PY 2013/14 On-Bill Finance Programs: Impact Evaluation

Prepared under the direction of the **Energy Division** for the

California Public Utilities Commission

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Acronyms and Abbreviations

AAPOR	American Association for Public Opinion Research
Btu	British Thermal Unit
CATI	Computer-assisted telephone interviewing
CPUC	California Public Utilities Commission
EUL	Expected useful life
FR	Freeridership
G&I	Government and Institutional
GRR	Gross realization rate
kW	Kilowatt (equals 1,000 watts)
kWh	Kilowatt hour (equals 1,000 watt hours)
LED	Light-emitting diode
LIR	Loan-to-incentive ratio
MMBtu	Million British Thermal Units
NTGR	Net-to-gross ratio
OBF	On-Bill Finance
PA	Program administrator
PAI	Program attribution index
PG&E	Pacific Gas and Electric
PM	Program manager
PY	Program year
RR	Realization rate
SCE	Southern California Edison
SCG	Southern California Gas Company
SDG&E	San Diego Gas and Electric Company

1. Executive Summary

This report presents findings from the impact evaluation of the program year (PY) 2013/14 On-Bill Finance (OBF) programs, completed by Opinion Dynamics. This evaluation is one of multiple California Public Utilities Commission (CPUC) studies conducted under the Finance Roadmap.

The purpose of this study was to quantify OBF program energy savings for the evaluation period (PY2013/14), to determine the impact of the OBF programs on the installation of energy-efficient equipment by non-residential customers, and to assess the relative importance of the OBF loan and the program incentive in customer decision-making.

1.1 Program Background

OBF is offered to non-residential customers by four California program administrators (PAs): Pacific Gas and Electric (PG&E), Southern California Edison (SCE), San Diego Gas & Electric Company (SDG&E), and Southern California Gas Company (SCG). While implementation details (e.g., delivery channels, loan tracking, application processing) differ, many key elements are the same across all four PA programs, including repayment through the utility bill, 0% interest, bill neutrality, and maximum loan terms and caps. The following OBF programs are part of this evaluation:

- PG&E On-Bill Financing Program (Program Number PGE2114)
- SCE On-Bill Financing Program (Program Number SCE-13-SW-007a)
- SDG&E On-Bill Financing Program (Program Number 3262)
- SCG on-Bill Financing Program (Program Number SCG3735)

In order to participate in the 2013/14 OBF programs, customers also had to participate in one of the PA's non-residential incentive programs. Savings from OBF-funded projects are claimed through the incentive programs in which customers participate. The IOUs currently do not directly claim savings for the OBF programs.

1.2 Study Objectives

The OBF evaluation was conducted in two phases. Phase I included an assessment of available data and early data collection efforts. Phase II consisted of the assessment of gross and net energy savings and incremental net impacts, attributable to the OBF programs for PY2013/14.

The primary objectives of Phase I were to:

1. Understand what data is available for the OBF programs;
2. Understand which business segments are impacted by the programs;
3. Characterize which energy-efficient measures are being financed through OBF and document the ex-ante savings associated with these projects; and
4. Determine the best evaluation methods to address the unique challenges regarding attribution for the OBF program in light of the overlap with utility incentive programs.

The primary objectives of Phase II were to:

1. Develop an estimate of gross energy savings associated with projects that were completed and received an OBF loan during PY2013/14;
2. Develop an estimate of freeridership and net savings for the OBF programs;
3. Develop an estimate of incremental net savings of the OBF programs, relative to net savings already claimed by the incentive programs;
4. Assess the importance of the OBF loan relative to the importance of the incentive in customer decision-making; and
5. Determine other sources of funding for OBF projects.

1.3 Overview of Analysis

To develop the findings in this report, we conducted the following primary data collection activities:

- Interviews with OBF program managers (4 completed interviews);
- Exploratory participant interviews (7 completed interviews); and
- Telephone survey with OBF program participants (136 completed interviews).

We performed five distinct analyses, as summarized below.

Gross Impact Analysis. The objective of this analysis was to determine tracked (ex ante) and verified (ex post) gross energy savings, as well as realization rates, associated with projects that received an OBF loan. In support of this analysis, we reviewed OBF program tracking data and matched it to the incentive program data housed in the statewide Claims database. We then developed an OBF-to-Claims match rate. We also estimated ex post gross savings for OBF projects completed in 2013/14 and determined gross realization rates (GRR) by PA and technology.

Net Impact Analysis. The primary objectives of this analysis were to determine the overall influence of the OBF programs (including the OBF loan, the incentive, and other support provided by the programs) on customers' decision to install energy-efficient equipment and to develop net-to-gross ratios (NTGRs) and net program savings. The freeridership analysis was based on responses to the participant survey, i.e., it used a customer self-report approach. We used a methodology that closely follows the methodology that was developed by the CA Nonresidential Net-to-Gross Working Group and is employed in the net impact evaluations for the CA large non-residential incentive programs.[1] We adapted this method to incorporate consideration of the OBF loan. We developed NTGRs by PA and by technology. We applied the NTGRs to OBF ex post gross savings to estimate OBF net savings.

Incremental Net Impact Analysis. For the purposes of this study, we define OBF incremental net impacts as net savings that are attributable to the OBF programs but that have not already been claimed by the