments from customers	✓		
Pay financial institution***	✓		
Recover bad debt	✓		

*AIC Administrator is Conservation Services Group; the PGL/NSG Administrator is Franklin Energy.

**Program measure QA/QC is performed independently of loan processes.

***The utilities remit full payment to AFC First each month regardless if the customers pay their loan charges.

AFC First is responsible for recruiting and training qualified contractors and retailers, which are subject to the utilities’ approval. Each utility determines what measures will be eligible for its OBF program offering, according to the regulations set forth in the legislation. All parties market and promote the OBF program; the utilities use bill inserts and their websites to inform customers. AFC First develops marketing materials for contractors to use. AFC First processes loan applications, which are separate from incentive applications;⁶ the utilities or their administrators process the incentive applications. The utilities are responsible for collecting loan payments via customers’ utility bills and for paying AFC First every month, regardless of whether their OBF customers have paid their loan charges. The utilities handle any defaults through their standard nonpayment procedures and recover any loan losses through the bad debt rider.

⁶ AFC also verifies that the project complies with the utility’s requirements, which include a determination of whether the applicant qualifies for any applicable incentives offered through the utility.



Loan Product and Underwriting

AFC First worked with each utility and National Penn Bank, the capital provider, to establish the rate, terms, and underwriting standards for both residential and then nonresidential loan products. These attributes, presented in Table 11, are similar across each utility.

Table 11. Loan Characteristics and Underwriting Standards (Residential and Small Commercial)

Item	Description
Loan Terms	
Loan amounts*	\$500 to \$20,000**
Loan tenor	Three, five, or 10 years
Interest rate	4.99% Fixed (5.99% for multifamily and commercial)
Prepayment penalty	None
Loan type	Unsecured***
Eligible building owners	Single-family home, condo, and small commercial
Customer Eligibility and Underwriting	
Applicant minimum credit score	640
Bankruptcy, foreclosure, and repossession	None in last seven years
Unpaid Collection accounts, judgments, and liens	No more than \$2,500 total
Income verification	For loans \$4,000 or greater
Debt-to-income ratio	For loans \$3,000 or greater: 50% for W-2 Wage Earners; 45% for self employed
Utility account standing	In good standing (varies by utility)
Payment Protocols	
Partial utility bill payment priority	<ul style="list-style-type: none"> • Energy bill then OBF loan (AIC, ComEd, NSG/PGL) • OBF loan then energy bill (Nicor Gas)
Overpayment allocation	Utility credit
Reporting for past due payments	<ul style="list-style-type: none"> • No credit agency reporting collections when account goes final (AIC, ComEd, Nicor Gas) • Credit agency reporting after 30 days past due (NSG/PGL)

*Loan amount is up to total out-of-pocket cost to customer; downstream incentives do not reduce the maximum loan amount.

**For ComEd, minimum varies by product financed; for Nicor Gas, the loan amount is up to \$50,000 for commercial customers.

***Nicor Gas' tariff allows the utility the right to a security interest in the measure for commercial customers.

The underwriting requirements for customer's bill payment history vary by utility (shown in Table 12).

Table 12. Utility Bill Payment History Underwriting Requirements

Utility	OBF Program Utility Bill Pay Requirements
AIC	The account cannot be disconnected for non-payment within the last 12 months, and the account cannot have arrears greater than \$200 and greater than 60 days.
ComEd	The account must be active and not eligible for disconnection due to non-payment.
Integrus (NSG/PGL)	The account must be active and not eligible for disconnection due to non-payment.
Nicor Gas	The account must have been current for the prior 12 months, and cannot have arrears greater than \$100 and greater than 90 days. The account must not have reported bankruptcy.

The program adopted new underwriting guidelines for multifamily properties in the summer of 2014, along with enhanced loan options (see Table 13). The new product takes into account the greater variability in project size for larger buildings as well as the increased complexity and greater risk from lending in the commercial sector.



Table 13. Loan Characteristics and Underwriting Standards (Multifamily)*

Item	All Utilities			
Loan Terms				
Loan amounts	\$500 to \$150,000			
Loan tenor	Three, five, or 10 years			
Interest rate	5.99% Fixed			
Prepayment penalty	None			
Loan type	Unsecured**			
Eligible building owners	Multifamily property owners (up to 50 units)			
Customer Eligibility and Underwriting				
Loan amount requested	Up to \$10,000	\$10,001 – \$20,000	\$20,001 – \$50,000	\$50,001 – \$150,000
Length of time in business	Minimum one year	Minimum three years	Minimum five years	Minimum five years
Satisfactory business credit report required	No	No	Yes	Yes
Business financial statement or tax return required	No	No	One year	Two years
Personal guarantee of any individual that owns more than 20%	Yes	Yes	Yes	Yes
Minimum credit score for guarantors	640	640	670	700
Maximum debt ratio for guarantors	50%	50%	45%	40%
Income verification required for guarantors	No	Yes	Yes	Yes
Payment Protocols				
Partial utility bill payment priority	<ul style="list-style-type: none"> • Energy bill then OBF loan (AIC, ComEd, NSG/PGL) • OBF loan then energy bill (Nicor Gas) 			
Overpayment allocation	Utility credit			
Reporting for past due payments	<ul style="list-style-type: none"> • No credit agency reporting collections when account goes final (AIC, ComEd, Nicor Gas) • Credit agency reporting after 30 days past due (NSG/PGL) 			

*This loan did not become available until after the Cadmus team completed its primary data-collection effort. However, this loan was a significant development and merited mention in this report.

**Nicor Gas' tariff allows the utility the right to a security interest in the measure for commercial customers.

Eligible Measures

Initially, the PUA required utilities to demonstrate that measures they allowed to be financed through the OBF Program were cost-neutral, meaning the estimated energy cost savings (determined by the rates available at the time of purchase) were sufficient to cover the total cost of implementing the measure, including finance charges, less the portion of the cost covered by incentives. Just a few months after the program officially began, the legislature passed an amendment that expanded the OBF Program to include any electric measures that are part of a Commission-approved energy-efficiency

demand response plan.⁷ The program operated under this structure until the beginning of EPY6/GPY3 (June 2013), when the General Assembly expanded the new provisions to also apply to gas measures.⁸

AIC and Nicor Gas made nearly all of the measures in their portfolio programs eligible for the OBF Program. ComEd, NGL, and PGL offer program loans for only a selection of measures in their portfolios. The refrigerator that ComEd makes available is the only measure not included in a portfolio that is eligible in the program. ComEd originally offered clothes washers under the program, but discontinued this measure by the spring of 2013. Table 14 shows the measures eligible for the program.

Table 14. Eligible Measures

Utility	Eligible Measures	
	Residential	Multifamily/ Small Business
AIC	<ul style="list-style-type: none"> • Furnaces (AFUE ≥ 92%) • Air sealing / insulation • Ceiling insulation (R11 to R49) • Ceiling insulation (R19 to R49) • R11 wall insulation • Rim joist insulation • Crawl space insulation • Central air conditioning (SEER 14.5 or greater) • Air source heat pump (SEER 16 or greater; HSPF 8.2) • ECM blower motor • Programmable thermostat 	<ul style="list-style-type: none"> • Lighting upgrades for common areas
ComEd	<ul style="list-style-type: none"> • ENERGY STAR®-qualified refrigerators • Central air conditioning system (only if installed with qualifying furnace)* • Weatherization for an all-electric home 	<ul style="list-style-type: none"> • Lighting, HVAC, kitchen equipment, refrigeration, VSD, etc. • Custom projects
NSG /PGL	<ul style="list-style-type: none"> • Furnaces (AFUE ≥ 92%)* • Boilers (AFUE ≥90%) 	<ul style="list-style-type: none"> • Furnaces (AFUE ≥ 92%)* • Boilers (AFUE ≥90%)
Nicor Gas	<ul style="list-style-type: none"> • Furnaces (AFUE ≥ 92%)* • Boilers (AFUE ≥95%) • Storage water heaters (≥0.67 EF) • Indirect water heater (installed with qualifying furnace that is >95% AFUE and programmable thermostat) • Prescriptive air sealing and attic insulation (per air sealing and attic insulation rebate program requirements) • Air sealing and other qualifying recommendations per an energy 	<p>Multiple measures related to:</p> <ul style="list-style-type: none"> • Space heating equipment • Water heating equipment • Energy efficiency controls • Tune-ups

⁷ PA 97-616, enacted on 10/31/2011

⁸ PA 98-586



Utility	Eligible Measures	
	Residential	Multifamily/ Small Business
	assessment (some of which may include attic, crawl space, wall, and garage ceiling insulation)	

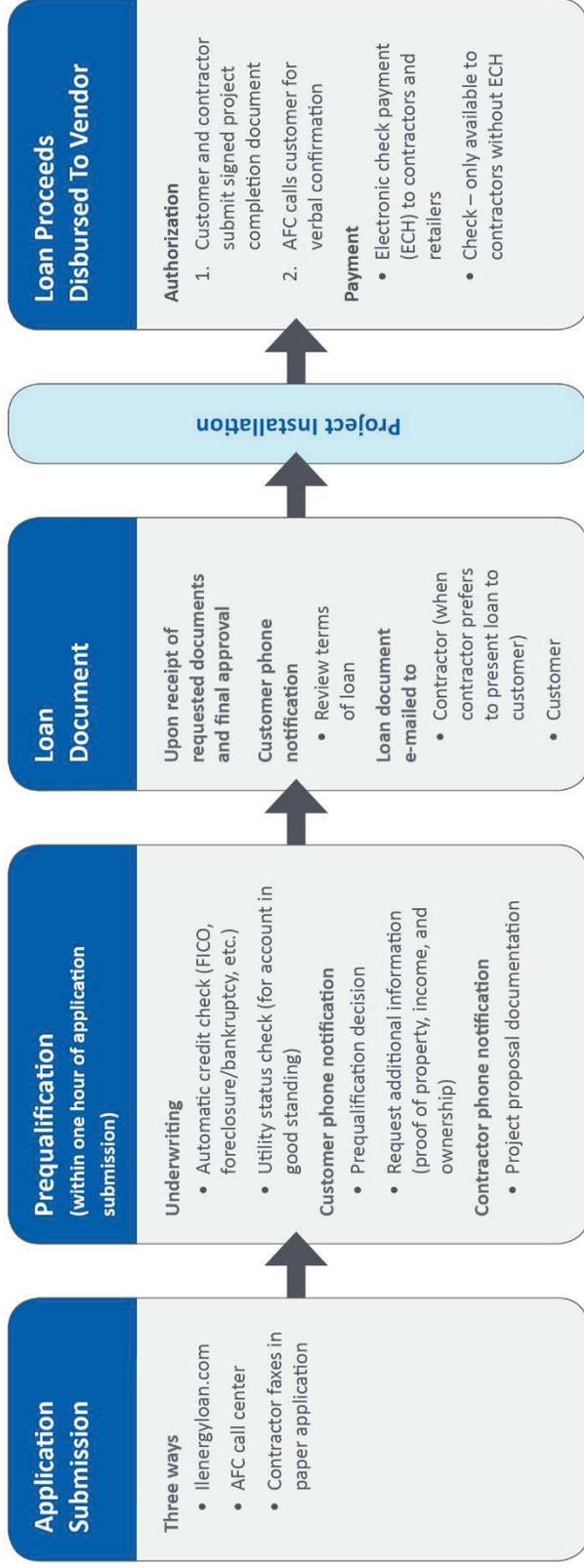
*For gas furnaces installed through the Complete System Replacement program (ie, purchased together with a qualifying central AC), electric savings from the furnace, due to the ECM motor, are attributed to ComEd.

Application Process

After hearing about the OBF Program from their contractor or through another promotional effort, utility customers apply for the program through the process shown in Figure 1. The process begins when a customer submits an application to AFC First through one of several methods: the statewide program website (<http://www.ilenergyloan.com/>), AFC First’s call center, or a contractor who forwards the application to AFC First via fax. AFC First performs a prequalification screening within one hour of receiving the application. During this time, AFC First’s system automatically gathers the prospective borrower’s credit history, and an AFC First underwriter reviews the information and checks that the borrower has an active utility account. The AFC First underwriter checks to see if the borrower’s utility account is in good standing.⁹ AFC First contacts the borrower to convey the prequalification decision (approved or declined) and requests additional information if needed. AFC First also calls the contractor to request a copy of the proposed work.

⁹ AIC and AFC First coordinated their IT systems so that AFC First could access detailed customer account information. For the remaining utilities, AFC First e-mails a request for payment history.

Figure 1. OBF Application Process¹⁰



¹⁰ AFC First checks customer's utility account standing again before disbursing the check. If the customer is not in good standing, the loan will not be disbursed.



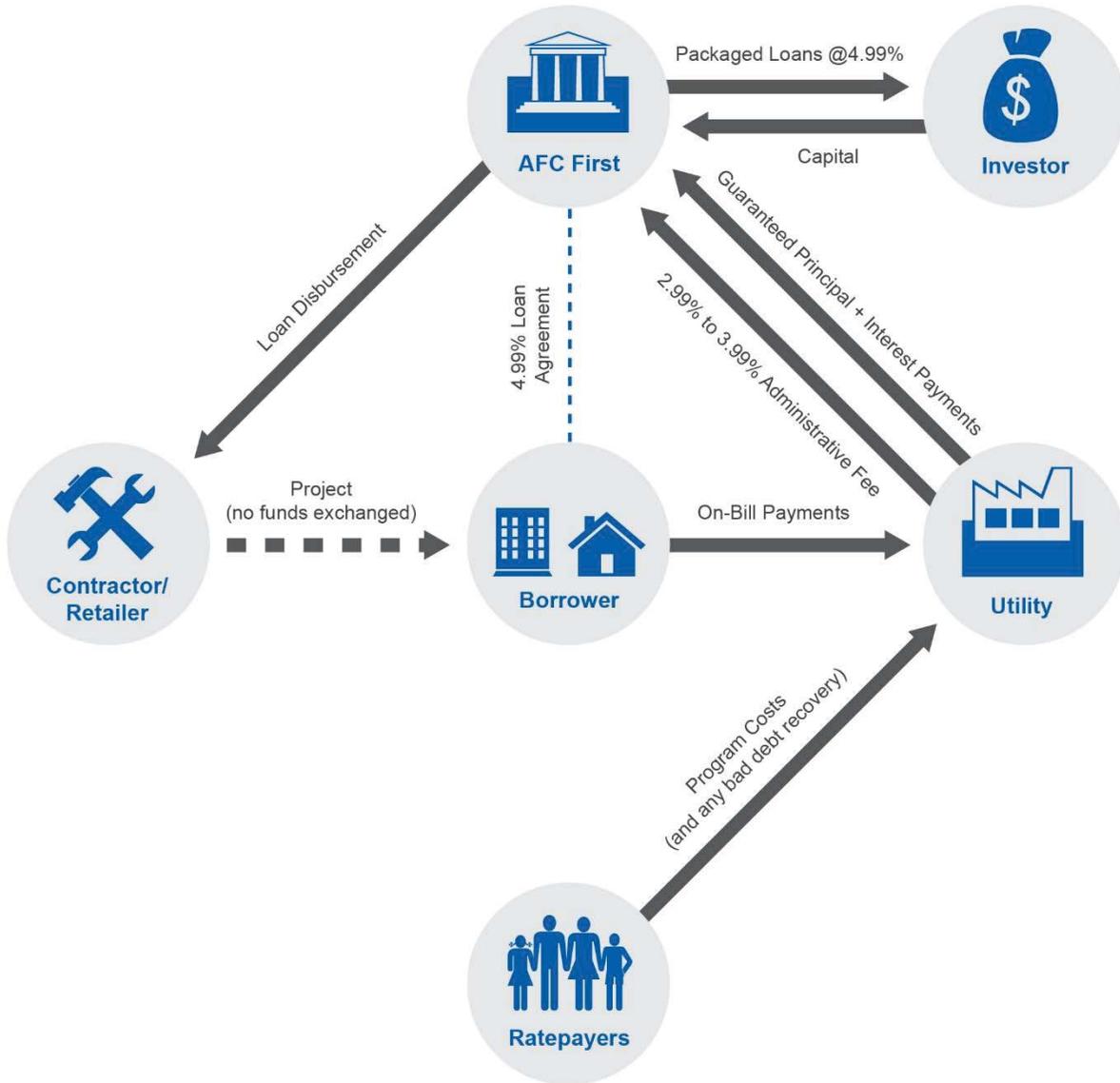
Upon receipt of the requested information, AFC First conducts a final approval review, calls the borrower to review the terms of the loan, and e-mails the loan documents to either the contractor or the customer. If the customer does not respond within 30 days, the application is automatically withdrawn. The customer can also opt to withdraw the application.

Once the customer signs the loan documents, the project may move forward. Upon project completion, the customer and contractor sign a project completion document and send it to AFC First. AFC First calls the borrower for a final verbal confirmation that the work was satisfactorily performed and releases payment to the vendor.

Flow of Funds

Figure 2 shows the flow of capital through the various parties involved in the OBF Program. The lending process begins with a homeowner applying for a loan with AFC First. After confirming and approving the borrower's credit standing and implementing the loan agreement, the borrower can authorize the contractor (or retailer) to proceed with the project. Once the project is completed to the borrower's satisfaction, AFC First disburses the loan funds to the contractor as payment.

Figure 2. Flow of Funds



Each month, the borrower repays the loan through the utility bill. Failure to pay the entire bill (loan and energy charges) can result in service disconnection. Each IOU aggregates the customers' loan payments to create a single payment for all outstanding loans (principal and interest) to AFC First. The utilities also pay AFC First an administrative fee of 2.99% to 3.99% (depending on the utility and measure) of the average principal balance of the loans being serviced. The utilities pay AFC First in full regardless of customer late payments or defaults. Any utility losses are recovered from ratepayers via a bad debt rider.



Once AFC First collects a sufficient number of loans, it packages the loans to yield a 4.99% return and sells the packaged loans to another lender in a secondary transaction. AFC First then uses the proceeds to make more loans.

Research Approach

The Research Approach section describes the research performed for this evaluation. The Cadmus team conducted the research tasks below in accordance with the filed evaluation plan (ICC Docket No 11-0689).

Research Objectives

Table 15 summarizes the research objectives that the Cadmus team addressed through this evaluation and the corresponding evaluation tasks. We conducted some analyses once, such as cost-effectiveness and loan performance, and other methods multiple times, such as stakeholder interviews. Table 15 also notes the rationale for including each research objective, whether it was required by the PUA, required by the ICC, or requested during the kick-off meeting held by the Cadmus team, the IEA, and other stakeholders at the outset of the evaluation.

Table 15. Research Objectives and Corresponding Tasks

Research Objective	Rationale	Information Review	Cost-Effectiveness	Stakeholder Interviews	Customer Surveys	Trade Ally Research
Program Design						
Assess borrower eligibility criteria	PUA	✓		✓		
Assess measures financed	PUA	✓	✓	✓		
Determine if payment obligation should attach to meter	PUA			✓	✓	
Program Implementation						
Evaluate overall operations	PUA	✓		✓	✓	✓
Solicit feedback from participants and stakeholders	PUA			✓	✓	✓
Assess attrition and reasons for attrition	KO	✓		✓	✓	✓
Program Impacts						
Assess costs and benefits	ICC	✓	✓	✓		
Assess additional participation attributable to the OBF Program	KO*				✓	
Assess net-to-gross ratio for program participation	KO*				✓	
Analyze loan performance	KO*	✓		✓		

*Kick-Off Meeting



Research Tasks

The Cadmus team accomplished the research objectives described outlined in Table 15 through a series of research tasks distributed over the period of the evaluation. This section presents the detailed methodology we applied for each task.

Program Data Analysis

The Cadmus team analyzed application, underwriting, and repayment data from AFC First and each of the utilities to determine reasons for program attrition, overlap with utility rebate programs, possible impacts of changes to the underwriting requirements, and the program repayment.

Program Attrition

The Cadmus team evaluated potential barriers to entry based on the loan design, including the rate of application denial and withdrawn applications. We used the following analyses to evaluate potential barriers:

- Identified the proportion of applicants that were declined, the proportion of customers that withdrew their applications, and the proportion that were approved (stratified by FICO score and measure type—appliance vs. non-appliance).
- Determined the proportion of applicants declined due to their credit score, debt-to-income ratio, or other reasons.
- Created a profile of customers that withdrew based on measure type and FICO score and compared the profile to survey results to assess what types of customers are most likely to withdraw.

Percent of Program Participation Financed

To understand the degree to which customers who receive loans are also applying for appropriate rebates, the Cadmus team compared the total measures rebated to the total measures financed in single program year. We used the total measures rebated from the annual program reports for the EPY5/GPY2 period (June 2012 through May 2013), and used AFC First reports to determine measures financed in the same period. We then calculated the maximum percentage of financed projects for which customers may have received rebates.

Alternative Underwriting

FICO Adjustments

Underwriting criteria, while necessary, may also be an entry barrier for some customers. Therefore, it is critical to define underwriting criteria that will include those customers who are likely to manage their payments responsibly, while still identifying those customers who are not likely to repay. The Cadmus team assessed the sensitivity of the program approval rate to changes in the minimum FICO score, which is the most common reason an application is denied. The Cadmus team used the application data provided by AFC First to determine how 20-point changes in the minimum FICO score would affect the approval rate among applicants from June 2012 through May 2014.

Underwriting Based on Bill Payment History

The Cadmus team also examined the program approval rate using an alternate set of underwriting criteria based entirely on bill payment history rather than credit score. These criteria, based on those used by the California OBF Program, closely resemble the criteria already in place for AIC customers.¹¹ We assessed the impact of underwriting on the denial rate based on the following criteria:

- Customer is the owner of the property to be improved.
- Customer was not eligible for disconnection in the year prior to the loan application date.
- Customer has no more than one late payment charge in the year prior to the loan application date.

The Cadmus team compared the approval results under these alternate criteria to the approval rate under the current system, stratified by FICO score. We did not consider any applicants that were not homeowners to be eligible under either underwriting protocol, as currently required by the program.

Repayment Analysis

A standard default rate does not truly apply to the OBF Program because loan payments are mingled with service payments. Therefore, to track the rate of repayment, The Cadmus team measured the rate of delinquency, the rate of shut-off eligibility, and the rate of late payments among program participants. Specifically, The Cadmus team measured the following items:

- Numbers of delinquent accounts (sent to collections) at each utility
- Number of late payments in 12 months prior to July 1, 2014
- Number of disconnect-eligible events in 12 months prior to July 1, 2014; and
- Amount of loan funds unrecoverable

The Cadmus team did not include any loans issued within the past 12 months in this analysis because not enough time has passed to provide meaningful data on those loans. Therefore, we did not evaluate any Nicor Gas loans.

Stakeholder Interviews – 2012 and 2014

At two points during the evaluation the Cadmus team interviewed stakeholders involved in implementing the program (internal stakeholders) and those not involved in day-to-day management of the program, but with an interest in shaping program-related policy and legislation (external stakeholders). The interviews captured stakeholder perspectives on the goals of the program, feedback on the program design and operations, and how stakeholder opinions changed as the program worked

¹¹ AIC requires that the customer's account number must be valid, the account must be active, the account cannot be cutoff for non-payment, the account cannot be cutoff for non-payment within the last 12 months, and the account cannot be in arrears more than \$200 for longer than 60 days.



through initial obstacles and matured. Table 16 lists the parties we interviewed and when the interviews occurred.

Table 16. Stakeholder Interviews

2012 Interviews	2014 Interviews
Internal Stakeholders	
Illinois Energy Association	Illinois Energy Association
AFC First	AFC First
AIC	AIC
ComEd	ComEd
NSG/PGL	Integrus
Franklin Energy	Nicor Gas
External Stakeholders	
N/A	Citizens Utility Board
	Environmental Law and Policy Center
	Illinois Commerce Commission
	Elevate Energy

Contractor and Retailer Research

Cadmus interviewed the program’s partner retailers and contractors to understand their experience working with the OBF Program. The Cadmus team interviewed one senior staff person from each of the two retailers, Sears and Abt Electronics. The retailers are unique to ComEd’s measure offerings for refrigerators and clothes washers. The interviews took place in January 2014 after the program had been operating for more than two years.

The Cadmus team also surveyed 60 participating contractors who were on AFC First’s database of approved program contractors. This database contained contacts for 258 unique contractors. After removing entries without valid contact information, the final sample frame included 233 contractors. The Cadmus team completed these surveys in March, 2014.

Customer Surveys

The Cadmus team surveyed participants and partial participants. The survey explored customer awareness of the program, motivation for participating, satisfaction with various elements of the program, customer reactions to potential program design changes, and alternatives if the program had not been available (to establish the net-to-gross agent).

Sampling

The Cadmus team collected input from participants and partial participants through e-mail surveys. The availability of e-mail addresses within the sampling frame was more than 85% among both participant and partial-participant groups, allowing for a representative sample to be surveyed online.

The Cadmus team developed the sample frame from data supplied by AFC First. We removed AIC customers from the database who had recently completed a survey for an evaluation of AIC’s HVAC

program and selected participants at random from the remaining records.¹² Table 17 summarizes the statewide distribution of records in the program database in late 2013 and the resulting sample frame.

Table 17. Population and Sample Target Summary of Participants and Partial Participants

Group	Target	Participants		Partial Participants			
		Count	%	Count	Count	Count	%
				Denied	Withdrew	Total	Total
Population	Appliance	102	10%	466	107	573	28%
	Other measures	895	90%	1,182	322	1,504	72%
	<i>Total</i>	997	100%	1,648	429	2,077	100%
Sampling frame*	Appliance	102	11%	466	107	573	28%
	Other measures	871	89%	1,181	321	1,502	72%
	<i>Total</i>	973	100%	1,647	428	2,075	100%
Sampling frame with e-mail address	<i>Total</i>	838	86%	1,435	379	1,814	87%

*Population minus customers contacted for the AIC HVAC evaluation surveys.

Participant Survey Completes

The participant survey received 75 completes, resulting in a 90% confidence level with $\pm 10\%$ precision (90/10 confidence/precision) for the survey results.¹³ Table 18 shows the total number of loan applications and the final sample distribution by participating utility.

¹² Cadmus is part of the team evaluating AIC’s portfolio of DSM programs and had access to the AIC survey sample.

¹³ The filed evaluation plan for the OBF Program indicated the research team would consider stratification by measure category (appliances vs. non appliances). Because only 10% of participants used on-bill financing for appliances, the research team selected a simple random sample.



Table 18. Applications and Sample Distribution by Participating Utility

Utility*	Eligible Measures	Applications		Unique Applicants		Web Survey Sample	
		Count	%	Count	%	Count	%
AIC	Gas furnace, insulation, air sealing, gas or electric heating system, heat pump water heater, or central AC	656	66%	515	67%	45	60%
ComEd	ENERGY STAR refrigerator or central AC	219	22%	173	23%	24	32%
NSG / PGL	Gas furnace	122	12%	77	10%	6	8%
Total		997	100%	765	100%	75	100%

*Nicor Gas had not launched their offering when the Cadmus team completed this survey.

As shown in Table 19, the survey sample generally matched the program participation by measure installed, and the Cadmus team did not need to weight results.

Table 19. Measures Installed by All Participants vs. Sample (n=75)

Measure Installed	Population		Sample	
	Count	%	Count	%
Central AC	355	51%	38	51%
Furnace, boiler, or heat pump	176	25%	19	25%
ENERGY STAR refrigerator	80	11%	12	16%
Insulation or air sealing	76	11%	6	8%
Clothes washer	8	1%	–	–
Duct sealing	2	0%	–	–
Total	697	100%	75	100%

Partial Participant Survey Completes

The partial participant survey achieved 65 survey completions, resulting in a 90/10 confidence/precision level.¹⁴ Table 18 lists all the partial participant applications and the final sample distribution by participating utility.

¹⁴ The filed evaluation plan for the OBF program indicated that the Cadmus team would consider stratification by measure category (appliances vs. non-appliances). Because a minority of partial participants (32%) requested on-bill financing for appliances, based on data in the applicant database, the Cadmus team selected a simple random sample of 65 applicants. Under the finite population assumption, this sample provided the desired 90/10 confidence/precision level.

Table 20. Applications and Sample Distribution by Participating Utility

Utility	Eligible Measures	Partial Participant Applications		Unique Applicants		Web Survey Sample	
		Count	%	Count	%	Count	%
AIC	Gas furnace, insulation, air sealing, gas or electric heating system, heat pump water heater, and/or central AC	767	40%	761	40%	25	38%
ComEd	ENERGY STAR refrigerator, clothes washer, or central AC	907	47%	899	47%	27	42%
NSG / PGL	Gas furnace	254	13%	252	13%	13	20%
Total		1,928*	100%	1,912**	100%	65	100%

*Of 2,002 applications, 74 did not list the utility. The Cadmus team excluded these records from this tabulation.

**Of 1,989 unique partial participants, 73 did not list the utility on their application and four submitted two applications each to two different utilities. The Cadmus team excluded these records from this tabulation.

When comparing the types of partial participants between the survey sample and the population, the survey sample slightly over-represented partial participants who had their application denied (Table 21).

Table 21. Types of Partial Participant in Population vs. Sample (n=65)

Applicants	Unique Applicants		Sample	
	Count	%	Count	%
Not approved	1,578	80%	55	85%
Approved but withdrew	406	20%	10	15%
Total	1,984*	100%	65	100%

*Of 1,989 unique partial participants, five submitted two loan applications: one that was denied and one that was withdrawn. The Cadmus team excluded these five applicants from this tabulation.

The survey sample also over-represented partial participants who requested a loan for a central AC or for envelope measures (insulation or air sealing), and under-represented partial participants who requested a loan for an ENERGY STAR refrigerator (Table 22).



Table 22. Application Measures by All Partial Participants vs. Sample (n=65)

Measure on the Application	Unique Applicants		Sample	
	Count	%	Count	%
Central AC	671	38%	28	43%
Furnace, boiler, or heat pump	436	25%	17	26%
ENERGY STAR refrigerator	449	26%	11	17%
Clothes washer	103	6%	4	6%
Insulation/air sealing	61	3%	5	8%
Other	25	1%	-	-
Total	1,745*	100%	65	100%

*Of 1,989 unique partial participants, 238 did not list the measure on the application and six included two applications for two different measures. The Cadmus team excluded these 244 applicants from this tabulation.

Net Participation Rate (Net-to-Gross) Analysis

The Cadmus team used participant surveys to determine a self-reported net-to-gross (NTG) ratio or net participation rate¹⁵ for the program. As shown in the following equation, the factors most often included in calculating NTG ratios are freeridership, participant spillover, nonparticipant spillover, and market effects.

$$NTG = 1 - (\text{Freeridership Score}) + (\text{Spillover}) + (\text{Market Effects})$$

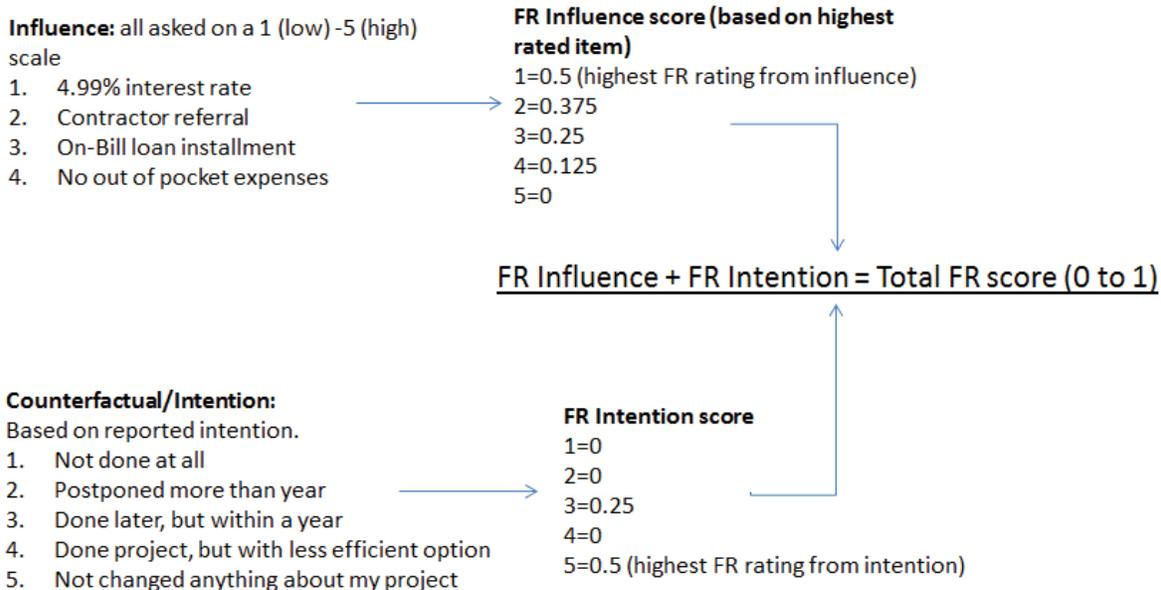
We did not attempt to include market effects or spillover due to the uncertainty of assigning attribution between the OBF Program and associated rebate programs. While our surveys qualitatively identify possible spillover, we do not quantify it or market effects.

As shown in Figure 3, Cadmus analyzed two questions from the survey to create a blended net participation rate (freeridership score). Using a blended score—combining program influence and counterfactual questions—provides a realistic assessment of program impact because it includes an estimate of program influence rather than just an estimate of stated intention.

¹⁵ Cadmus assessment of the net participation rate is analogous to a freeridership or NTG analysis. As NTG analysis is conducted to determine resulting net savings from an energy efficiency program, our net participation analysis attributes incremental program participation due to the addition of OBF.

Figure 3. Attribution or Freeridership (FR) Score Calculation

FR score calculated by combining assessment of influence and intention (counterfactual)



For example, a respondent with the following response (Table 23) would have a net participation or freeridership influence score of 0 and a net participation or freeridership intention score of 0.5, for a total net participation or freeridership score of 0.5.

Table 23. Example Response to Net Participation (Freeridership) Survey

Influence	Influence Score	Intention (Counterfactual)
4.99% Interest Rate	5	Nothing would have changed
Contractor	1	
On-bill financing	2	
No out-of-pocket expenses	3	



Cost-effectiveness Analysis¹⁶

Illinois laws require that utility portfolio energy-efficiency programs be cost-effective as determined by the statutorily-defined total resource cost (TRC) test. However, the OBF program, which is not considered a part of each utility's portfolio, is not required to meet this test.

Nevertheless, a cost-effectiveness analysis provides information for utilities, legislators, and other stakeholders about how the OBF Program is performing as it is currently designed. The ICC indicated in their conclusions for Docket No. 11-0689 that a cost-effectiveness evaluation of the OBF Program should be a "forward-looking assessment" that focuses on "whether the marginal administrative costs of doing new loans are cost-effective in terms of any additional efficiency benefits that will result from the OBF program." Cadmus applied the incremental UCT test (incorporating the net participation ratio) as the most focused on the marginal costs of the program going forward. In order to conduct a forward-looking analysis, the Cadmus team only included ongoing program costs (no startup costs). Since the programs were fairly new at the time of our analysis, we assumed participation may still be ramping up, and we conducted a breakeven analysis to determine participation volume required to reach a benefit cost ratio of one. In response to a request from ICC staff, Cadmus also included the TRC test, which incorporates measure costs and the financing cost.

The Cadmus team presented our proposed approach for measuring cost-effectiveness to the ICC, utilities and other stakeholders. We updated the proposal based on comments and requests from the stakeholders to arrive at the final methodology, described below.

Tests

The Cadmus team used the DSM Portfolio Pro model for the cost-effectiveness analysis.¹⁷ As agreed with the ICC and the utilities, Cadmus performed the following tests:

- Utility Cost Test (UCT) using full costs and benefits
- UCT test using incremental costs and benefits (applying net participation or freeridership rate).
- Total Resource Cost (TRC) test using full costs and benefits
- TRC test using incremental costs and benefits (applying net participation or freeridership rate)

UCT

The UCT test measures the dollar benefits of energy and demand savings against the utility's costs, and determines whether the value of the energy savings achieved by the program is sufficient to cover the utility's own costs of offering the program. Program benefits are equal to avoided load, therefore a ratio

¹⁶ In this report, the term "cost-effectiveness" refers to an evaluation of the relative costs and benefits of the program, using the costs and benefits appropriate to the particular test (i.e., total resource cost, utility cost test, etc.) We use the term "cost-neutral" to describe the measures that provide benefits to participants that are at least equal to the participant's costs, which was the initial test for measure eligibility under the PUA.

¹⁷ DSM Portfolio Pro has been independently reviewed by various utilities, their consultants, and a number of regulatory bodies, including the Iowa Utility Board, the Public Service Commission of New York, the Colorado Public Utilities Commission, and the Nevada Public Utilities Commission.

of one from the UCT indicates that running the program to save energy is no more expensive than providing the additional energy otherwise needed to meet demand. Any number above one indicates that it is cheaper for the utility to save energy by running the program than it would be to serve the existing load.

Table 24 lists the costs and benefits included in the UCT test. The main benefits included in the UCT are the avoided energy, capacity, and transmission and distribution costs from reduced energy use due to measures installed through the program. The test looks at the lifetime costs and benefits. Therefore, savings over the useful life of the measure are included, discounted back to the present. Costs included in the UCT are the utilities’ costs to operate the program. These includes the servicing fee, an annual 3% of the outstanding loan balance, that the utility pays to AFC First. It also includes the call center fee of \$1,375 per month that each utility pays to AFC First. Marketing costs are also included, although utility marketing fees for OBF were minimal.

Because UCT measures only the impact on the utility, we did not include in this test the incremental measure cost or the interest paid by the customer. However, in the event the customer loan goes into default, the utility is obligated to make up the difference to the lender. Loan losses, therefore, are a utility cost, and are included. Loan losses have been minimal since the program began. (See Repayment for more details on loan losses.)

Table 24. UCT Benefits and Costs

Benefits	Avoided energy
	Avoided capacity and transmission and distribution
	Avoided line loss
Costs	Servicing fees
	Call Center fees
	Evaluation
	Marketing
	Loan losses

TRC Test

The TRC test measures the dollar benefits of energy savings against all costs paid by either the participant or the utility to install the measure, and attempts to determine cost-effectiveness at a more holistic level (though it does not recognize non-energy benefits). In effect, the test answers the question, is the combined group (utility and participants) saving money by implementing this program and these projects?

The TRC test considers costs to customers and the utility for measures financed through the program as well as benefits. Table 25 lists the components of the TRC test. The benefits included in the TRC tests, as in the UCT, are the avoided energy, capacity, and transmission and distribution costs. As participants reduce their energy use, the utility avoids fuel purchases and defers capacity and transmission and



distribution construction, maintenance, and upgrades. Line losses are also reduced and counted as a benefit.

The costs included in the TRC are the utility costs to operate the program, as in the UCT. Unlike the UCT, the TRC also includes the participant costs. Participant costs include the incremental measure cost and the financing charge. The incremental measure cost is the amount the participant pays in excess of the standard equipment cost to purchase the more efficient equipment. The finance charge is the present value of the interest that the participant will pay over the life of the loan.

Table 25. TRC Test Benefits and Costs

Benefits	Avoided energy
	Avoided capacity and transmission and distribution
	Avoided line loss
Costs	Servicing fees
	Call center fees
	Evaluation cost
	Marketing
	Incremental measure cost
	Finance charge

Net Participation Rate

Cadmus performed both tests using full costs and benefits, and a second time with the net participation rate applied. The net participation rate (also referred to as the NTG ratio) that the Cadmus team calculated for this evaluation represents the incremental participation that resulted from the OBF program, that would not have occurred with only the rebate programs in place. Applying that rate to the benefits and variable costs (service charge, financing charge, and measure cost) included in the cost-effectiveness tests determines whether the additional savings achieved by the OBF program (beyond what people would have done on their own or with rebates) are sufficient to make the program cost-effective. In this way, the savings attributable to the rebate programs are carved out of the OBF Program results. The incremental UCT meets the ICC requirement that the cost-effectiveness analysis address forward-looking marginal administrative costs.

Table 26. Net Participation Ratio (equal to NTG ratio)

Net Participation (NTG)	0.87
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The California Standard Practice Manual for assessing DSM program cost-effectiveness describes the basic benefit and cost methodologies we used for this test. Cadmus modified these methodologies to incorporate costs specific to financing, such as interest, servicing fees, and loan losses.

Inputs

Benefits included avoided energy, capacity and transmission and distribution, and line losses. To calculate this amount, Cadmus used measure data provided by AFC First, and the Illinois Technical Reference Manual, version 2 (TRM)¹⁸ savings algorithms to determine per-unit savings per measure. Cadmus then applied the avoided costs values as provided by each utility.

Utility program administration costs included call center charge paid to AFC First, the annual servicing fee of 2.99% of the outstanding loan balance (3.99% for smaller loans), marketing costs, the cost of the evaluation, and loan losses. Table 27 shows the costs per utility over the two years. Cadmus calculated the annual servicing fee as a stream of payments based on the outstanding principle for each loan made during the period in question (EPY5/GPY2 and EPY6/GPY3). The call center fee is a fixed monthly charge assessed to each utility during the time that their program was active. All utilities had 24 months of fees assessed, except AIC, which stopped issuing new loans in August of 2013, and Nicor, which did not start issuing loans until January 2014. Utilities provided marketing costs and loan losses.

Cadmus calculated the evaluation payments made after each program began, based on information from IEA and Cadmus' own records. Because this was a statewide program operated in order to provide an undistorted evaluation of the cost-effectiveness of a mature program, Cadmus did not include evaluation payments made before the program was active, or after the two-year period of the cost-effectiveness evaluation.

Table 27. Costs Per Utility for EPY5/GPY2 and EPY6/GPY3 (June 2012 – May 2014)

Utility	Servicing Fee	Call Center Fee	Marketing	Evaluation	Loan Losses	2-year Total
AIC	\$556,779	\$19,250	\$72,000	\$27,658	\$7,111	\$682,798
ComEd	\$171,759	\$33,000	\$45,302	\$27,658	\$0	\$277,718
NSG	\$32,674	\$4,995	\$750	\$8,297	\$1,497	\$48,213
PGL	\$38,745	\$28,251	\$4,250	\$19,361	\$3,544	\$94,150
Nicor	\$46,738	\$6,875	\$5,000	\$12,408	\$0	\$71,021
OBF Program						\$1,173,900

Cadmus calculated participant costs (incremental measure costs and financing charge) from loan and project data supplied by AFC First. We used the incremental cost values provided by the Illinois TRM v.2. We calculated total finance charge based on the loan amount and loan tenor provided by AFC First. Table 28 shows participants costs by utility.

While we only included the incremental cost of the measure (above the cost of a standard measure), Cadmus included the full interest charge. We understood the theory behind the OBF Program to assume

¹⁸ Illinois Technical Reference Manual, version 2. http://www.ilsag.info/il_trm_version_2.html



that, without OBF, most customers would not have access to financing and would make a purchase with cash or not participate. The loan is therefore a result of the program, and the full financing charge is a program cost. The financing charges are calculated as the present value of the loan payments, discounted at 3%, minus the original loan amount.

Table 28. Participant Costs for Loans Issued in EPY5/GPY2 and EPY6/GPY3 (June 2012 – May 2014)

Utility	Participation	Financing Charge	Incremental Measure Cost	Total Costs
AIC	939	\$376,358	\$2,585,252	\$2,961,610
ComEd	307	\$98,093	\$3,487,894	\$3,585,987
NSG	68	\$21,582	\$3,961,019	\$3,982,601
PNG	79	\$24,650	\$3,760,698	\$3,785,348
Nicor	109	\$30,607	\$2,175,676	\$2,206,283
OBF Program	1,502	\$551,291	\$15,970,539	\$16,521,829

Discount Rate

Table 29 provides the discount rates used for the cost-effectiveness analysis. The Cadmus team used the utility weighted average cost of capital (WACC) as the discount rate to convert future energy savings benefits into present day values. Though the practice is not without controversy, WACC is commonly used to discount the benefits side of the equation under the TRC test.

Traditionally, analysts do not discount the cost side of the equation for rebate programs, as most costs are one-time payments. However, Cadmus also applied the WACC discount rate to the service charge, the only utility cost that is calculated as a stream of payments over time.

The finance charge is also spread over several years, and therefore must be discounted. The most appropriate treatment of loans is to amortize over time at loan rate and discount back at some other rate, often the weighted cost of capital (also the rate used on the benefits side). While we believe that is the correct approach, for this program, the two rates are equal and this approach results in a finance cost of \$0. Instead, we opted to discount the finance charge using the U.S. Treasury bill (T-bill) rate of 3%. We assume the customers would have paid cash without the program; therefore, the T-bill rate acknowledges the alternate use of the dollars spent on interest, which was likely to achieve a more modest return than that achieved by utility investors.

Table 29. Discount Rates

Input Description	Value	Source
General discount rate	4.99%	Program cost of capital (all utilities)
Finance charge discount rate	3.00%	U.S. Treasury bill rate

Breakeven Analysis

The Cadmus team conducted a breakeven analysis to determine what level of participation, given the relative costs and benefits per measure, would be necessary for the program to be cost-effective. The breakeven point identifies at what level of participation a program becomes cost-effective. This is useful for planning in the event that a program is not cost-effective based on current participation levels. We conducted this analysis using both the TRC and UCT costs and benefits.



Detailed Findings

Program Design

The Cadmus team interviewed stakeholders and surveyed contractors and participants to determine how the underwriting criteria, the measure eligibility, and the interest rate impact program performance.

Customer Eligibility

In order to be eligible, participants must be owners of an eligible property and a customer of one of the utilities sponsoring the program. Customers must also satisfy the financial underwriting criteria established by AFC First and approved by each utility. The traditional financial underwriting criteria, including minimum credit score, no bankruptcy, limited collections, income verification, and maximum debt-to-income ratio, are the same across all four utilities. In addition, all of the utilities require that customers be in good standing on their utility bills.¹⁹

According to AFC First, credit score is the primary reason for application denial. AFC First staff stated that other features of the program, such as the difficulty establishing eligible measures, caused greater barrier to participation than any aspects of the loan program. Staff reported that the loan product is similar to what the company offers in their other energy efficiency programs.

The credit score was the primary focus of all other stakeholder comments regarding customer eligibility. One utility staff member thought the score should remain at 640. However, staff from the remaining three utilities stated they felt the minimum credit score was too high and caused an unnecessary obstacle to potential participants. One utility wanted to eliminate the credit score as a criteria completely and rely only on bill payment history. This staff person stated that the utility did not report to the credit bureau and did not consider the credit score as an accurate reflection of a customer's likelihood to pay their utility bill. All external stakeholders stated they wanted a credit score that achieved the right balance between open participation and risk.

The Cadmus team evaluated the current underwriting system by reviewing the rate of denied applications by several factors, including credit score. These results are presented in the Alternative Underwriting_section.

Eligible Measures

During interviews in 2012, AFC First staff stated that identifying eligible measures was the most difficult part of startup. The Cadmus team identified three potential difficulties related to eligible measures. First, the original cost-neutral rules made it challenging to find measures that qualified. Very few measures were available for financing in the early period of the program when this was the only pathway to establishing measure eligibility. Second, it is difficult for customers to navigate projects that

¹⁹ The definition of good standing varies from utility to utility. AFC performs three checks of the customer's utility account during the loan process.

involve options from multiple single-fuel utilities (i.e., they have different gas and electric providers). This does not apply to AIC customers. Finally, not all of the utilities are offering financing for all of the measures for which they provide rebates.

Cost-Neutral Versus Cost-effective Measures

The original cost-neutral rules established by law required each utility to determine which measures would provide sufficient savings to meet or exceed the cost of installation in their territory.

Geographical differences between utility territories meant that even for measures with like fuels, the savings estimates could be different from utility to utility. Each utility was responsible for independently verifying what measures would be eligible for their OBF offering.

Before the program was opened to all electric measures in a Commission-approved utility plan, ComEd was able to identify refrigerators as a cost-neutral measure. The early change in the rules for electric measures (October 2011) meant that ComEd could add central ACs within a few months of program launch. ComEd also added all-electric home weatherization as an eligible measure, but it did not have any uptake for this measure.

Staff at all the gas utilities confirmed that the cost-neutral rules made it difficult to identify gas measures that qualified. PGL and NSG launched their programs with only gas furnaces as eligible measures. Nicor Gas did not launch its program until after the rule change allowing plan-approved gas measures. AIC's program was supported by a full array of electric measures, so its program had numerous measures available to customers early on, but only offered gas furnaces on the gas side. All of the gas utilities added measures after the rule change in 2013. Even so, in the customer survey completed in December 2013, only 84% of customers agreed with the statement that they liked the selection of equipment available for financing. This was slightly below the number of people that agreed with other positive statements about the program.

Measure Coordination

In addition to identifying any measures that qualified, staff at AFC First and the utilities stated that coordination of gas and electric measures is an important factor for program uptake. It is unclear to what degree this continues to be a meaningful barrier for customers.

ComEd has a larger electric customer base than AIC, but ComEd customers have completed fewer AC installations through the OBF Program. This could be in part because of the difficulty customers have coordinating measure rebates between utilities. Customers that have ComEd as their electric provider and a separate company as a gas provider have to apply separately to each company, where AIC customers only have to participate in one program to access both electric and gas measures. However, ComEd requires that any customer receiving a loan for an AC also install a high-efficiency furnace through their gas provider. AFC First is able to coordinate the verification of the project to ensure that the customer is compliant before approving the application. According to AFC First staff, this does not add significant time to the approval process.



In addition, a large proportion of ComEd’s customers are also Nicor Gas customers. As mentioned previously, customers must purchase an eligible furnace in order to qualify for a loan and rebate for a central AC through ComEd. Therefore, until Nicor Gas launched its OBF program in 2014, ComEd customers had to purchase an eligible furnace to qualify for a loan for the central AC, but could not include the furnace cost in the loan. It appears that Nicor Gas’s program launch has done a great deal to overcome this barrier. Thirty-three percent of the ComEd AC loans for the period June 2012 through May 2014 occurred in the six months after Nicor Gas’s program launched.

ComEd’s complete system requirement may be another barrier to greater participation. ComEd requires customers that apply for a rebate on an AC to also apply for a rebate for an eligible gas furnace upgrade at the same time, through their gas utility. AIC allows customers to purchase only a central AC. ComEd notes that the full system replacement requirement, while necessary to make the measures cost-effective, probably limits their customer participation in two ways. Customers that do not have the resources to support the large investment will not replace their ACs through the program. In addition, customers that are satisfied with their gas furnace and do not want to replace it, will not replace their central AC through the program.

Available Measures

Most of the participating utilities currently allow loans for all measures that are also eligible for a rebate. The only utilities that do not offer on-bill financing for all of the measures in the rebate portfolio are PGL and NSG. These utilities offer gas furnaces and boilers but not water heaters.

Utilities are still allowed to add measures that were not included in a Commission-approved utility plan to the OBF Program, if they can be demonstrated to be cost-neutral. At the writing of this report, the only measure that qualified under the cost-neutral path was the refrigerator offered through ComEd’s program. ComEd launched the appliance financing portion of their OBF offering first, before the program was opened to all measures in the utilities Commission-approved plans. According to ComEd staff, ComEd launched the appliance financing portion of the OBF Program because no other measures appeared viable. (This report presents details on program participation in the Program Impact section.)

Loan Design and Interest Rate

AFC First was primarily responsible for the loan design. AFC First proposed the model for the loan program to the ICC and the utilities based on other programs they have operated around the country. They established the loan range up to \$20,000, with the tenor options of three, five, and 10 years, along with the minimum credit score of 640 and other underwriting requirements. They worked with each utility to set bill payment requirements.

AFC First staff reported that sourcing capital was easier for this program than it has been for other programs AFC First operates because of the utility guarantee. According to AFC First staff, the program design team originally intended to work with Chicago-based Covenant Bank as capital provider.

However, that institution was unable to source sufficient capital to fund the program. AFC First was able to quickly contract with a partner they had previously worked with, National Penn Bank, under the same terms and requirements that had been negotiated with Covenant Bank.

AFC First negotiated with the lender, National Penn Bank, to arrive at the interest rate and presented the rate to the utilities and the ICC for approval as part of the loan design. According to interviews shortly after the program launched, stakeholders expressed confusion about the interest rate. Several stakeholder expressed concern that the interest rate was too high, and that it would not attract customers. Others thought that since the ratepayers are accepting all risk for the loans, the interest rate should be closer to 0%.

Due to the utility guarantee of payment, AFC First said the firm was able to reduce the standard market rate (around 8.99%) to 4.99%, lower than other private lender rates for unsecured lending. Contractors that use the OBF Program also frequently mentioned the low interest rate as one of the attractive features of the loan (see the Contractors section). According to a literature review of 10 similar programs published in 2014, the 4.99% rate is at the median rate for a selection of energy efficiency financing programs nationwide.²⁰

AFC First staff stated that the payment guarantee was much more persuasive than other credit enhancements they have worked with, such as a loan loss reserve. One AFC First staff member said, “The guarantee of payment is more important than a loan loss reserve. The guaranteed monthly cash flow is huge in terms of reducing the cost of capital. Anyone providing capital from the private sector is looking to make a return on their capital, so zero risk does not equal zero interest. But the guarantee of cash flow, even more than the guarantee of repayment in the case of default, is great for investors because it provides so much stability and predictability.”

Stakeholders did not report concerns about any of the other loan features, other than the credit score, which is discussed in more detail in the Program Attrition section.

Tied-to-Meter Financing Structure

In contrast to the OBF program loan structure, in a tied-to-the-meter arrangement, the utility places a surcharge for repayment against a particular meter, rather than a particular customer account. When the OBF Program was in the design phase, several stakeholders advocated for a tied-to-meter approach. According to some external stakeholders, a possible benefit of tying the loan to the meter is that people would not be afraid that they may not stay in the property in order to recoup the full benefit of the energy efficiency investment that they make. This type of loan structure is also useful in rental situations, where the renter has an incentive to reduce the monthly bills, but no incentive to make long-term investments. Some external stakeholders also expressed concern with the idea of tied-to-the

²⁰ The Illinois OBF Program is one of the programs reviewed in the study. (Cadmus. *California Joint Utilities Financing Research: Existing Programs Review*. Pacific Gas & Electric, Southern California Edison, Southern California Gas, and San Diego Gas and Electric. April 22, 2014.)



meter loans, commenting that they feared a tied-to-the-meter loan might make buyers skittish and make a property difficult to sell. No external stakeholders were actively advocating that the program adopt tied-to-the-meter loans at this time.

Utility staff all stated they were not in favor of a tied-to-meter approach. They were concerned that nothing like this had been done in Illinois, and the stakeholders were uncertain how legal issues would be resolved as well as how partners or customers would react. The utility staff did not want to have to demand payment on a loan from a customer who did not take out the loan, and they were not certain that they could legally pursue payment from a new owner on such a loan. AFC First staff reported that because it is not a proven concept, they have had difficulty securing capital for other tied-to-meter programs.

To explore borrowers’ potential receptiveness to financing attached to the meter, the Cadmus team used the participant and partial-participant surveys to present two hypothetical scenarios:

- What they would do if selling their house and they could transfer the remaining loan payments to the buyer (scenario 1).
- What they would do if buying a house with a similar energy loan (scenario 2).

Just over one-third (36%) of participants reported they would pay off the remaining balance if selling their house and could transfer the remaining loan payment to the buyer. As shown in Table 30, another third (33%) reported being unsure of their actions under this scenario.

Nearly half of partial participants (49%) reported they would pay off the remaining loan balance if selling their house, with the option to transfer the remaining loan payment to the buyer. Another 31% reported being unsure of what they would do under this scenario. These responses were not significantly different from participant responses to this question.

Table 30. Responses to the Hypothetical Scenario 1

Imagine that you are selling your house and are able to transfer remaining loan payments to the buyer. Would you expect to...	Participants	Partial Participants
Pay off the remaining loan balance before you sell the house.	36%	49%
Transfer the loan without adjusting the sales price.	17%	8%
Transfer the loan and reduce the sales price.	13%	12%
I’m not sure.	33%	31%
Total	100%	100%

As with scenario 1, participant and partial-participant responses to scenario 2 were similar. When asked what actions they would have taken when buying a home with a similar energy-saving improvement loan, one-half (50%) of participants expected the seller to pay the remaining loan balance, as shown in Table 31. Nearly one-third (30%) would have taken over the remaining loan payments, but they would have asked for a lower purchase price. Partial-participant responses were almost identical.

Table 31. Responses to the Hypothetical Scenario 2

Imagine that you are buying a house with energy-saving improvements and a loan like this. Would you expect...	Participants	Partial Participants
The seller to pay off the remaining loan balance.	50%	52%
To take over the remaining loan payments without asking for an adjustment to the purchase price.	4%	6%
To take over the remaining loan payments and ask for a reduced purchase price.	30%	28%
I'm not sure.	16%	14%
Total	100%	100%

Most participants (87%) expressed no concerns that they would move out of their house before paying their loan off. Nearly one-half (44%) said this type of loan (attached to the meter and can be transferred to a buyer) would not change their interest in wanting to finance upgrades covered under the loans, and nearly one-quarter (22%) said “don’t know.” One-third (33%) said it would make them more likely to use financing for the upgrades.

Few partial participants (2%) expressed concerns that they would move out of their house before paying off their loan. Thirty-eight percent said having a loan that is attached to the meter and can be transferred to a buyer would make them more likely to use financing for the upgrades covered under the loan. Nearly one-third (30%) said this type of loan would not change their interest in wanting to finance upgrades, and 22% said they were unsure. Just 10% said having a loan that is attached to the meter and can be transferred to a buyer would make them less likely to use financing for the upgrades covered under the loan.

The survey did not address whether landlords would be willing to use a tied-to-the meter loan. The tied-to-the-meter approach, in theory, would could help overcome a well-known barrier to energy efficiency upgrades for rental properties known as the “split-incentive”. According to the “split-incentive” theory, a landlord has little incentive to make energy-efficiency improvements in a property, because they do not recoup the comfort or savings (in cases where the landlord does not pay the utility bill). At the same time, renters do not have an incentive to make energy-efficiency improvements, because they may not stay in the property long enough to recoup benefit equal to the cost of the measure. If a legal framework could be developed, a tied-to-the-meter financing structure could allow a landlord to make energy efficiency upgrades, and have the tenants pay the monthly installments for as long as they are in the property, and then pass the monthly installments to the next tenant.

Program Implementation

The Cadmus team conducted stakeholder interviews to evaluate the effectiveness of the program implementation.

Start-up

Once the program design was final, starting up the OBF Program consisted of several steps. These steps included finding capital to support loans, negotiating contracts between AFC First and each utility,



identifying eligible measures, and creating data interfaces to allow for rapid underwriting and monthly invoicing. The utilities staggered the program launch over several years. ComEd was the first to launch a program, offering loans for appliances beginning in June of 2011. Nicor Gas was the last to offer a program, bringing their loans online January 2014. Most of the utilities launched the small commercial programs in January of 2014, and Nicor Gas launched the small commercial program in March of 2014.

All stakeholders reported that identifying eligible measures was the most difficult part of the start-up process and resulted in the longest delays. This part of the process is discussed in greater detail in the Eligible Measures section of this report.

In 2012, AFC First reported that program start-up and launch was a long process that was complicated by the multiple parties involved. Each utility had its own legal team with its own priorities, which necessitated signing individual agreements between AFC First and each lender, rather than the joint agreement that AFC First initially proposed. Differences among utilities included their requirements for invoicing, data transfer, and verification of bill pay history. (While the standard underwriting was established program-wide, AFC First negotiated the details of the requirements for utility bill pay history with each utility.)

IT Systems

AFC First staff stated that information technology systems took longer to establish for the Illinois program than with other programs due to the need to adapt to different systems within each utility. The implementer's ability to access applicants' eligibility based on their account standing varied by utility. AFC First was able to build an interface to allow their staff to verify a customer's account number and check their eligibility for AIC, though the project took several months. For ComEd, Nicor Gas, NSG and PGL, AFC First underwriters e-mail a bill pay history request to the utility or post the application to a secure SharePoint website, and the utility verifies the eligibility. According to utility staff, AFC First did most of work to create the IT interfaces. One utility reported it had to process applications manually for its loans until about six months after the appliance program launched.

Staff from all utilities reported that IT systems and data transfer between the utility and AFC First was working smoothly as of June 2014. Two utilities noted that there were a few glitches in the system early on and that AFC First has addressed these issues. One utility report that they were still performing some tasks manually that they hope to automate, but that these tasks were not a bottleneck on the system. Cadmus asked utility staff if major systems adjustments would be needed should the program rapidly scale up, and staff at each utility replied that no major system changes would be necessary. One utility reported that the IT system was never an issue, but rather that sorting through and tracking all the data generated by the system was an issue. The utility was still working on learning which metrics to prioritize.

Marketing

The program is primarily marketed through contractors. AFC First manages the contractor network and is responsible for recruiting and training contractors. AFC First also keeps contractors up to speed with

program changes. Utility staff reported they occasionally attend trainings to provide updates on the program and answer questions. Utility and implementer staff design the marketing materials that contractors use in their outreach. In surveys, 89% of contractors reported they were satisfied with the available training. However, only 71% reported they were satisfied with the program marketing. (See Contractor section for more detail.)

AIC, ComEd, Nicor Gas, and Franklin Energy (the implementer for PGL and NSG) do some direct promotion. ComEd promotes the program through their home-visit programs, such as the appliance recycling program. ComEd staff reported they promote the OBF Program in the footer of their e-mail blasts and also maintain an interactive website.

According to participant surveys, the most common channel for participants to enter the program was through a contractor or retailer (55%). Twenty-four percent of participants learned about the program from a utility mailing.

Staff from all of the utilities reported they are planning on being more involved in marketing the OBF Program going forward. Once it receives its second allocation, AIC plans to market the program aggressively to its low- and mid-income customers together with its middle-income, whole-home program, which offers high incentives. AIC has already determined that over half of its residential customers are in this income range and is in the process of assessing what proportion of those are homeowners. AIC staff estimates that 80% to 90% of the market consists of reactive customers, those that are replacing failed equipment. However, they also noted that customers financed 11 geothermal heat pumps financed through the program, (indicating some customers were proactively investing in energy efficiency).

Nicor Gas staff reported that they intend to focus on outreach to the commercial and multifamily sectors. They have identified their eligible customer base and are in the process of developing a targeted marketing approach.

Partners

The program relies on two types of trade allies: (1) contractors for HVAC, plumbing, insulation, and other trades who install the majority of program measures, and (2) commercial retailers who sell the refrigerators and clothes washers. The Cadmus team surveyed the participating trade allies and interviewed staff from both of the participating retailers.

Retailers

ComEd customers are able to use the OBF Program to obtain an ENERGY STAR-qualified refrigerator from two program-approved retailers (Sears and Abt Electronics). One retailer has a single location while the other retailer is a major chain store with multiple locations throughout the ComEd service area. At the end of February 2014, the Cadmus team interviewed these two retailers about their reasons for partnering with the OBF program, how the program affected their operations, their satisfaction with the program, challenges they experienced, and their suggestions for improvement. The Cadmus team also



included questions about the partnership with retailers in its interviews with staff at ComEd and AFC First. Responses for all of the interviewed parties are summarized below.

Reasons for Participating in the OBF Program

Both retailers said they chose to participate in the OBF program because of successful participation in ComEd rebate programs. One of the retailers also said that providing a new service to enhance customer satisfaction was an important decision factor. The other said the ability to increase sales from lower-income customers who could otherwise not afford to make purchases was an important decision factor.

Program Impacts on Retailer Operations

The Cadmus team sought to identify retailer satisfaction with the program as well as the program effect on the following aspects of the retailers' operations:

- Marketing
- Interaction with retailer credit offerings²¹
- Sales and stocking decisions

Both retailers relied mainly on the program marketing to inform customers about the availability of the OBF Program. One retailer reported that they conducted their own marketing campaign in targeted geographic areas near stores that were participating in the program. This retailer recommended that the program implementer “get the word out there more to consumers” and improve the website because “customers aren’t responding to it.” The retailer requested that the implementer maintain consistent and frequent marketing efforts for the program.

Both retailers offer customers an in-house credit card option for financing purchases. One retailer also offers a lease-to-own program, which is similar to layaway except that the customer can take possession of the product right away instead of at the end of the payment period.

One retailer said, “We don’t push any particular method of payment; we have an [in-house credit] card but don’t like to show preference for any particular method [of payment].” The other retailer said retail staff offer customers in-house credit first and then then on-bill financing only if the customer does not meet in-house creditworthiness requirements.

Both retailers reported experiencing a small increase in sales upon program launch, which then diminished over time. Neither said the increase was enough to affect their overall sales of energy-efficient products. However, one retailer said that the financing created a noticeable increase in sales of ancillary products and services, such as extended warranties.

Neither retailer said the program had affected product stocking decisions.

²¹ Both retailers offer financing through store credit cards, which include no-interest promotions under certain terms and conditions.

Program Operations

One retailer reported experiencing no program-related challenges and was “very satisfied” with the experience.

The other retailer reported experiencing challenges related to employee training and integrating the OBF Program as a payment option. Due to infrequent use of the program, this retailer reported that it was difficult for employees to retain the details of the program over time. In addition, to incorporate on-bill financing as a form of payment, the retailer had to create a workaround system that required duplicative staffing, which decreased the retailer’s profit margin on program products.

Additionally, this retailer said that the program loan process requires the customer to choose a product, then wait to receive additional loan-related paperwork, which the customer must sign and return before completing the purchase. The retailer said that some customers become impatient with these additional steps and ultimately go elsewhere to make their purchase.

The retailer recommended that the program implementer “streamline and optimize overall process flow... sit down and figure out how we can make it a better customer and sales associate experience.” This retailer also suggested that the program implementer conduct analysis to determine which marketing strategies are successful and maintain more consistent and frequent marketing efforts for the program’s duration.

Contractors

The majority of the program measures (with the exception of the refrigerators and clothes washers) are available only through contractors who have registered with both a sponsoring utility and with AFC First. (AFC First manages the contractor network for the OBF Program.) The Cadmus team conducted a survey of participating contractors in March 2014. Out of 60 contractors surveyed, 45 had completed projects using the program, and 15 had not completed any projects financed through the program.

Contractors Not Completing OBF Projects

One-fourth of the surveyed contractors (15 of 60, 25%) had not completed projects financed through the OBF Program. Most of these contractors (11 of 15) reported that they offer the program to at least some of their customers. The contractors who had not completed OBF projects offered a variety of reasons why customers did not access OBF (Table 32).



Table 32. Reasons Given by Contractors for Customers Not Using the OBF Program (n=15)

Reason	Number of Contractors
Lack of customer interest	4
Typical project is incompatible with the program*	2
Customers did not qualify for the program	2
Customers prefer other financing options	2
Other**	2
Did not specify reason	3

*For these contractors, either the project costs after incentives were low (and did not warrant financing), the measure was not eligible, or the contractors' customers were served by a rural electric co-op that does not offer the OBF Program.

**This includes one contractor that needed more information about the OBF Program and another that reported simply "not thinking to offer it."

Offering On-Bill Financing to Customers

A majority of the contractors with at least one completed project financed through the OBF program reported always offering on-bill financing to their customers (30 of 45, 67%), and an additional 10 contractors (22%) reported sometimes offering on-bill financing. The remaining five contractors who had completed projects under the program reported that they do not typically offer it to their customers; one reported being unaware of the program until a customer brought it to his attention and another preferred to offer financing from other sources. Three contractors did not provide a reason for why they do not offer the OBF Program.

Contractors who do not offer the program or who only offer it to some of their customers cited the inability to pay cash as the most important factor to a customer's interest in on-bill financing. These contractors also noted that customers with larger, more expensive projects tend to be interested in the program (Table 33).

Table 33. Customer Characteristics Influencing Interest in the Program; Cited by Contractors who do not Always Offer the Program (n=15)

Customers Most Likely to be Interested in the Program	Customers Least Likely to be Interested in the Program
<ul style="list-style-type: none"> Lack cash required to complete projects (9 mentions) Have larger projects (2 mentions) Are completely replacing emergency equipment (1 mention) 	<ul style="list-style-type: none"> Have the cash required to complete projects or have access to other attractive financing options (12 mentions) Complete smaller projects (3 mentions) Complete new construction projects (1 mention)

Few contractors (six of 45) reported notable differences between the types of projects that use the OBF Program and other projects they complete. Those who did most often stated projects that use the program typically involve higher efficiency equipment (three mentions) or are larger than other projects (two mentions). Two contractors noted projects financed through the program require more paperwork and time (to process financing applications) than other projects.

Contractor Interest in the OBF Program

The 45 contractors with at least one project financed through the program offered two primary reasons for their interest in the program: (1) the attractiveness and convenience of the financial product for their customers and (2) the potential to use the financial product to expand their business (Table 34).

Table 34. Drivers of Contractor Interest in Offering the Program (multiple responses allowed, n=45)

Reason for Offering the Program	Count
Potential to expand business	20
Attractiveness of financing product	19
Customers specifically requested on-bill financing	4
Other	6

In discussing the financing product’s attractiveness, contractors most commonly mentioned the low interest rate, with one noting that the program offers more attractive financing than the equipment manufacturer his company represents. Contractors also cited the convenience of using the financing product for both themselves and their customers, including the fact that it does not include a dealer fee.

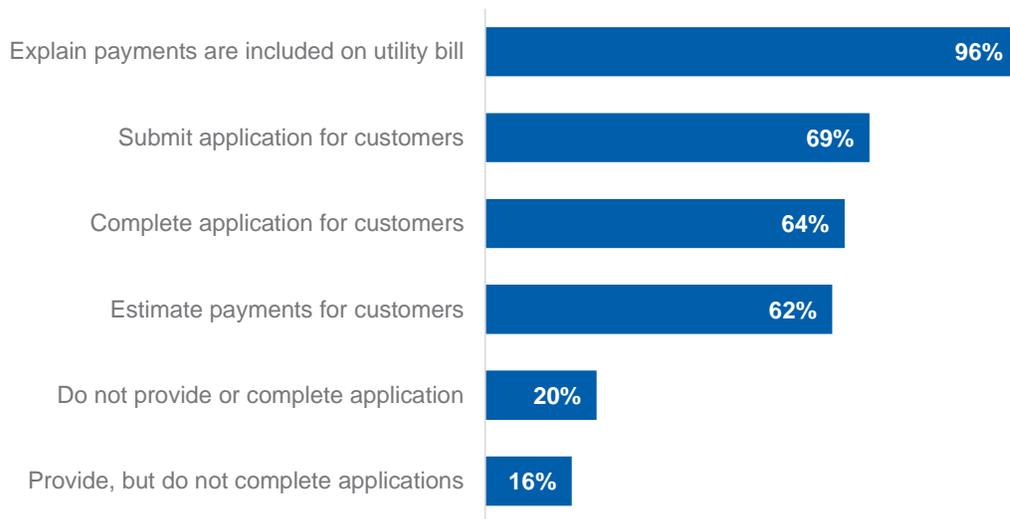
Contractors mentioned several potential business benefits of offering the OBF Program, including a perceived customer demand for financing, the ability to serve customers who are unable to pay cash for improvements, and the ability to use financing as a sales tool. Contractors noted that the program offers them an opportunity to provide additional financing options to customers or to offer financing if they had not done so previously.

Delivery of the OBF Program

Contractors support customers and potential program participants by informing them about features of on-bill financing and assisting them during the application process. Almost all of the contractors (96%) who had completed projects using the program reported informing customers that payments would be included on their utility bills (Figure 4). Most contractors (69%) also reported submitting program applications for their customers, and a majority of contractors (64%) reported completing the application for their customers.



Figure 4. Support Contractors Provided to Customers (n=45)



Contractors reported that their assistance in completing financing applications increases the likelihood that customers will pursue the program, with 44% rating their assistance as very influential and 24% rating their assistance as somewhat influential.

A majority of contractors (22 of 36) who assist customers with loan applications or paperwork reported that customers had not expressed concerns about providing the information needed to enable the contractor to help with the loan process (Table 35). Five contractors reported encountering customer concerns about privacy, while eight others reported encountering concerns about the loan product or financing process, most frequently the amount of time it would take to process a financing application.

Table 35. Customer Concerns with Contractor Assistance in Financing Process, Reported by Contractors Completing or Providing Applications (multiple responses allowed, n=36)

Area of Concern	Count	Percentage
Customers did not raise concerns	22	61%
Concerns with financing product or process	8	22%
Concerns with privacy	5	14%
Other types of concerns	2	6%

Impact of Program on Contractors’ Businesses

Contractors reported relatively low uptake of the program among their customers who qualified for rebates, with more than three-fourths reporting that fewer than 25% of these customers applied for on-bill financing through the program. In describing how the program had affected their businesses, 25 contractors provided an estimate of the number of projects they completed financed through the program. The project volume ranged from one to 63 projects, although most contractors (18 of 25) reported that 10 or fewer of their projects were financed through the program (Table 36).

Table 36. Number of Projects Using On-Bill Financing (n=25)

Projects Financed by the Program	Contractors Reporting	
	Count	Percentage
1 - 5	13	52%
6 - 10	5	20%
11 - 20	3	12%
More than 20	4	16%

Among contractors who estimated the number of OBF projects they completed, OBF typically accounted for less than 5% of the projects they completed in 2013 (Table 37). Two contractors reported using OBF on 50% or more of their 2013 projects.

Table 37. Program Projects as a Proportion of All 2013 Projects (n=25)

Percentage of Projects Funded by the Program	Contractors Reporting	
	Count	Percentage
5% or less	15	60%
5% - 10%	4	16%
10% - 20%	4	16%
More than 20%	2	8%

Two contractors said that offering the program helps them reach specific types of customers. One stated that the program is particularly helpful for elderly customers, and the other stated it is helpful for customers between the ages of 25 and 40, who often have fewer credit choices available than older customers.

Projects Not Approved for the OBF Program

Approximately two-thirds of the contractors with at least one OBF project (29 of 45, 64%) reported that one or more of their customers’ financing applications had been denied. Approximately one-third of these contractors (34%) reported that customers with denied applications never continued with their projects, while approximately one-fifth reported customers with denied applications typically completed their projects (Table 38).

Table 38. How Often Customers Who Were Denied On-Bill Financing Continued With Project (n=29)

How Often Customers Continued With Project	Count	Percentage
Never	10	34%
Rarely	2	7%
Sometimes	6	21%
Often	6	21%
Unknown	5	17%

In open-ended responses, four contractors complained about the number of their customers who had applied for on-bill financing through the program but did not qualified for the loan.



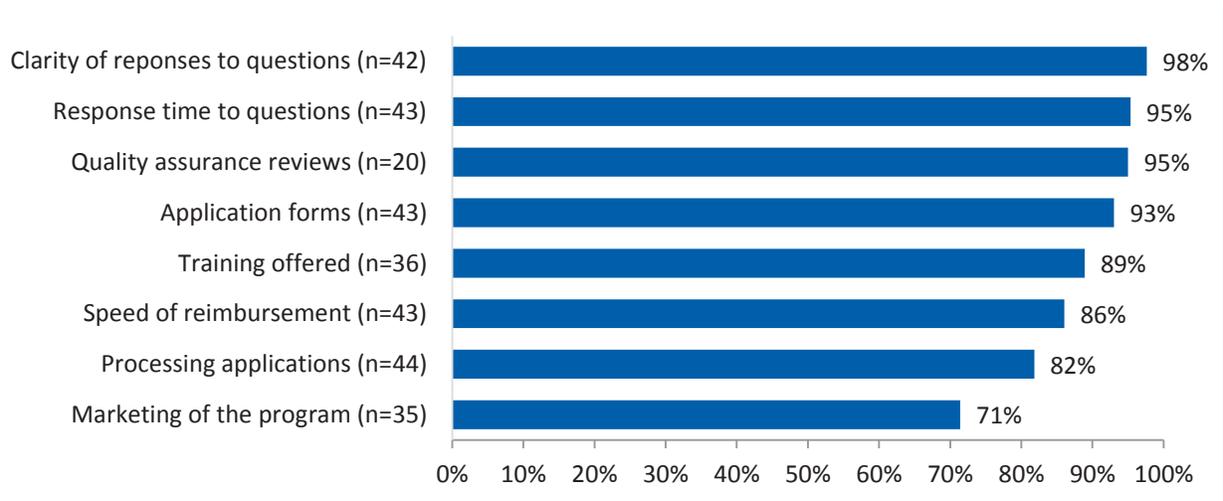
Delivery across Utility Territories

Eighteen of the 60 surveyed contractors reported working in more than one utility service territory. None of these contractors reported any differences in their experience working with different utilities to deliver projects funded through the program, although four noted differences between utility rebate processes.

Program Satisfaction

Contractors who had completed projects financed through the program were largely satisfied with the program, with 80% reporting that the program meets (58%) or exceeds (22%) their expectations. Contractors most often reported satisfaction with both the quality and timeliness of the program’s response to their questions (Figure 5). In open-ended responses, two contractors emphasized their satisfaction with the support they had received from program staff. Fewer contractors were satisfied with the amount of time required to complete the financing process, including application processing time and the speed of providing reimbursement to contractors. Program marketing received the lowest satisfaction ratings from participating contractors.

Figure 5. Proportion of Contractors Reporting Satisfaction With Program Elements*



*Percentages exclude “Don’t know” responses

In open-ended responses, contractors elaborated on their experience with the following program elements (also listed in Figure 5):²²

- **Response time to questions:** Three contractors expressed a desire for increased communication with the implementer regarding the status of their customers' financing applications. Two of these contractors noted that with more information, they could follow up with their customers on any outstanding documents and ensure the applications were complete. One additional contractor expressed dissatisfaction with the amount of time it took the program to respond to his questions, stating that, in some cases, it took more than a week to receive a response.
- **Application forms:** Three contractors offered comments on the application form. One contractor appreciated that the program website prefilled his information on customer applications. Another stated that applications required too much back and forth with the customer. The third stated that some customers were surprised that they were required provide information about their mortgages on the application.
- **Training offered:** Five contractors requested program training, two of whom reported not receiving training and a third who was unaware of program training.
- **Speed of reimbursement:** Three contractors expressed dissatisfaction with the amount of time it took to receive reimbursements. One expected reimbursements within 30 days, and another reported that one time reimbursement was delayed for two weeks because the customer was not available to confirm satisfaction with the work. A third contractor noted that waiting for projects to be completed before receiving payment could be particularly difficult, especially for large projects.
- **Processing applications:** Three contractors expressed dissatisfaction with the program application processing time. One of these contractors reported that it took more than two months for the program to process his first application. Another contractor stated that the process should take no more than a few days, and the third stated the program should respond the same day.
- **Marketing of the program:** Six contractors wanted the program implementer to lead more marketing efforts. Three of these contractors reported not being aware of program marketing.

In other open-ended comments, five contractors stated that the program was easy to use for both themselves and their customers. Three of these contractors stated that, because of this simplicity, their customers had been satisfied with the program.

Continuation in Ameren Illinois Territory

Survey findings suggest that contractors see continuing demand for the OBF Program. In open-ended responses, 17 of the interviewed contractors expressed a desire for the program to be reinstated in

²² The Cadmus team probed contractors who provided unsatisfied ratings for program elements; contractors also provided other spontaneous comments over the course of the survey.



AIC’s territory. One contractor said, “Customers have asked for something like it since it was discontinued.” Another contractor said, “The program lost momentum by being discontinued; just when awareness of it was getting out there, it was discontinued.”

Characteristics of Contractors Delivering the OBF Program

All 60 of the surveyed contractors provided information about their firms. The surveyed contractors largely represented small firms. A majority of contractors (63%) stated their firm had 10 employees or fewer, while 12% stated their firm had more than 20 employees. More than two-thirds of the interviewed contractors (68%) reported that their firm had completed fewer than 250 residential energy-efficiency projects in 2013, including both projects that did and did not qualify for the program, with most contractors reporting between 100 and 250 projects. All of the interviewed contractors reported typically performing HVAC work (54 contractors), while some reported performing insulation and air sealing (five contractors), or both (one contractor).

Many contractors have financing options available to offer their customers other than the OBF Program. Seventy-two percent of the surveyed contractors (43 of 60) reported offering other financing options, most often financing provided by equipment manufacturers (Table 39).

Table 39. Other Financing Sources Offered by Contractors (multiple responses allowed, n=43)

Financing Source	Number of Offerings	Percentage
Manufacturer	30	70%
Local bank or finance company	10	23%
Distributor	5	12%
Other	2	5%

Customer Experience

To better understand the market response to the program, the Cadmus team surveyed both participants and partial participants (those who complete an application but are either denied, or approved but withdraw before closing the loan). Surveys for both groups collected information on how and what motivates customers to enter the program, their experience with the program process, and their satisfaction with the program. The Cadmus team also incorporated questions about possible changes to the program and spillover behavior.

Participant Surveys

In February 2014, the Cadmus team conducted a participant survey and received 75 responses. The results of the survey are presented below.

Sources of Information about the OBF Program

As shown in Table 40, participants learned about the program from a variety of sources. Those completing non-appliance upgrades mostly learned about the program from contractors, whereas those installing appliances most commonly learned about it from their utility (the small sample size for those using the program to fund appliance measures limited statistical comparisons).

Table 40. Sources of Information About the Program

Where Respondents Learned About the Program	Group With Appliance Measures* (n=12)	Group With Non-Appliance Measures** (n=63)	Overall Count (n=75)	Percentage
From a contractor	–	32	32	43%
In material mailed or e-mailed to them by their utility	8	10	18	24%
At a participating retailer	–	9	9	12%
Word of mouth	1	6	7	9%
From their utility website	2	4	6	8%
Other	1	2	3	4%

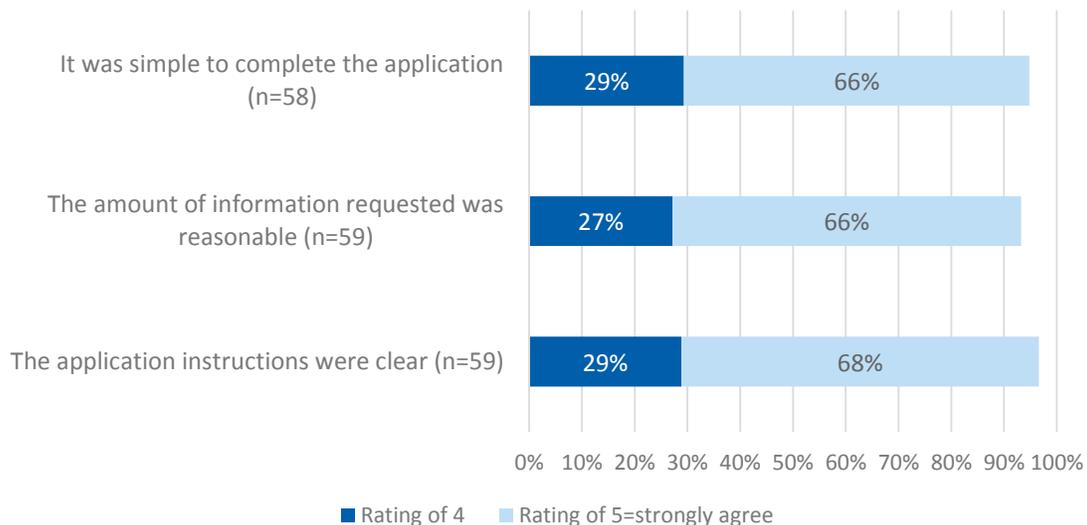
*Refrigerator or clothes washer.

**Central AC, furnace, boiler, heating pump, insulation, or air sealing.

Experience with Application Process

Participants did not experience major difficulties with the loan application process. Most participants (10 of 12) upgrading appliances and a majority of participants (46 of 63) upgrading central AC, heating systems, insulation, or air sealing completed the loan application themselves. Among those completing the loan applications, the majority of participants (greater than 90%) found the loan application clear and reasonable in terms of information requested and simple to complete (Figure 6).

Figure 6. Percentage of Participants Agreeing With the Following Statements*



*Participants rated each statement on a scale of 1 to 5, where 1 meant strongly disagree and 5 meant strongly agree.

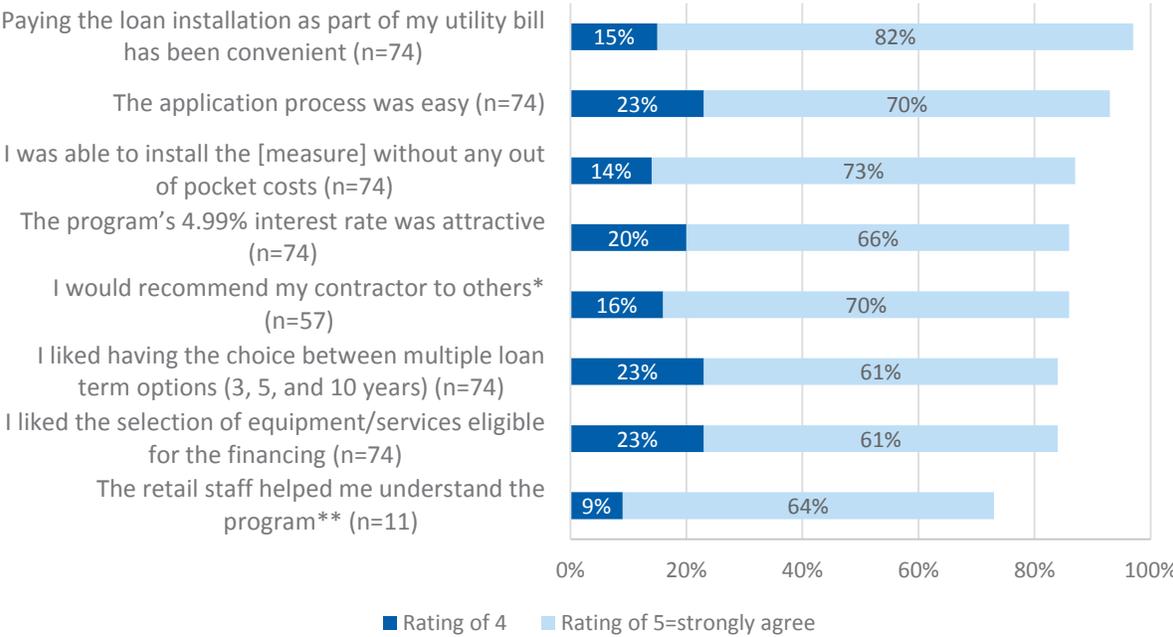


Fifteen participants provided comments about ways to improve the OBF program. Four wanted an option to make larger payments on their loans. One of these four respondents explained that participants either had to pay off the loan in full at one time or complete the full repayment schedule (i.e., no option existed to increase monthly payments, thus paying off the loan early). Three participants wanted to know the remaining loan amount (one of these respondents wanted an option to check loan balances online or on utility bills, citing the balance as “a mystery”).²³

Satisfaction With the Program

Overall, participants reported satisfaction with many program elements. On a scale of 1 to 5, where 1 meant strongly disagree and 5 meant strongly agree, the majority of participants (greater than 60%) strongly agreed with the statements about the program (Figure 7).

Figure 7. Participant Agreement With Statements About the Program (ratings of 4 or 5)



*Only asked participants who were installing non-appliance measures.

**Only asked participants who were installing appliance measures.

Three of four participants who disagreed (ratings of 1 or 2) with the statement “I was able to install the [measure] without any out-of-pocket costs” commented on the out-of-pocket costs the program loan failed to cover:

- The loan failed to cover the cost of installing an ENERGY STAR refrigerator.

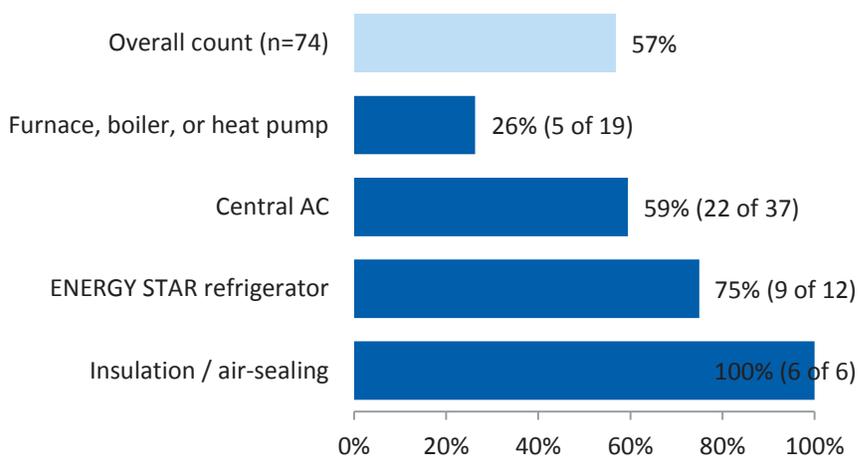
²³ Customers can call AFC First to obtain a payoff quote for all utilities except Nicor Gas, which quotes payoffs directly to customers.

- The loan covered all costs except the difference between the contractor’s initial estimate to install the gas furnace and the actual cost of the installation—a difference of \$600.
- The loan failed to cover \$2,000 of the overall costs to purchase and install a central AC system.

Motivation to Complete the Upgrade and Participate in the Program

Though just over one-half (57%) of all participants reported not planning to complete the upgrade prior to learning about the program, this number varied by measure. As shown in Figure 8, participants purchasing a new furnace were the most likely to have planned the upgrade prior to learning about the program. Insulation, on the other hand, was a measure respondent only planned to purchase after learning about the program.

Figure 8. No Plan to Complete the Upgrade Prior to Learning About the Program



As shown in Table 41, when asked why they chose to complete the upgrade, participants most commonly reported seeking to reduce energy use and to replace equipment on the verge of failure.

Table 41. Reasons for Completing the Upgrade by Measure Type (multiple response allowed)

Reasons for the Upgrade	Central AC (n=38)	Heating System (n=19)	Appliance (n=12)	Envelope (n=6)	Overall Count (n=75)	%
To reduce energy use	18	7	10	6	41	55%
Equipment was on the verge of failure	21	8	5	–	34	45%
Equipment stopped working	4	8	–	–	12	16%
New equipment had features I wanted	3	–	3	–	6	8%
I previously did not have this equipment	1	–	–	–	1	1%
Other	1	1	–	–	2	3%

Participants also reported that the program influenced their decision to complete the upgrade. As shown in Figure 9, on a 1 to 5 scale, where 1 meant not at all influential and 5 meant extremely

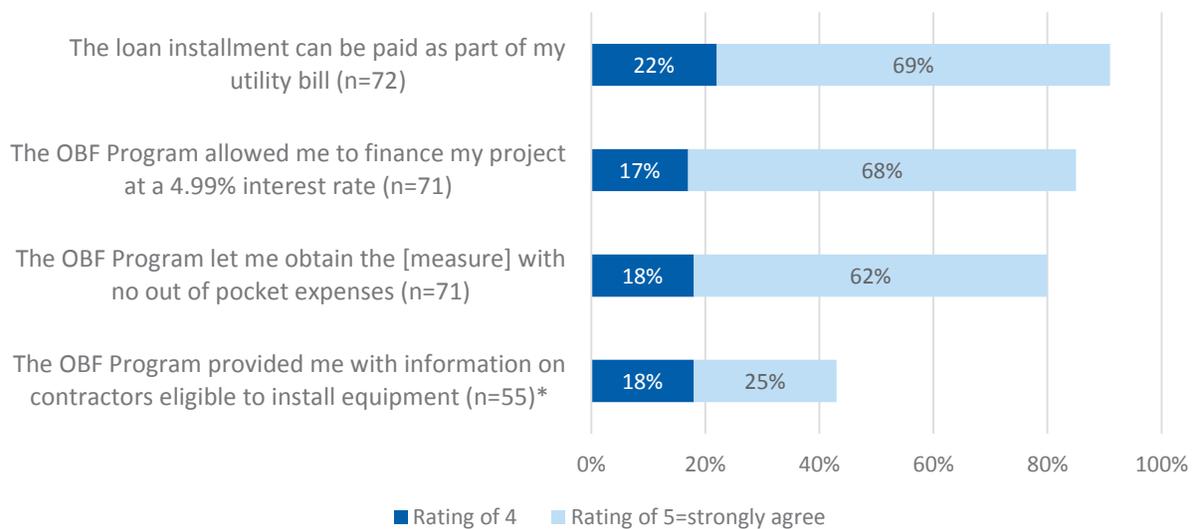


influential, the majority of participants (greater than 80%) rated the following program features as influential (a rating of 4 or 5) in their decisions to complete the upgrades. Respondents made these comments:

- *Having the loan payment as part of the utility bill*
- *Financing the upgrade with interest rate of 4.99%*
- *Completing the upgrade with no out-of-pocket expenses*

As shown in Figure 9, program information on contractors proved to be the least influential feature.

Figure 9. Influence Ratings of Program Features on Decisions to Complete Upgrades



*Only asked participants who were installing non-appliance measures.

When asked what actions they would have taken had the program financing not been available, nearly one-third (32%) of participants reported they would not have been able to install the measure, and another one-third (33%) would have postponed the installation for a year or more. One-third (33%) of participants would have proceeded with the project, with over one-half (60%) of those saying they would have installed the same measure.

The Cadmus team also inquired about how participants would have paid for the measure had program financing not been available. As shown in Table 42, those who responded most commonly cited using a credit card (financed over time), which was followed by a home equity line of credit.

Table 42. How Participants Would Have Paid Without OBF (Multiple Response Allowed, n=52)*

Payment options	Count	Percentage offering the response
Credit card (financed over time)	20	38%
Home equity line of credit	9	17%
Cash or check	7	13%
Contractor-provided financing	7	13%
Credit card (would pay off all upgrade charges on the next bill)	4	8%
Personal loan	2	4%
Bank loan	1	2%
Other	2	4%
Don't know	7	13%

*Excludes all respondents that would have cancelled their project altogether without OBF and one respondent who reported they could not have bought the measure when asked this question.

Additional Upgrades Beyond the OBF Program

Nearly all (96%) of the participants reported installing at least one upgrade not funded through the OBF program during the past five years, with energy-efficient lights and new heating systems the two most commonly installed measures (Table 43).

Table 43. Installation of Upgrades not Funded Through the Program (multiple response allowed, n=75)

Upgrades Completed in the Past Five Years	Count	Percentage
Installed energy-efficient light bulbs	61	81%
Installed new heating system	42	56%
Purchased other efficient appliances	32	43%
Replaced lighting fixtures	32	43%
Added weather stripping, caulking, or other measures to reduce air leakage	30	40%
Installed a new water heater	27	36%
Installed new cooling system	20	27%
Replaced windows	20	27%
Sealed or insulated duct work	18	24%
Added wall insulation	12	16%
Added attic insulation	11	15%
Other	7	9%
None	3	4%

More than one-half (59%, n=75) of participant respondents reported that their experience with the program encouraged them to install additional upgrades not financed through the program. This is a relatively high result, and could represent a sizable amount of savings. Survey respondents should be cross-checked against the rebate databases to verify they did not apply for a rebate.

As shown in Table 44, participants' most common upgrades included energy-efficient light bulbs and new heating systems.



Table 44. Additional Upgrades Since Participating in the Program (multiple response allowed, n=44)

Upgrades Completed Since Program Participation	Count	Percentage
Installed energy-efficient light bulbs	27	61%
Installed new heating system	17	39%
Purchased other efficient appliances	12	27%
Replaced lighting fixtures	12	27%
Installed a new water heater	11	25%
Installed new cooling system	10	23%
Replaced windows	9	20%
Added weather stripping, caulking or other measures to reduce air leakage	8	18%
Added attic insulation	7	16%
Added wall insulation	5	11%
Sealed or insulated duct work	3	7%
Other	3	7%
None	2	5%

The Cadmus team asked participants who reported completing upgrades since participating in the OBF program whether they received a utility rebate or discount for those measures. As shown in Table 45, those who installed new heating or cooling systems (measures more expensive than other listed measures) were more likely to report having received a rebate or discount than those who installed other measures.²⁴

²⁴ Beginning with Nicor Gas in January 2014, the utilities requested that AFC First verify the customer had submitted a rebate application as part of the loan application process. As a result, the Cadmus team expects that the proportion of customers receiving rebate for a measure financed through the program is now higher than at the time of the survey.

Table 45. Rebates for Subsequent Upgrades (multiple response allowed, n=37)

Upgrades Completed Since OBF Participation	Count*	Utility Rebate/Discount Received?
Installed energy-efficient light bulbs	22	3
Installed new heating system	17	13
Purchased other efficient appliances	11	4
Installed new cooling system	10	6
Replaced lighting fixtures	10	0
Installed a new water heater	10	2
Replaced windows	6	3
Added weather stripping, caulking or other measures to reduce air leakage	6	0
Added attic insulation	5	1
Added wall insulation	4	1
Sealed or insulated duct work	2	0
Other	3	1

*Counts only include those that indicated whether or not they received a utility rebate or discount.

All participants reported on whether they planned future home improvement projects, with 73% planning to complete additional projects in the next 12 months. As shown in Table 54, participants most commonly reported planning to weatherize their homes or purchase efficient appliances.

Table 46. Planned Upgrades in the Next 12 Months (multiple responses allowed, n=75)

Planned Upgrades	Count	Percentage
None	20	27%
Adding weather stripping, caulking, or other measures to reduce air leakage	14	19%
Purchasing other efficient appliances	13	17%
Replacing windows	12	16%
Adding attic insulation	11	15%
Installing a new water heater	10	13%
Adding wall insulation	7	9%
Replacing lighting fixtures	5	7%
Installing energy-efficient light bulbs	4	5%
Sealing or insulated duct work	3	4%
New cooling system	2	3%
New heating system	2	3%
Other	1	1%

Partial Participant Surveys

In February 2014, the Cadmus team conducted a web survey of 65 partial participants in the OBF program. This section presents the results of the survey. Partial participants are utility customers who



applied for financing through the program, but either did not qualify for the loan or were approved and then withdrew from the program.

Sources of Information About the OBF Program

Partial participants learned about the program from a variety of sources (Table 47). Those completing non-appliance upgrades mostly learned about the program from contractors or their utility. Those installing appliances most commonly learned about the program from their utility. The small sample size for those installing appliance measures funded through the program limited our ability to make statistical comparisons between groups.

Table 47. How Partial Participants Learned About the Program

How Respondents Learned About the Program	Appliance Measures* (n=15)		Non-Appliance Measures** (n=50)		Total (n=65)	
	Count	%	Count	%	Count	%
In material mailed or e-mailed by utility	6	40%	11	22%	17	26%
From utility website	7	47%	10	20%	17	26%
From a contractor	–	–	14	28%	14	22%
Word of mouth	2	13%	9	18%	11	17%
At a participating retailer	–	–	1	2%	1	2%
Other	–	–	3	6%	3	5%
Don't know	–	–	2	4%	2	3%

*Refrigerator or clothes washer.

**Central AC, furnace, boiler, heat pump, insulation, or air sealing.

Table 48 shows that those with a denied application learned about the program from multiple sources, whereas those with an approved but withdrawn application learned about the program from a contractor or utility. The small sample size for those with an approved but withdrawn application limited our ability to make statistical comparisons between groups.

Table 48. How Respondents With Denied or Withdrawn Applications Learned About the Program

How Respondents Learned About the Program	Not Approved (n=55)		Approved but Withdrawn (n=10)	
	Count	%	Count	%
In material mailed or e-mailed by utility	12	22%	5	50%
From utility website	15	27%	2	20%
From a contractor	11	20%	3	30%
Word-of-mouth	11	20%	–	–
At a participating retailer	1	2%	–	–
Other	3	5%	–	–
Don't know	2	4%	–	–

Reasons for Applying

When asked why they wanted to purchase the measure, partial participants most commonly reported they were seeking to reduce household energy use. This was followed by replacing broken equipment or equipment on the verge of failure (Table 49).

Table 49. Reasons for Applying by Measure Type (multiple responses allowed)

Reasons for Upgrading	Central AC (n=28)	Heating System (n=17)	Appliance (n=15)	Envelope Measure (n=5)	Overall (n=65)	%
To reduce energy use	17	5	5	5	32	49%
Equipment stopped working (could not repair or was too costly to repair)	7	8	4	–	19	29%
Equipment was on the verge of failure	6	2	3	1	12	18%
Equipment stopped working (did not try to repair)	1	1	5	–	7	11%
New equipment had features I wanted	5	1	1	–	7	11%
I previously did not have this equipment	1	1	1	1	4	6%
Other	2	2	–	–	4	6%

The Cadmus team’s online survey also asked partial participants with approved applications why they decided to withdraw their applications. As shown in Table 50, those responding most commonly cited that the overall cost of the project was too high or that they found a more attractive offer than the one offered through the program.

Table 50. Reasons for Withdrawing the Application (multiple response allowed, n=10)

Reason	Count
Overall cost of the project was too high	4
I found a more attractive offer than the program	4
It took too much time to complete the application	2
The duration of on-bill payment was too long	1
I decided to pay with cash to avoid paying interest	1
The program was not beneficial	1

Experience With Application Process

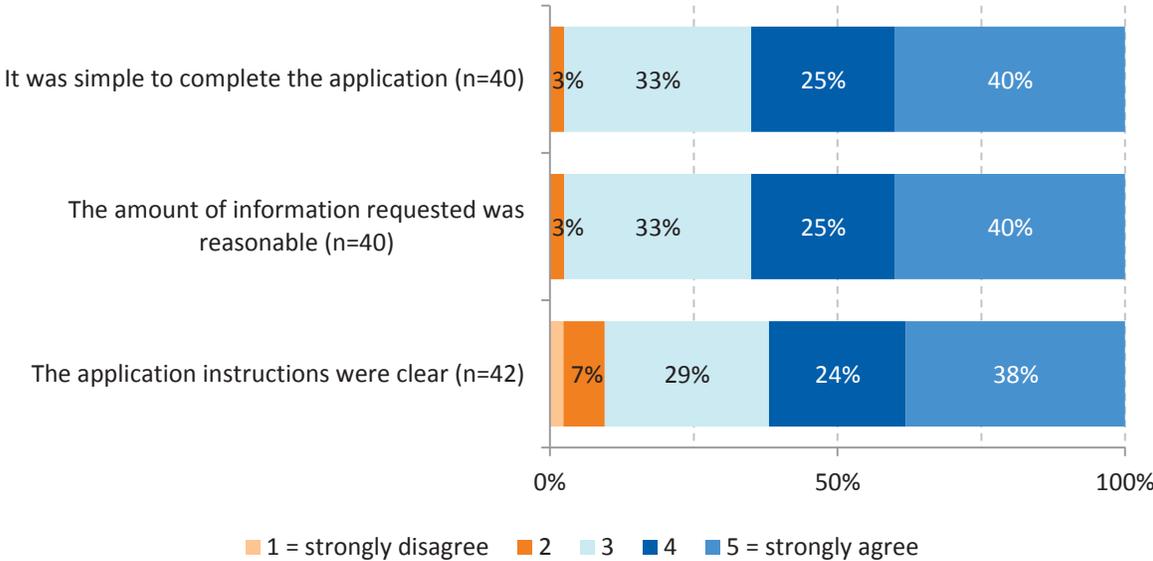
Partial participants reported having no major difficulties with the loan application process, but they were less positive about the application process than they were about the attractiveness of program features. Most of those with an application for upgrading appliances (14 of 15) and a majority of those with an application for upgrading central AC, heating systems, or insulation/air sealing (35 of 50) completed the loan application themselves.

When asked to rate how simple, clear, and reasonable the application was, not all of the 49 respondents who reported that they had completed the loan application themselves provided an answer. Of those



who provided an answer, nearly two-thirds rated the loan application as having clear instructions, being reasonable in terms of information requested, and being simple to complete (indicated by giving a rating of 4 or 5). Another one-third of respondents were neutral (gave a rating of 3) as to whether the application had clear instructions, was reasonable in terms of information requested, and was simple to complete (Figure 10).

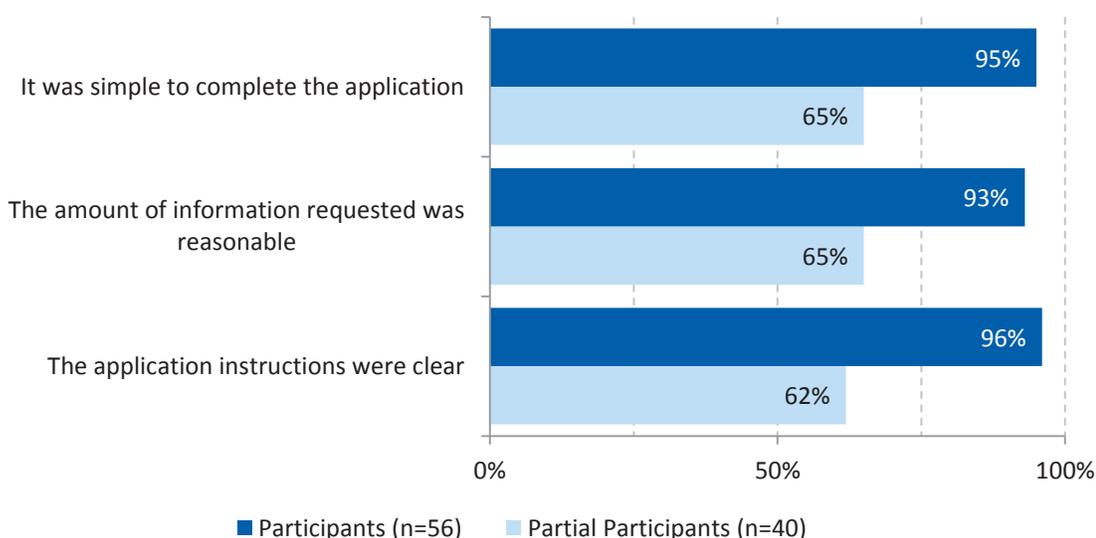
Figure 10. Percentage of Partial Participants Agreeing With the Following Statements*



*Of the 49 respondents who completed the application and were asked to rate these statements, seven to nine respondents refused to provide a rating for each statement. These missing responses were excluded from this analysis.

As shown in Figure 11, compared to full participants, partial participants were significantly less positive about the loan application process (Z-test of proportions at $p < 0.05$).

Figure 11. Percentage Agreeing With the Following Statements (rating of 4 or 5)



Those who had their application denied more frequently agreed that the application was clear, simple, or reasonable than those who withdrew their application (Table 51). However, the small sample size for those with withdrawn applications limited our ability to make statistical comparisons between groups.

Table 51. Partial Participants’ Ratings of the Application Process (rating of 4 or 5)

Process Component	Not Approved	Approved but Withdrawn
It was simple to complete the application	69% (n=32)	50% (n=8)
The amount of information requested was reasonable	72% (n=32)	38% (n=8)
The application instructions were clear	64% (n=33)	44% (n=9)

Eighteen partial participants provided comments about ways to improve the program. Five wanted the program to have options for people with poor credit (one of these five respondents suggested including another criteria besides the credit score to determine loan eligibility). Four reported disappointment about being denied (three of these four individuals also reported wanting the program to help those in need). Three said that the program should help people in need or enable financing for those in need (these three individuals did not report being disappointed about being denied). Three said there should be no criteria to qualify for the loan (two of these three respondents explained that as a utility customer, they should have been eligible for the program). The other partial participants’ comments varied: one wanted the application to be approved, one recommended that the program offer an interest-free loan, and another said that the program could be more organized (this respondent reported receiving contradicting information about the rebate amount without explaining whether the rebate was for the upgrade related to the program loan).

Additionally, of the four individuals who reported disappointment about being denied, two believed that their utility was the organization that provided the financing. One said, “I am unsure if I would ever

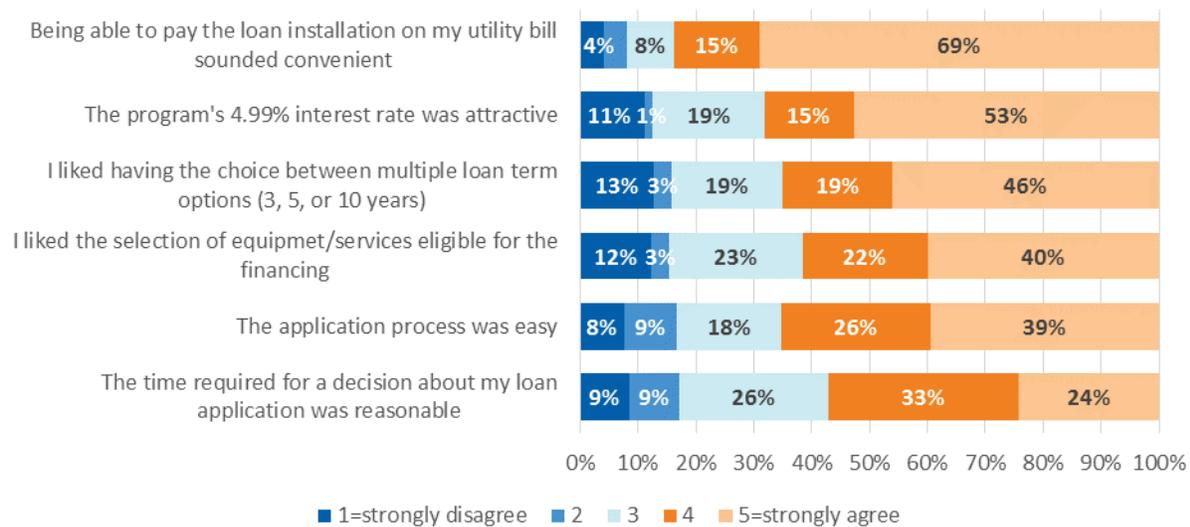


consider financing through [the utility] again,” and the other said, “I was denied the loan...With my payment history to [the utility], I think I should have been treated a little better.”

Partial Participant Satisfaction With the Program

Overall, partial participants reported being moderately satisfied with many program elements. On a scale of 1 to 5, where 1 meant strongly disagree and 5 meant strongly agree, approximately 40% to 60% of partial participants agreed with all of the statements about program attractiveness illustrated in Figure 12 (indicated by giving a rating of 4 or 5). The statement “Being able to pay the loan installation on my utility bill sounded convenient” received the highest ratings (62% rated it as 4 or 5). The statements “The time required for a decision about my loan application was reasonable” and “I liked the selection of equipment/services eligible for the financing” received the lowest ratings (40% rated as 4 or 5).

Figure 12. Partial Participants’ Ratings for Program Attractiveness (n=65)



As shown in Figure 13, compared to full participants, partial participants reported significantly lower agreement with several statements about various program elements.

Figure 13. Comparison of Ratings for Program Attractiveness (rating of 4 or 5)

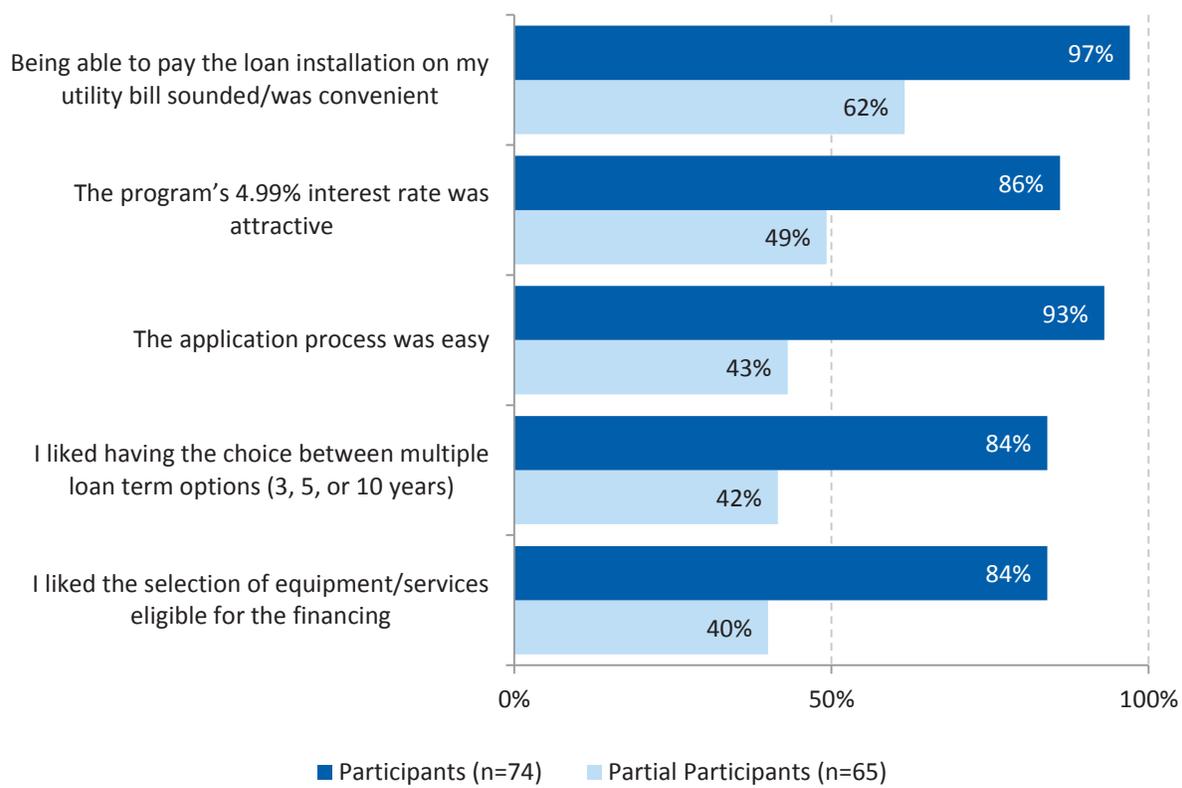


Table 52 compares ratings for program attractiveness from partial participants with denied applications to those with approved but withdrawn applications. Although those with denied applications more frequently agreed with many of the statements about program attractiveness than those who withdrew their applications, the small sample size for those who withdrew their applications limited our ability to make statistical comparisons between groups.



Table 52. Comparison of Ratings for Program Attractiveness (rating of 4 or 5)

Statements About Program Attractiveness	Not Approved (n=55)	Approved but Withdrawn Application (n=10)
Being able to pay the loan installation on my utility bill sounded convenient	62%	60%
The program's 4.99% interest rate was attractive	53%	30%
I liked having the choice between multiple loan term options (3, 5, or 10 years)	42%	40%
The application process was easy	44%	40%
I liked the selection of equipment/services eligible for the financing	44%	20%
The time required for a decision about my loan application was reasonable	38%	50%

Upgrades Subsequent to Program Application Denial or Withdrawal

When asked, just over one-third of the 65 partial participants (37%) reported purchasing the measure they applied for and 8% reported buying a less efficient measure. As shown in Table 53, of those making a purchase, respondents most commonly mentioned the payment method was cash or check. Respondents made thirteen mentions of using a different kind of financing (credit card, contractor-provided, home equity loan, retirement loan, or bank loan). Only two respondents mentioned using multiple payment methods. One respondent reported paying for the measure with cash, credit card (charges paid off on the next bill), and contractor-provided financing. The other reported paying for the measure with two credit cards: one credit card with charges paid off on the next bill and another credit card with charges financed over time.

Table 53. Method of Payment for Upgrades (multiple response allowed, n=29)

Payment Option Used	Count	Percentage
Cash or check	16	55%
Credit card (financed over time)	4	14%
Credit card (paid off on the next bill)	3	10%
Contractor-provided financing	3	10%
Home equity line of credit	1	3%
Retirement loan	1	3%
Bank loan	1	3%
Other	3	10%

All partial participants reported on whether they had planned future home improvement projects, with 82% planning to complete additional projects in the next 12 months. As shown in Table 54, partial participants most commonly reported planning to weatherize their homes or purchase efficient appliances.

Table 54. Planned Upgrades in the Next 12 Months (multiple responses allowed, n=65)

Planned Upgrade	Count	Percentage
Adding weather stripping, caulking, or other measure(s) to reduce air leakage	33	51%
Purchasing ENERGY STAR appliances	26	40%
Upgrading heating or cooling system	24	37%
Adding wall or attic insulation	21	32%
Sealing or insulating duct work	18	28%
Upgrading windows (to double or triple pane)	15	23%
Installing energy-efficient light bulbs (CFL or LED)	15	23%
Upgrading water heater	13	20%
None	12	18%
Installing new doors	2	3%
Other	2	3%

Applicant House and Demographic Characteristics

The Cadmus team included demographic questions in both the participant and partial participant surveys that allowed the Cadmus team to identify differences between the two groups. We also analyzed application data from denied, withdrawn, and funded applications.

Participant and partial participant surveys asked customers about their age, income, education, and housing. Both groups averaged just over 50 years old. However, participants were more likely to earn more than \$50,000, have a college degree, and live in a single-family home.²⁵

Table 55. Participant and Partial Participants’ Demographic Characteristics

House and Demographic Characteristics*	Participants	Partial Participants
Live in a home built before 1990 (n=64)	Not available	83%
Live in a home less than 2,000 square feet (n=60)	Not available	80%
Are 50 years or older (n=47)	53%	55%
Live in a single-family detached home (n=65)	96%	74%
Have a household income of \$50,000 or greater (n=57)	74%	67%
Have a college degree (n=62)	63%	34%

*The Cadmus team excluded missing data from this analysis.

The group of partial participants surveyed included both customers that withdrew their applications as well as customers that had their applications denied. Although the smaller sample size for those with approved but withdrawn applications limits our ability to make statistical comparisons between groups, those who withdrew their application were less likely to live in a home built in 1960 or earlier and more likely to have a college degree compared to those whose application was denied (Table 56). These

²⁵ Illinois residents had a median household income of \$56,853 between 2008 and 2012 (U.S. Census Bureau).



results indicate that, in terms of education, applicants that withdraw are closer to the participant profile than the denied profile.

Table 56. Demographic Differences Grouped by Approved and Withdrawn Applications

House and Demographic Characteristics*	Not Approved	Approved but Withdrawn
Live in a home built in 1960 or earlier	63% (n=52)	40% (n=10)
Have a college degree	28% (n=53)	67% (n=9)

*The Cadmus team excluded missing data from this analysis.

Program Impacts

Participation

AFC First reviewed 4,686 program applications from June 2011 through May 2014. Table 57 shows the distribution of applications over the first three years of program implementation. Because AFC First tracks the ComEd appliance program separately from the ComEd central air conditioner program, we report the results separately.

Table 57. Program Participation (EPY4/GPY1 through EPY6/GPY3)

Utility	Declined	Approved		Program Total
		Funded	Withdrawn	
AIC	802	940	206	1,948
ComEd - Appliances	665	124	128	917
ComEd - CAC	397	272	182	851
NSG	51	86	28	165
PGL	271	105	89	465
Nicor Gas	186	109	45	340
Grand Total	2,372 51%	1,636 35%	678 14%	4,686 100%

Figure 14 shows how quickly each utility's program came online and its rate of activity over time. The AIC offering's steep increase and abrupt stop indicates its initial success and rapid uptake to full subscription. Nicor Gas, which was the last utility to launch its OBF offering, had a similar steep ramp-up. In addition, ComEd's AC program saw notably increased uptake after Nicor Gas's offering came online.

Figure 14. Loan Activity By Utility Over Time

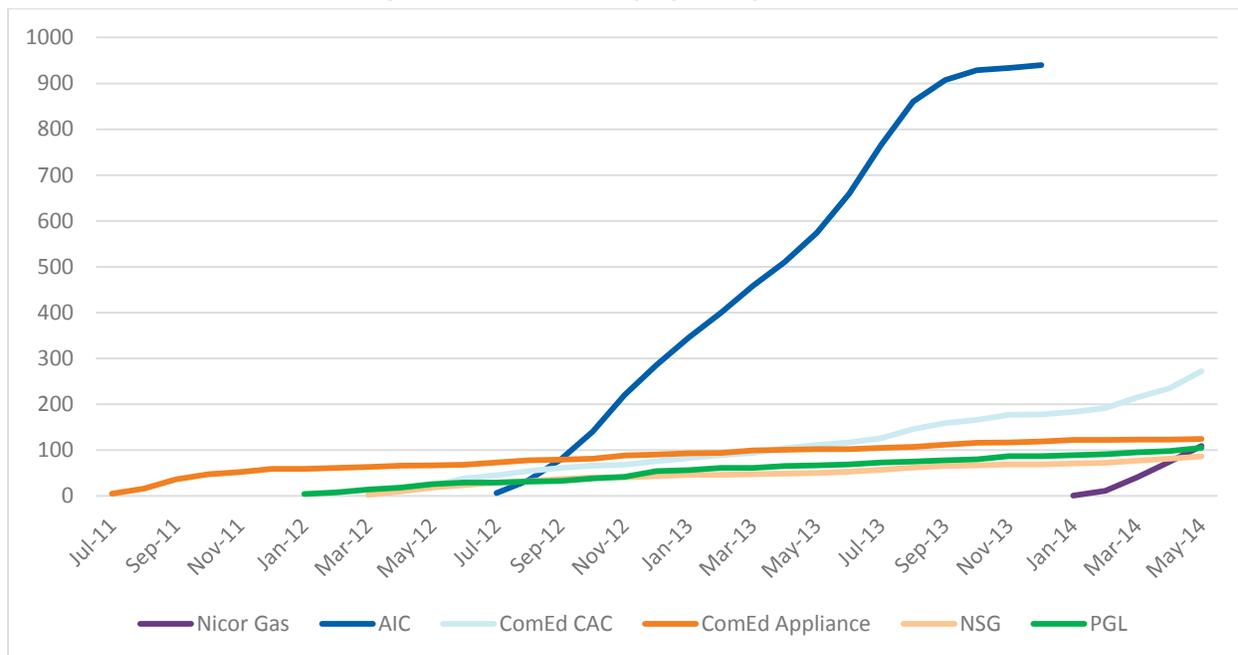


Table 58 shows the total loan volume (total amount loaned) as of May 31, 2014, by utility. As noted above, AIC is the only utility that issued loans equal to its full allocation, and so shows the highest loan volume. ComEd’s central AC offering has the second highest loan volume, while the appliance offering has the lowest volume, despite being the offering with the longest time in the market.

Table 58. Loan Volume by Utility

Utility Offering	OBF Allocation	Total Loan Volume	% of Allocation
AIC	5,000,000	\$4,957,721	99%
ComEd - Appliance	2,500,000	\$132,447	58%
ComEd - CAC		\$1,326,932	
NSG	2,500,000	\$385,796	15%*
PGL		\$445,099	18%*
Nicor Gas	2,500,000	\$410,400	16%
OBF Program Total	15,000,000	\$7,658,395	51%

*PGL and NSG together have used 33% of the allocation for the Integrys

Loans through the OBF Program range in size from just over \$500 for a refrigerator or clothes washer through ComEd’s appliance program to \$20,000 for whole-house retrofits through AIC’s program or an AC through ComEd’s CAC program. Table 59 shows the average loan size and range of loans at each utility.



Table 59. Average Loan Size by Utility (EPY4/GPY1 through EPY6/GPY3)

Utility	Average Amount Borrowed	Minimum Loan Amount	Maximum Loan Amount
AIC	\$5,526	\$500	\$20,000
ComEd - Appliance	\$1,840	\$505	\$1,517
ComEd - CAC	\$4,852	\$1,048	\$20,000
NSG	\$5,416	\$2,000	\$10,589
PGL	\$6,478	\$1,800	\$16,167
Nicor Gas	\$5,246	\$998	\$15,212
OBF Program	\$4,681	\$500	\$20,000

A variety of measures were funded through the OBF Program. AFC First provided detailed measure data for loans funded from EPY5/GPY2 through EPY6/GPY3 (June 2012 through May 2014). Table 60 shows the number of each type of eligible measure included as part of a project financed through the program during this period. A number of projects included multiple measures.

Table 60. Distribution of Measures Financed by the OBF Program (EPY5/GPY2 through EPY6/GPY3)*

Measure	Number Financed
Gas Furnace	844
Central AC	832
Insulation**	137
Air Source Heat Pump	83
Air Sealing	65
Refrigerator	64
Programmable Thermostat	39
Gas Boiler	16
Water Heater	15
Clothes Washer	12
Geothermal Heat Pump	11
Duct Sealing	9
Ductless Heat Pump	3
Total Measures	2,130

*Measure data prior to June 2012 not available.

**Insulation represents number of projects containing any insulation measures, it is not a count of distinct types of insulation.

Table 61 shows the number of projects with multiple measures funded during this period. In addition, the table shows the number of the three most common measures that occurred in single and multiple measure projects. Over half of central ACs, gas furnaces, and insulation projects were purchased as part of a multiple measure project. ComEd only allows central ACs when they are accompanied by an eligible gas furnace, but Ameren does not have this restriction. Nevertheless, for gas furnaces, the companion

measure in a two-measure project is generally a central AC and vice versa. For insulation projects, the companion measure is air-sealing. In projects with three plus measures, the most common combination is a furnace, central AC and insulation, often accompanied by air sealing.

Table 61. Number of Multiple Measure Projects (EPY5/GPY2 through EPY6/GPY3)*

Number of Measures per Project	Total Projects	Projects Including Central AC	Projects Including Gas Furnace	Projects Including Insulation
1	956	46%	44%	45%
2	502	50%	52%	42%
3	34	3%	3%	7%
4	6	1%	1%	4%
5	4	0%	0%	3%
OBF Program Total	1,502	100%	100%	100%

*Cadmus did not receive complete measure data for 2011. 248 projects were completed from June 2011 through May 2012 that are not included in this table.

Program Attrition

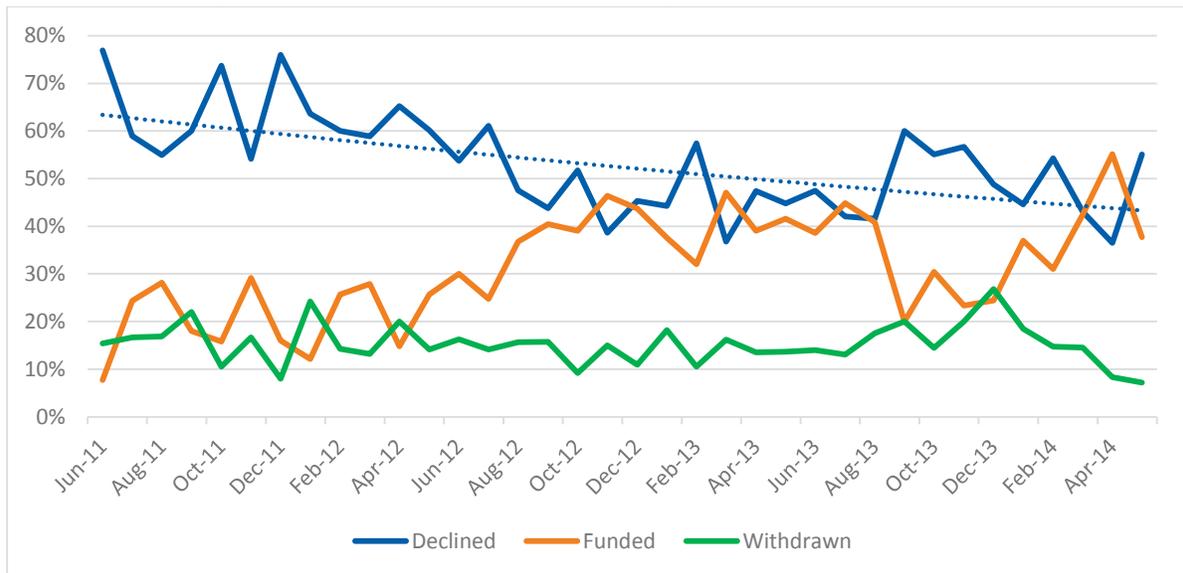
Program attrition refers to potential participants that drop out of or are barred from participating at each stage of the process, including applications denied, and approved applications that are withdrawn. Specifically, the Cadmus team investigated the following items:

- Who applies (to shed light on who might not be applying in the first place)?
- Who gets denied? What credit score band? For what reasons?
- Who withdraws? What are the characteristics of a person who withdraws? Is it for a specific loan size, measure type, or utility?

Over the period EPY4/GPY1 through EPY6/GPY3 (June 2011 through May 2014), the denial rate declined from over 60% in the early months of the program, to just under 45% by May 2014. Figure 15 shows the percentage of loans denied, funded, or withdrawn by month. The period with the highest rate of denials coincides with the launch and ramp up of the first offering, the ComEd appliance program. The period of the lowest percentage of monthly denials overlapped the AIC program, from July 2012 through August 2013. During this period, ComEd appliance program applications, which have the highest denial rate (see Figure 16), became a much lower proportion of total applications. The denial rate dipped again after Nicor Gas’s offering launched, enabling ComEd/Nicor Gas customers to apply for furnaces and central ACs through the program, similar to the AIC offering. Again, uptake through these offerings significantly overshadowed the ComEd appliance program activity. As with AIC’s launch, offering measures that attract more credit worthy customers pushed down the percentage of applications denied. Other factors may also have contributed to the decline in the rate of denials, such as a broader segment of the population gradually becoming aware of the program, and improved targeting by contractors as they gain experience.



Figure 15. Loan Decisions as a Percentage of Applications by Month

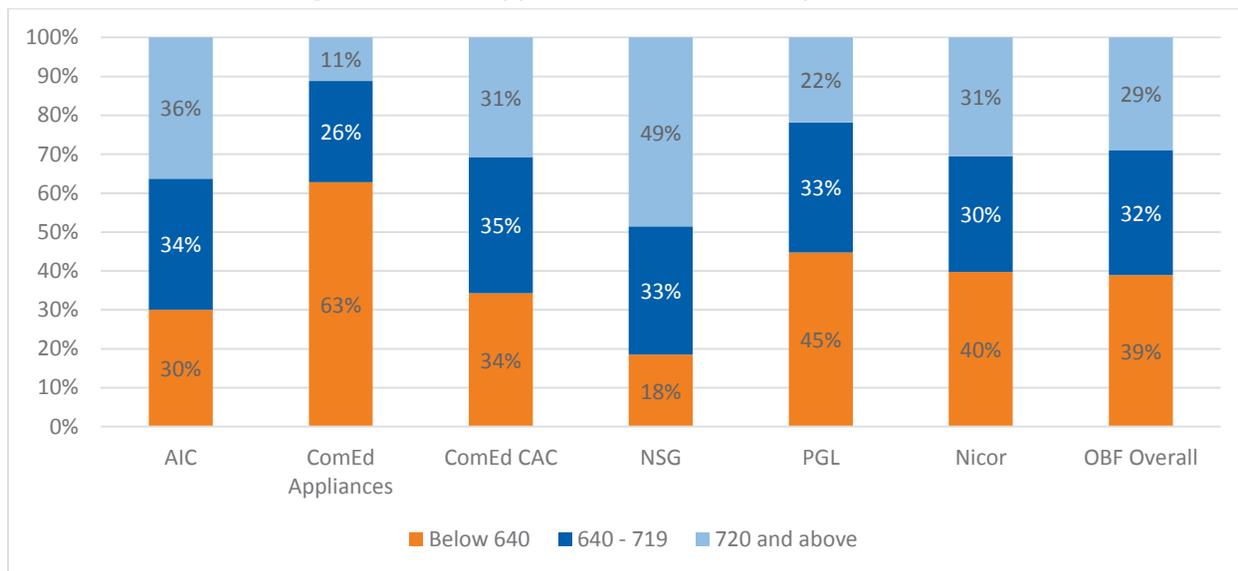


Characteristics of Applicants

The Cadmus team assessed the characteristics of program applicants in order to determine if there are gaps in the application pool and to understand key characteristics of applicants that are denied or never close their loan. This analysis is based on the AFC First data from EPY4/GPY1 through EPY6/GPY3.

Figure 16 shows how applications are distributed across credit scores within each utility. The distribution for the program overall is shown at the far right of the figure. ComEd applications are divided by program, given the very different nature of the purchase of a refrigerator or washer from the purchase of a new HVAC system. Credit scores below the minimum required level are shown in orange, credit scores that may not qualify for some private sector loans are shown in dark blue, and credit score bands that would generally qualify for most private sector financing programs are shown in light blue.

Figure 16. Total Applications Distributed by Credit Score



Some of this distribution is to be expected given the demographics of the utility territory. For example, NSG is the only utility where the percentage of applications below 640 is significantly less than a third of its applications. According to utility staff, NSG has a higher income demographic than the other utilities, which may explain the difference. Similarly, utility staff reported that PGL, which has the second-highest proportion of its applications in the bottom tier, has a customer base with relatively low incomes.

The Cadmus team divided the applicants into three tiers: those with a credit score below 640, those with a credit score from 640 to 719, and those with a credit score 720 or higher. The bottom tier includes those unlikely to qualify for many private sector loans and also unable to qualify for the OBF Program. The middle tier includes those that qualify for the OBF Program but may be higher risk or have trouble qualifying for private financing, and the top tier includes those that easily qualify for the OBF Program and would likely not have trouble finding a different financing option.

Not including the ComEd appliance program, which we will discuss below, utilities received between 18% (NSG) and 45% (PGL) of their applications from the bottom tier. Again, with the exception of the ComEd appliance program, the utilities all received roughly a third of their applications in the mid-tier 640 to 719 range. The proportion of customers in the upper band was more varied. NSG, which had the lowest percentage of applications in the bottom tier, had nearly 50% of their applications in the top tier, the highest proportion of any utility. PGL, on the other hand, received only 22% of their applications from customers with credit scores over 720, below the program average of 29%. The remaining utilities received between 30% and 36% of their applications from the top tier.

ComEd’s appliance offering differed from the other utility offerings in several ways. For example, the loan amount required to purchase a refrigerator or clothes washer is lower than the amount required to buy more popular measures such as furnaces or central ACs. People applying for this size loan were



much more likely to have a credit score below the minimum acceptable score. The ComEd appliance offering received 63% of applications from people with a credit score below 640, compared to 39% for the program overall. Forty-one percent of the total applications to this offering had a credit score below 600. The high number of low credit scores may correlate with the low loan amount for the appliance measures, as applications for higher-cost measures had much lower denial rates.

The Cadmus team also looked at the credit score distribution of approved applications; in particular, at the percentage of approved applications that fall into the mid-tier range of above 640 but below 720. This range represents customers eligible for the OBF Program, but likely to have some difficulty qualifying for private sector financing. Table 62 shows the percentage of approved applications in the 640 to 719 tier by utility offering. Overall, 44% of the approved program applications fall into this mid-tier range (with the remainder in the 720 or higher category). The ComEd appliance offering had the largest percentage of their approved applicants in this tier (60%), followed by the PGL offering (52%). The remaining offerings issued more than half of their loans to top-tier customers.

Table 62. Approved Applications with Mid-Range Credit Score

Utility	Percentage Approved with 640 to 719 Credit Score
AIC	41%
ComEd–Appliance	60%
ComEd–CAC	45%
NSG	36%
PGL	52%
Nicor Gas	39%
OBF Program	44%

Application Denials

Over the period of this evaluation, just over 50% of the program applications were denied. AFC First tracks reasons for denials according to eight categories. Table 63 shows the number and percentage of declined applications by reason for decline. As shown in Table 63, approximately 44% of declined applications were rejected due to credit score. Among the applications denied for reasons other than credit score, 9% of applications showed credit score as a secondary reason. The total share of denied applications that were denied for credit score is 53%, which is approximately 26% of all applications received. Non-payment of other obligations reported in the credit report but not included in the credit score was the second most frequent reason for application denials, followed by a bankruptcy in recent years.

Table 63. Applications Declined

Decline Reason	Number of Denied Applications	Percentage of Total Denials
Credit score below minimum requirement	1,071	43.6%
Delinquent past or present credit obligations	913	37.1%
Bankruptcy past or present	274	11.1%
Program does not grant credit on the terms and conditions requested	102	4.1%
Excessive obligations in relation to income	68	2.8%
Per Utility Company, Unacceptable Credit History	15	0.6%
Type of equipment purchased does not meet the program requirement	9	0.4%
Customer does not own the property	7	0.3%
Credit score below minimum requirement (secondary reason)	214	9%

Withdrawn Applications

Of applications approved, 72% were funded. The remaining 28% of approved applications were withdrawn, meaning the applicant did not carry through with the loan (see Table 64). AFC First staff stated that the level of withdrawals for this program is comparable to other programs that AFC First operates. However, as shown in Table 64, the percentage of approved applications withdrawn varied widely among utilities, from 18% for AIC to 51% for the ComEd appliance program. The Cadmus team was not able to identify the proposed projects associated with the withdrawn applications as this data is not tracked by AFC First.

Table 64. Applications Withdrawn after Approval

Utility	Approved	Withdrawn	Percentage Withdrawn
AIC	1,146	206	18%
ComEd - Appliances	253	128	51%
ComEd - CAC	501	182	36%
NSG	117	28	24%
PGL	203	89	44%
Nicor Gas	208	45	22%
OBF Program	2,428	678	28%

According to the partial participant survey, customers who withdrew their application (n=10) said their reasons for doing so were that the overall cost of the project was too high (n=4), they found a more attractive financial offer than OBF (n=4), or it took too much time to complete the application (n=2). According to stakeholder interviews, the variance in withdrawal rates is possibly due to the types of projects eligible through each utility, rather than the result of any process differences between utilities. For example, retailers participating in ComEd’s appliances program noted that customers often give up



on the program loan while waiting for their paperwork. On the other hand, AIC and AFC First noted that customers appreciate the convenience of purchasing multiple measures through AIC's program.

Rebate Program Overlap

The OBF Program was intended to increase participation in utility demand-side management programs. To understand the program's role in financing rebated measures, Cadmus determined the percentage of total measures rebated or discounted that were purchased with an program loan during the period June 1, 2012, through May 31, 2013, which corresponds to the utilities' electric program year 5, gas program year 2. Table 65 presents the number of rebated measures per utility by measure and program and compares them to the number of measures financed by measure type.

As there are almost certainly projects that received rebates that did not receive a loan, this calculation should not be taken as the actual number of projects that received both incentives (rebates and loan). It is rather the upper bound of the potential for overlap projects. The actual number is something less than this number.

AIC had the highest financing uptake during the period (697 loans). Loans may have accounted for as much as 10% of the air source heat pump rebates the utility issued in this period. Other maximum overlap boundaries were lower, ranging from 0 to 13%, depending on the measure and the utility.

Nicor Gas launched their program with a requirement that the customer submit a completed application form as part of the loan application. Shortly thereafter, the other utilities followed suit (except AIC, which no longer had funding available and therefore did not have an active program at that point.) Currently, all OBF program activity should overlap with rebate program activity.

Table 65. Percentage of Commonly Rebated Measures Financed Through the OBF Program (EPY5/GPY2)

Utility	Program	Measure	Measures Rebates through Utility Programs*	Measures Financed by OBF Program	Maximum Saturation of OBF**
AIC	Residential HVAC	Central air conditioner	3,871	389	10%
AIC	Residential HVAC	Gas furnace	5,869	436	7%
AIC	Residential HVAC	Air source heat pump	543	68	13%
AIC	Home Energy Performance (HEP)	Home insulation (any type)***	3,981	108	3%
ComEd	Complete System Replacement (CSR)	Central AC	4,675	91	2%
ComEd	Energy Star Refrigerator****	Refrigerator/ Freezer	N/A	45	N/A
NSG	Residential Prescriptive Rebate (RPR)	Gas furnace	1,623	68	4%
PGL	RPR	Gas furnace	3,639	73	2%

*Verified in the PY5 evaluation reports. Program measure count refers to the number of individual measures rebated or discounted through the program. This number is higher than the number of individual participants as participants can receive rebates for more than one measure.

**OBF saturation is the percentage of measures rebated or discounted through the portfolio program that were paid with an OBF program loan. It is calculated as the number of OBF program-financed measures divided by the rebate program measure count.

*** Wall, Attic, and Rim Joist insulation. Sum of unique households by measure, may include duplicate households if home received multiple types of insulation. Opinion Dynamics. *PY5 HEP Evaluation report*.

Available online:

http://ilsagfiles.org/SAG_files/Evaluation_Documents/AIC/AIU%20Evaluation%20Reports%20EPY5/AIC_PY5_HEP_Report_FINAL_2014-05-27.pdf

****No evaluation report was available for the refrigerator rebate.

Net Participation Rate (Net-to-Gross) Analysis

The Cadmus team used participant surveys to ask two questions we used to generate a net participation rate for the program. The first question asked about the relative influence on the participant’s decision of certain aspects of the program. The second question asked what the participant would have done in the event the program was not an option.



We included one question to determine the influence on the customer’s decision of four aspects of the OBF Program:

- On-bill loan payments
- Qualified contractors are reviewed by the program, and registered to participate
- The 4.99% interest rate
- The program eliminated upfront costs

The survey asked respondents to rank each aspect from 1 to 5, with 1 being not at all influential (not a result of the program), and 5 being very influential. The degree to which we ranked a respondent a freerider, or not making upgrades as a result of the program, was based on the customer’s response, as shown in Table 66. Participants were evaluated by the maximum value they assigned to any one aspect.

Table 66. Results from the Influence Question

Rank	Attribution to OBF Program	Count
5	0.5	3
4	0.375	0
3	0.25	1
2	0.125	6
1	0	65
		Influence Freeridership Score = 0.03

The survey also included a question to judge what the participant would have done if the OBF Program had not been available. Table 67 shows the responses to this question and the resulting freeridership score. This freeridership score is higher than the influence question.

Table 67. What Participants Would Have Done in the Absence of the Program

Response	Freeridership Score	Count
1 – Would not install	0	25
2 – Would have postponed the project for a year or more	0	26
3 – Would pursue the same project, different funding source	1	13
6 – Would have installed a less efficient option	0	10
7 – Would have postponed the project for less than a year	0.5	2
		Intention Freeridership Score = 0.09

To calculate the total freeridership score (or 1-net participation), the Cadmus team added the freeridership results for each question, which produced an average total freeridership score of 0.13 and a NTG or net participation of 0.87.

Cost-Effectiveness Tests

The Cadmus team analyzed cost-effectiveness achieved by the program as a whole as well as by utility and year.²⁶ This section presents the following results, first for the UCT test and then for the TRC test:

- Statewide Benefit/Cost Ratio, all benefits
- Statewide Benefit/Cost Ratio, incremental benefits using the net participation rate
- Utility Benefit/Cost Ratio, all benefits
- Utility Benefit/Cost Ratio, incremental benefits using the net participation rate
- Breakeven Participation Level, by Utility, all benefits

UCT Results

The UCT shows whether the utility is covering its own costs, as described in the Tests section of the Methodology. Table 68 shows the UCT benefit/cost ratio for the statewide program. Both the EPY5/GPY2 and EPY6/GPY3 program years were better than cost-effective, according to this test. The two years of the program together were nearly three times less expensive than for the utilities than meeting the energy load without the program savings.

Table 68. UCT Statewide Benefit/Cost Ratios by Year

Year	Benefits (PV)	Costs (PV)	Net Benefits	Benefit/Cost Ratio
EPY5/GPY2 (2012-2013)	\$1,693,780	\$553,588	\$1,140,192	3.06
EPY6/GPY3 (2013-2014)	\$1,652,892	\$620,311	\$1,032,581	2.66
Full Period (2012-2014)	\$3,346,672	\$1,144,417	\$2,202,255	2.92

Cadmus calculated a net participation rate to determine what percentage of participation was due to the program directly, rather than the influence of program rebates, or actions that people would have taken on their own (freeridership). We applied this rate (0.87) to the program benefits to determine the cost-effectiveness of the program based on the incremental savings benefit of the program.

Table 69 shows the UCT incremental benefit/cost ratio of the OBF Program. Applying the net participation rate results in a moderate decrease in the benefit/cost ratio, but the program is still cost-effective.

²⁶ The Cadmus team used the measure of useful life as defined by the Illinois 2013 Technical Reference Manual. Savings for all measures were calculated as a replacement on burnout. Available online at: http://ilsagfiles.org/SAG_files/Technical_Reference_Manual/Version_2/Illinois_Statewide_TRM_Version_2.0.pdf



Table 69. UCT Incremental Statewide Benefit/Cost Ratios by Year (Based on Net Participation)

Year	Benefits (PV)	Costs (PV)	Net Benefits	Benefit/Cost Ratio
EPY5/GPY2 (2012-2013)	\$1,473,549	\$553,588	\$919,961	2.66
EPY6/GPY3 (2013-2014)	\$1,438,016	\$620,311	\$817,705	2.32
Full Period (2012-2014)	\$2,911,565	\$1,144,417	\$1,767,148	2.54

Table 70 shows the incremental benefit/cost ratios by utility. Because Nicor Gas was not active until half-way through GYP3, there are no results for Nicor Gas for GPY2. Based on full program benefits, all utilities achieved savings greater than the program costs.

Table 70. Incremental UCT Benefit/Cost Ratios by Utility

Utility	EPY5/GPY2 (2012-2013)	EPY6/GPY3 (2013-2014)	Full Period (2012-2014)
AIC	3.56	2.65	3.13
ComEd	0.79	1.81	1.27
NSG	1.68	1.21	1.42
PGL	2.45	2.41	2.43
Nicor Gas	-	2.49	2.49

Table 71 shows the level of participation each utility needs to break even according to the UCT test using full program benefits. This is the point at which the utility's benefits cover the utility's costs. As all utilities are cost-effective under the UCT, the breakeven is below the actual level of participation for each utility.

Table 71. UCT Breakeven Participation by Utility

Utility	Actual Participation (June 2012 through May 2014)	UCT Breakeven Participation
AIC	939	261
ComEd	307	210
NSG	79	48
PGL	68	24
Nicor Gas	109	37

TRC Results

The TRC test measures the cost-effectiveness of the measures and program jointly from the utility and participant perspectives. Table 72 shows the TRC benefit/cost ratios at the state-wide level, by year. A benefit/cost ratio greater than or equal to 1.0 indicates a cost-effective program from the TRC

perspective. Because the TRC test incorporates the participant costs as well as the utilities' costs, while the savings levels remain the same, the TRC values are lower than the UCT values. In this case, under the TRC test, the program is not cost-effective, with a two-year benefit cost ratio of 0.86.

Table 72. TRC Statewide Benefit/Cost Ratios by Year

Year	Benefits (PV)	Costs (PV)	Net Benefits	Benefit/Cost Ratio
EPY5/GPY2 (2012-2013)	\$1,694,082	\$1,932,958	(\$238,876)	0.88
EPY6/GPY3 (2013-2014)	\$1,657,211	\$1,960,484	(\$303,274)	0.85
Full Period (2012-2014)	\$3,272,529	\$3,800,264	(\$527,735)	0.86

Table 73 shows the incremental cost-effectiveness of the program under the TRC test. Because the net participation ratio is applied to both the energy savings benefits and the participant costs, it impacts both the numerator and the denominator of the benefit cost ratio. Therefore, the incremental benefit cost ratio is only marginally different from the ratio considering full benefits and costs.

Table 73. TRC Incremental Statewide Benefit/Cost Ratios (Based on Net Participation)

Year	Benefits	Costs	Net Benefits	Benefit/Cost Ratio
EPY5/GPY2 (2012-2013)	\$1,473,852	\$1,753,640	(\$279,788)	0.84
EPY6/GPY3 (2013-2014)	\$1,441,773	\$1,786,262	(\$344,489)	0.81
Full Period (2012-2014)	\$2,847,100	\$3,455,004	(\$607,904)	0.82

Table 74 shows the TRC test benefit/cost ratios by utility, based on incremental benefits. If measurable costs or benefits do not appear for a utility and year combination, the benefit/cost ratio equals zero. While AIC shows the highest ratio, none of the five utilities are cost-effective with the participants costs (the measure cost and the financing charge) are included in the analysis.

Table 74. Incremental TRC Benefit/Cost Ratios by Utility

Utility	EPY5/GPY2 (2012-2013)	EPY6/GPY3 (2013-2014)	Full Period (2012-2014)
AIC	0.92	0.84	0.89
ComEd	0.48	0.83	0.67
NSG	0.66	0.58	0.62
PGL	0.77	0.76	0.76
Nicor Gas	-	0.74	0.74

Table 75 shows the actual participation by utility, as well as the level of participation needed for the utility to have a TRC ratio of 1.0, based on full benefits. Because variable costs – the servicing charge and the interest and measure costs – increase as participation increases, programs would need to increase their participation significantly to achieve cost-effectiveness under the TRC test.



Table 75. TRC Breakeven Participation by Utility

Utility	Actual Participation (June 2012 through May 2014)	TRC Breakeven Participation
AIC	939	1,345
ComEd	307	726
NSG	79	243
PGL	68	499
Nicor Gas	109	832

Discussion of Results

In answering the question of whether or not the OBF program is cost effective, Cadmus analyzed cost-effectiveness using the different perspectives described above. Because OBF is an incremental offering, that acts to increase customer participation in other programs, Cadmus recommends the incremental UCT as the best measure of program cost-effectiveness. This test is the most straightforward, as it can easily be understood to be comparing program costs to the utilities' opportunity costs. Because the net participation rate is applied, it also acknowledges the influence of other utility programs, and avoids double-counting measure savings. The incremental UCT is the test that best meets the ICC requirement that the test be forward-looking and only address the marginal cost to the utility to achieve the savings due directly to the program.

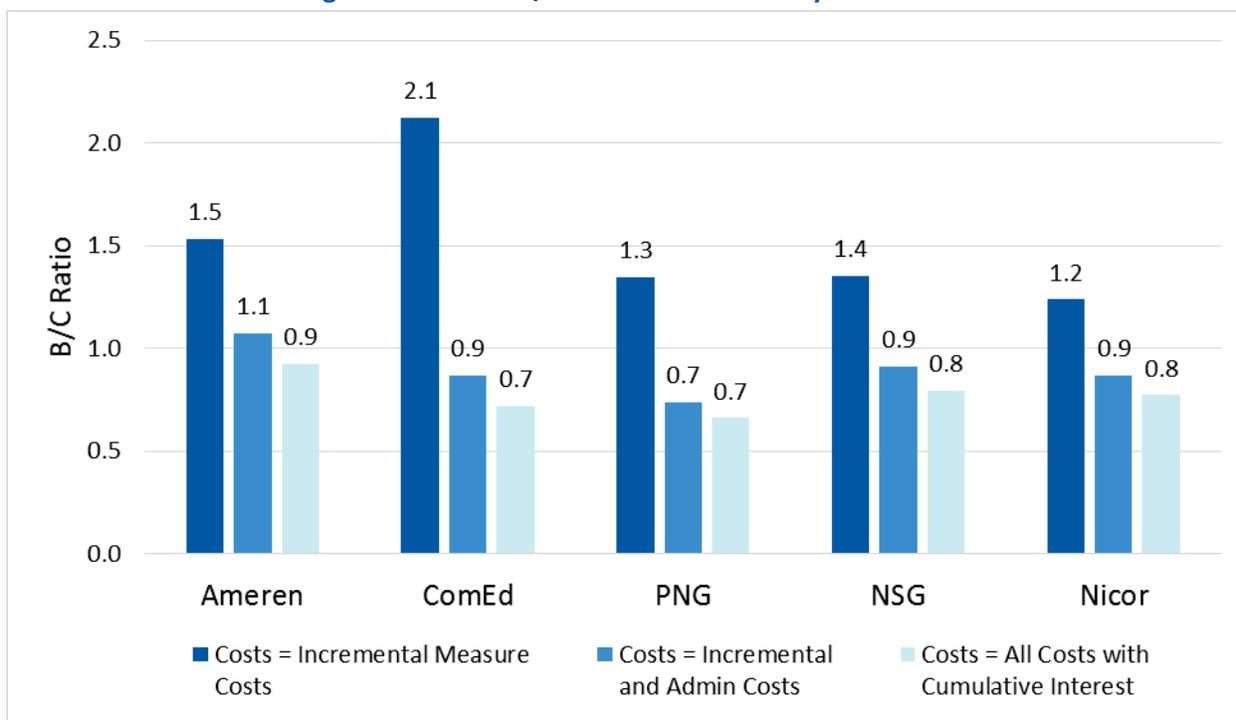
Unlike the UCT, the TRC analysis, which factors in the incremental measure cost and financing charge, does give some indication of the extent to which layering on financing charges can make a measure no longer cost neutral (i.e., able to generate sufficient energy savings to make up the cost of upgrading). However, this comparison is not straightforward. First, because the program administrative costs are also included, it is not a pure analysis of the measure cost-effectiveness. Second, most higher-efficiency equipment is more expensive not only because it is higher efficiency, but for other improved attributes as well. For example, a refrigerator may have more shelving or color options, and run more quietly. These features are part of the incremental measure cost. Including the cost without some measure of the benefit is not a fair test, and deriving a value for these other benefits is very difficult.

According to the incremental UCT test, all the utilities are implementing the OBF Program cost-effectively. Ratios ranged from 1.27 for ComEd to 3.13 for AIC. This indicates the utilities are more than covering their own program costs through the savings generated.

The changes in results between 2012 and 2013 are due to new programs and new measures coming on line. Legislative changes during this period allowed portfolio measures to be offered in addition to cost-neutral measures, as well as rising levels of participation that changed the measure mix.

One benefit of the TRC test is that it does give some indication of the impact of financing costs on a measure’s ability to be cost-neutral (to generate sufficient energy cost savings to equal the cost of purchase and installation). In order to understand the drivers behind the TRC cost-effectiveness results, the Cadmus team analyzed cost-effectiveness at three levels of cost: (1) cost-effectiveness at the level of measure costs; (2) at the level of administrative costs and measure costs; and (3) at the level of full cost (the financing charge, program administration costs, and measure costs). As illustrated in Figure 17, the impact of the administrative costs is the primary driver for the decline in cost-effectiveness, creating a much more dramatic drop than the financing charge. By including the administrative cost, this test clouds the issue of whether the financing charge is overburdening the measure savings.

Figure 17. TRC Cost/Benefit Ratios with Layered Costs



Repayment

In interviews, both program and external stakeholders reported concerns about the potential risk to ratepayers from loan defaults. At the same time, most stakeholders were interested in approving as many applicants as possible for the program. Stakeholders reported that they want a better understanding of the default rate under the current system before recommending any changes.

Default Rate

Table 76 lists the number of loans in default as of May 2014. The default rate for the OBF Program is not directly comparable to a default rate for a conventional loan because the process for billing, collections, and writing off a program loan is not the same as for a conventional lender. In the OBF Program, utilities define loans in default as accounts that have been sent to collections, which is usually the last step after



the utilities have assessed late payment charges and disconnected an account. The criteria that determine when an account is issued a disconnection notice, and when an account is sent to collections vary by utility. These criteria also vary within each utility, according to the customer’s internal credit assigned by each utility according to bill payment history. (Accounts for deceased customers are terminated without requiring a disconnection.) In the case that a bill is sent to collections, the utility closes the loan with AFC First by paying the remainder of the outstanding principle and interest. Under the OBF Program, from June 2012 through May 2014, seven loans were sent to collections for a total of \$12,151 in loan losses (0.16% of loan volume).

Table 76. Number of Delinquent Accounts as of May 2014

Utility	Total Loans	Total Loan Volume	Delinquent Accounts*	Loan Losses**	Notes on Delinquencies
AIC	940	\$4,957,721	Four accounts	\$7,111 (0.14%)	Three loans were delinquent because the customer died, and one loan was delinquent because the customer moved out of state.
ComEd	396	\$1,459,379	No accounts	\$0 (0%)	N/A
NSG/PGL***	191	\$830,895	Three accounts	\$5,040 (0.61%)	Two loans were delinquent because customers moved out of state, and one loan was delinquent because customer filed bankruptcy.
Nicor Gas	109	\$410,400	No accounts	\$0 (0%)	N/A
OBF Program	1,636	\$7,658,395	7 accounts	\$12,151 (0.16%)	

*The number of delinquent accounts refers to accounts sent to collections. This number is cumulative for each program through July of 2014. Staff reported these numbers during interviews.

**Loan losses refer to the period from June 2012 through May 2014. Staff reported these values during the cost-effectiveness evaluation. This table does not include accounts sent to collections before June 2012.

***NSG and PGL are operated by the same company, Integrys, and their accounts are managed jointly.

Disconnects and Late Payments

Late payments, and late payments resulting in disconnect events, are indicators of loans at high risk of default. The Cadmus team analyzed the monthly bill payments for the period July 1, 2013, through June 30, 2014, for all loans issued prior to June 1, 2013. This date range ensured that all loans in the analysis had at least one full year of repayment history. All repayment analysis in this report is based on these earlier loans. Because Nicor Gas did not issue any loans until January 1, 2014, we were unable to include any Nicor Gas loans in the analysis.

Table 77 shows the percentage of accounts with program loans that were issued prior to June 1, 2013 that had one or more late payments, two or more late payments, and one or more disconnect-eligible events from August 1, 2013, to July 31, 2014. Each utility has a different procedure for determining when an account can be disconnected, and each utility has different procedures for different customer profiles. In addition, each utility has its own internal credit rating system, based on bill payment history, to determine when an account may be eligible for disconnect.

Table 77. Bill Payments by Utility for 12 months Post-Loan

Utility	One or More Late Payment	Two or More Late Payments	Disconnect Eligible 1 or More Times
AIC	18%	13%	2%
ComEd	45%	31%	4%
NSG/PGL	32%	21%	11%

OBF programs, like many energy efficiency financing programs, generally have low default rates, in the range of 0.5 to 3.0%.²⁷ The threat of disconnect is generally considered an added insurance against late payments in an OBF program. However, not all past-due accounts that could be disconnected are actually shut off. There is a mandatory moratorium on gas service shut-off during the winter months. During the remaining months, in order to shut off an account, the utility must schedule a service call for a manual on-site shut-off, which presents an additional cost to the utility. Disconnect events may be delayed in order to group them to allow for more efficient shut-off. The threat of disconnection, therefore, may be less of an incentive to pay for customer that have experienced these delays.

Alternative Underwriting

As part of this evaluation, Cadmus team evaluated changes to the underwriting process that could increase program participation without significantly increasing risk to ratepayers. In interviews, all five external stakeholders²⁸ stated that the program should do something to increase the loan approval rate. Staff from two utilities said a 20-point drop in the credit score might be a reasonable method to increase the approval rate. One person suggested completely transitioning the underwriting to a bill payment-based system. This person pointed out that because the utilities do not report to the credit bureaus (with the exception of PGL and NSG), credit scores do not accurately represent if customers are likely to pay their utility bills. The Cadmus team investigated both of these scenarios.

Reducing the Minimum Credit Score

One way to alter the underwriting criteria is to reduce the minimum credit score. According to AFC First, the program minimum credit score of 640 is standard for energy efficiency programs they implement.

²⁷ Cadmus. *California Joint Utilities Financing Research: Existing Programs Review*. Report for Pacific Gas & Electric, Southern California Edison, Southern California Gas, and San Diego Gas and Electric. April 22, 2014.

²⁸ External stakeholders are those not directly involved in operating the program. See Table 16 for a list of external stakeholders.

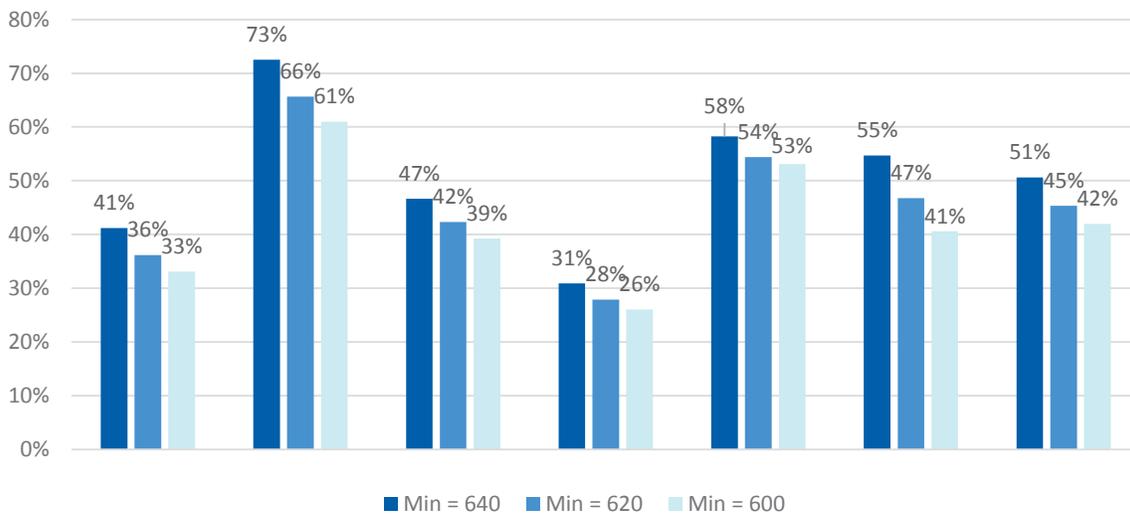


The Cadmus team found that it is within the range of minimum credit scores for several other energy efficiency financing programs. According to a 2014 comparative review of several energy efficiency financing programs (including Illinois OBF), minimum credit scores for six residential programs based on credit score ranged from 590 to 640, with one program requiring a 680 minimum score in some areas.²⁹

The Illinois OBF program denied 1,008 applications received between June 2011 and May 2014 because of low credit scores; this contributed to an overall denial rate of 51% for the program. Figure 18 shows the impact that a 20-point or 40-point reduction in the minimum credit score would have on the denial rate by utility. As shown in Figure 18, a 620 minimum score would have reduced the overall denial rate by five percentage points to 45%. A 600 minimum credit score would have reduced the denial rate by nine percentage points for an overall rate of 42%.

For this analysis, the Cadmus team allowed the change in minimum credit score to impact only loans that were denied for not meeting the minimum score of 640. However, some of these applications may still have been denied if they did not meet other underwriting criteria.

Figure 18. Impact of Minimum Credit Score on Denial Rate



Underwriting Based on Bill Payment

Utility bill payment history is already a part of program underwriting, though with very low requirements. One approach to increase participation may be to use bill payment history as the only part of underwriting and forego the traditional credit analysis. This has been pioneered in large-scale on-bill loan programs in Manitoba, Canada, and New York State. The advantage is that the underwriting is more directly connected to the mechanism for paying the debt. For most of the utilities, bill payment history is not reported to the credit bureaus, so credit score does not reflect their customers' payment

²⁹ Cadmus. *California Joint Utilities Financing Research: Existing Programs Review*. Report for Pacific Gas & Electric, Southern California Edison, Southern California Gas, and San Diego Gas and Electric. April 22, 2014.

history. In theory, a person's decision to skip a personal loan or other payment could be a different type of decision than skipping a utility bill payment, since skipping the utility payment could result in disconnection of services. In addition, utility bill payment is a comparable amount to a typical OBF loan payment. The monthly payment for a loan of \$4,681 (the average OBF loan) is \$94 with a 5 year term or \$53 with a ten year term, in range of utility bill payments.

To test how this underwriting might impact the OBF denial rate, Cadmus applied a bill payment test to approved and denied applications from EPY4/GPY1 through EPY6/GPY3 (June 2011 through May 2014). The Cadmus team applied the same bill-payment criteria used by the California OBF Program, which closely resemble the criteria already in place for Ameren Illinois customers.³⁰ The bill payment criteria require program applicants to satisfy the following conditions:

- Customer is the owner of the property to be improved.
- Customer was not eligible for disconnection in the year prior to the OBF application date.
- Customer has no more than one late payment charge in the year prior to the application date.

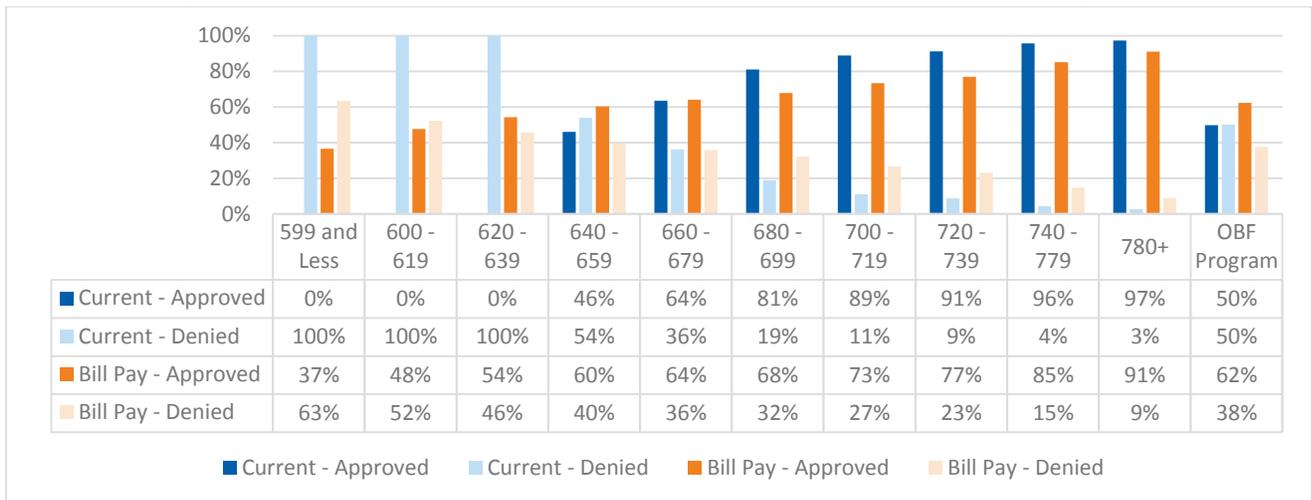
The Cadmus team compared the denial rate under these alternate criteria to the denial rate under the current system, using all records for which we have billing history. We did not consider any applicants that are not homeowners to be eligible under either underwriting protocol, as currently required by the program. The Cadmus team used all utilities' loan history from June 2011 through May 2014 for this analysis. Bill payment history was not available for 281 AIC applicants, 88 ComEd applicants and 18 Nicor Gas projects (of a total of 4,800 applicants).

The results show that bill-based underwriting decreases the denial rate from 50% to 38%, somewhat lower than the reduced minimum credit score approach. An underwriting system based on bill pay history has another potentially beneficial impact. It shifts the approved applications dramatically toward customers with lower credit scores who would have the most difficulty finding other financing, but would be denied under current underwriting system. The alternative system shifts the profile of the approved customer in the higher credit score brackets as well – some of applicants approved under the current system would not be approved under a bill pay underwriting system. Even among those with a credit score of 780 or higher, the approval rate would drop by 6 percentage points. Figure 19 shows that eligibility based on a customer's bill pay history allows nearly half of the customers with an ineligible credit score in the current underwriting system to participate in the program.

³⁰ Ameren requires that the customer's account number must be valid, the account must be active, the account cannot be cutoff for non-payment, the account cannot be cutoff for non-payment within the last 12 months, and the account cannot be in arrears more than \$200 and longer than 60 days.



Figure 19. Comparison of Credit-Based and Bill Payment-Based Underwriting



The risk profile for this type of underwriting is not well known. A review of the NYSERDA On-bill Repayment (OBR)³¹ program in 2014 found that borrowers underwritten based on utility bill payment history had a lower delinquency (late payments) rate than borrowers approved based on a minimum 640 credit score and other traditional criteria, when they were applying to the OBR product. The report also notes that the default rate was around half a percent, and roughly equal between the two customer groups. Another program mentioned in the same study, the PowerSmart Program operated by Manitoba Hydro, has one of the longest running programs and highest participation rates of any residential energy efficiency financing program in North America, and has an average default rate of less than half a percent.³² More research would be needed to better understand the potential impact on the Illinois OBF program of bill payment underwriting.

Multifamily Loan

With the June 2013 amendment to the PUA, the utilities were allowed to offer financing to owners of multifamily family properties up to 50 units. Most of the utilities implemented the new rule as of January 2014. Nicor Gas made commercial and multifamily loans available as of March of 2014. As of May 2014, the program had not issued any loans to multifamily or small commercial customers.

Stakeholders had differing reactions to the progress of the multi-family component of the program. One program stakeholder said he was not concerned by the delay. He expected commercial programs to take longer to ramp-up. Two other stakeholders reported that commercial and multifamily customers were having difficulty with certain aspects of the program implementation. One of these stakeholders in particular noted several concerns. The stakeholder said it was difficult to determine what measures

³¹ OBR refers to a program where the utility collects payments but doesn't actually make the loan. Illinois OBF uses an OBR model, despite the name.

³² Cadmus. *California Joint Utilities Financing Research: Existing Programs Review*. Pacific Gas & Electric, Southern California Edison, Southern California Gas, and San Diego Gas and Electric. April 22, 2014.

were eligible, and that the implementer was slow to provide guidance. According to this stakeholder, the lender, AFC First, and the portfolio program implementer all agreed that customers needed additional support to complete the application, relative what single-family homeowners needed. However, they had not clearly determined which party was responsible for dealing directly with customers to identify eligible measures and “package the project,” so customers were having a hard time getting support. The process to identify eligible measures and design a project requires some time and resources, but there was no system in place to ensure that funds would be available for customers that started the process once they reached the application stage. Finally, because the contractor does not receive payment until the customer signs off on the completed project, the contractor has to front a great deal of cash for a multifamily customer that chooses to use the OBF Program.

Multifamily Loan Product

Midway through 2014, the Community Investment Corporation (CIC), a Chicago-based community development financial institution, reached out to AFC First to explore alternative lending structures for multifamily projects. Working with the CIC, AFC First and the utilities adopted a new loan product just for multifamily projects. (See Table 13 for details on the loan product.)

During interviews in November 2014, two utilities reported that a few projects were “in the pipeline,” though no loans had closed. AFC First and CIC were in the process of signing a memorandum of understating (MOU) for CIC to provide underwriting support for multifamily projects. AFC First reported they expected CIC to provide capital for some multifamily projects it was developing. AFC First would use its capital provider for additional loans. The Cadmus team did not interview CIC, but other stakeholders reported that CIC had “shovel-ready” projects that were expected to close financing once the MOU was signed.



Conclusions and Recommendations

Program Design

Conclusion 1. The unique benefits of the financing program model are attractive to consumers, and result in added savings for the utilities. The convenience of paying the loan installment on their utility bill was the program component that participants were most satisfied with. Not surprisingly, this was also one of the features that customers said was most influential in their decision to use the OBF Program financing. Other popular features were the 4.99% interest rate, which was the result of the utility guarantee, and completing their upgrade with no out-of-pocket costs. Based on this evidence, the program is unique financing product that is truly filling a gap in the market and removing a barrier to energy efficiency investment. Our results indicated that 87% of measures purchased through OBF were the result of the OBF loan being available.

Recommendation 1a. Continue to offer the OBF program, and make it available to as many customers as possible. See our recommendations regarding underwriting, marketing and other changes below.

Recommendation 1b. Determine the program purpose, target markets, and performance goals for the program. This will clarify the desired outcome of the OBF program, and give utilities and implementer a target with which to manage the program design and implementation. Setting performance goals, along with other metrics such a net UCT test for cost-effectiveness, will allow utilities to design their program well in advance of evaluation, so that they achieve the metrics set out for them.

Conclusion 2. Several changes made over the course of the program implementation have improved program design, or show promise for increased uptake. Expanding the list of potential eligible measures to match all measures approved in the portfolio plan allowed some programs to finally launch. Other changes included advising customers to complete a rebate application as part of loan underwriting, and revising the underwriting for the multifamily loan product.

Recommendation 2a. The utilities, and to the extent necessary, the ICC and the legislature, should endeavor to keep these changes in place. The change help the program add to utility savings, and are responsive to customers' requests.

Conclusion 3. Refrigerators show the poorest performance of all measures in terms of credit-worthy applicants, on-time repayment, trade ally satisfaction and trade ally ability to support the customer. The refrigerator (and, originally, clothes washer) were important in the first months of the program, when so few measures could meet the cost-neutral requirement that applied to OBF at the time. However, since the bar for measure eligibility has been lowered, these measures may represent more administrative hassle and risk to the program than benefit in terms of energy savings.

Recommendation 3a. ComEd should consider discontinuing the refrigerator as an eligible measure. If ComEd chooses to retain the cost-neutral refrigerator measure, it should commit additional resources to improving the loan process, improving marketing and facilitating retailer response to customer questions.

Customer Eligibility

Conclusion 4. Customer eligibility criteria currently exclude about 50% of applicants. These criteria could be altered to make more participants that are likely to be more in need of OBF eligible for the OBF program. Though not atypical for a residential energy efficiency program, the denial rate of program applications is just under 50%, thereby excluding a large number of customers that want to participate. The denial rate makes the program less attractive for contractors to use, as customer often drop the project if they are denied. The program could reduce the minimum credit score by 20 or even 40 points and still be within range of other energy efficiency financing programs across the country. This could decrease the denial rate by up to nine percentage points (51% to 42%).

Another alternative would be to use an underwriting approach based on utility bill payment history. This approach, if structured as proposed in this report, could lower the overall denial rate to 38% (a 12 point drop). It has the added benefit of granting access to more people with lower credit scores, who might have trouble finding an alternative financing product. It should also be noted that the program already has very low default rates, below 0.16%. However, as bill payment history is a less studied underwriting approach than credit scores, the impact of a bill-payment based underwriting approach on default rates is not known.

Recommendation 4a. The utilities should investigate repayment rates under a bill payment underwriting system. Using bill payment would extend OBF loans to a greater number of participants, a shift the participant profile towards those who most need the program. While the risks are not as well understood as will a credit-score based system, the potential for service shut-off for OBF loans provides added security of payment that is not reflected in credit-based underwriting. Other programs have successfully implemented bill-payment based underwriting for on-bill loans. Tracking bill payment of loan recipients and denied applicants over longer periods of time will build the understanding of the predictive capacity of bill payment history. To better understand the risk, the utilities should monitor bill payment behavior for a sample of both approved and denied applications, stratified to represent different credit profiles.

Recommendation 4b. To better understand how a bill-payment underwriting alternative would impact the OBF program, the utilities should consider offering a pilot program with a limited number of loans offered based on bill payment history. The pilot program should be structured to allow the utilities to monitor repayment for different customer types, such as high and low energy usage, and high and low credit score. (The credit score can still be monitored, even if it is not the basis for approving the loan. Utilities may want to consider limiting the loan size for this pilot, since the underwriting is based on the borrowers ability to make relatively small payments each month.



Burdening customers, especially any who qualify for low-income assistance, with a large additional payment each month could overwhelm the borrower. A potential model for a pilot is the NYSEDA on-bill financing program in New York that offers customers a choice of underwriting based on bill payment history or credit score. The program pulls a credit score for each customer regardless of which option they choose in order to compare repayment rates between the two programs.

Multifamily Customers

Conclusion 5. The multifamily loan requires improvements to the program process, as well as greater outreach and support in order to drive uptake. The multifamily program is relatively new. Based on our experience with other nonresidential financing programs, the Cadmus team agrees with utility staff that these programs can take much longer than residential programs to ramp-up. We have also noted that these programs often require a different approach to outreach and implementation to achieve significant uptake. However, in this case, stakeholders raised several issues with the current implementation that could be improved in order to make the program easier to use.

Multifamily projects will be more complex than residential projects, as will the loan application. Stakeholders have already seen that these customers require additional support to complete their applications. If they do move forward, the projects are likely to be larger and take longer than a residential project, which strains contractor’s cash flow.

Recommendation 5a. Refine the program processes for multifamily customers, then follow up with targeted mailings and other outreach to eligible customers. The Cadmus team supports Nicor Gas’s plan to send targeted mailings to their multifamily customers. However, utilities, their rebate program implementers and the lender should also work to resolve existing issues in the program process. Utilities and implementers should work together to ensure greater support for multifamily customers. To function well, the program must provide one-on-one support to potential customers to identify a project, understand and apply for available rebates, and complete an application for financing.

Recommendation 5b. If they have not already done so, AFC First should work with utilities and their new partner CIC to establish staged distribution of funds for large-scale projects, to ease the cash-flow burden for contractors. This may require hiring a quality-assurance manager to review projects prior to disposition.

Program Implementation

Conclusion 6. Enhanced direct marketing would benefit the program. Participating contractors employ best practices for encouraging customers to complete an OBF loan (discussing the on-bill component of the loan, estimating the monthly payment for the customer, and filling out and submitting the application for the customer). However, nearly a quarter of customers did not come

into the program through their contractor, and at least one contractor noted he discovered the program through his customer, indicating how effective utility marketing can be.

Recommendation 6a. The Cadmus team supports the AIC and Nicor Gas plans for greater promotion of the program, especially if it is done as joint promotion with the rebate programs and uses a segmented market approach. Each of the utilities should review their portfolio marketing materials to incorporate mention of the OBF Program wherever it is appropriate.

Conclusion 7. The high percentage of HVAC contractors in the program corresponds to the high number of HVAC projects. About 90% of contractors are primarily HVAC contractors, installing furnaces and central ACs through the program. Overall, nearly 80% of measures installed through the program were one of those two measures. Whether HVAC measures tend to be installed because HVAC contractors participate, or vice versa, the program would benefit from having more contractors from other trades involved in the program.

Recommendation 7a. The lender should recruit home performance and general contractors (contractors that install HVAC as well as weatherization measures). In addition to increasing recruiting efforts, utilities and the lender should review contractor outreach and training practices to ensure contractors are learning from each other the best ways to promote the OBF Program.

Recommendation 7b. If the implementers do not already do so, they should present OBF in contractor training offered for the rebate programs. The training should reinforce the complementarity of the programs with the loan.

Conclusion 8. Contractors and participants overall expressed satisfaction with the components of the program. However, several requested an early repayment option that allows the borrower to make incremental payments in excess of the monthly bill. For the most part, participants and contractors appeared satisfied with the design and operation of the OBF Program. However, multiple customers requested a method for early repayment in increments smaller than a lump sum. This is a standard feature of private-sector financing products in the dollar range of program loans.

Recommendation 8a. Review the investment needed to make incremental early payoff possible. As the general tone of the survey and interview respondents was that the program design was satisfactory, it is not justifiable to make changes that would negatively affect the cost-effectiveness of the program. However, utilities should review options with the lender to determine if this feature can be added at a reasonable expense.

Conclusion 9. The time to receive approval is a hurdle for all applicants, and in particular those purchasing a refrigerator. Partial participants indicated they were less satisfied with the length of time to get approved than with other components of the program. Retailers indicated that the wait for approval is relatively long, and many customers apply but either move on to purchase elsewhere or use a different tool before they get a response from the OBF Program. The processing time is



also a concern for those not purchasing an appliance. Contractors, who primarily interact with customer on non-appliance purchases, said time to approval was one of the main concerns voiced by potential customers.

Recommendation 9a. Monitor time to approve a loan, and review options for reducing approval time with the lender and retailers. The lender can likely provide a record of the time for approval of each loan. If not, brief exist survey with participants, or period interviews with contractors, could provide data.

Cost-Effectiveness

Conclusion 10. The incremental UCT test provides the best measure of whether the programs are operating in a cost effective manner. The UCT incorporates all utility costs relative to operating the program, and all benefit derived from avoided energy use. When the net participation (net-to-gross) score is applied to the benefits and variable costs, the result is the incremental benefit to the utility from offering the program. A score of one or higher indicates that the marginal administrative cost is offset by the value of the additional energy savings due to the OBF option.

Recommendation 10a. Adopt an incremental UCT test as the measure of whether the program is cost-effective. The incremental UCT is the most applicable method for determining if the additional service offering of OBF is cost effective. Since OBF by itself is not a program, traditional TRC analysis does not make sense. Investing in a more precise, albeit more expensive, methodology than the self-report survey to determine the net participation (net-to-gross) ratio will provide added confidence for the UCT score. Enhanced methods include, among others, a discrete choice model customer survey, or a quasi-experimental comparison of measure uptake in a test area (where financing is available) and use of a control group (where financing is not available), if other differences can be minimized or controlled.

Tied-to-Meter Loans

Conclusion 11. Tied-to-the-meter loans offer little benefit and the potential for delay, expense, and confusion. Proponents of the tied-to-the-meter approach thought that it might overcome hesitation from customers concerned that they would need to move from their home before they had paid off the loan. However, nearly all (98%) of partial participants surveyed said that this was not a concern for them. In addition, utility stakeholders expressed concern that adding this feature could cause legal complication and had the potential to confuse customers. External stakeholders were generally ambivalent.

Tied-to-the-meter loans could overcome barriers for landlords that would prefer their tenants pay the loan cost, as they will directly benefit from the upgrades. Because renters are not eligible for the program, Cadmus did not survey them as either participants or partial participants. We do not have data regarding their attitudes about making an OBF Program payment.

Recommendation 11a. Recommendation: Do not make the program loan a tied-to-the-meter loan at this time. There is not a compelling reason at the present moment to transition the program to a tied-to-meter loan. The Illinois legislature and program stakeholders should monitor those programs that use this feature to see if the tied-to-the-meter design could be beneficial; in particular, if the approach is successful in attracting rental properties or younger lower-income borrowers (in other words, a market segment that participates less in the current program).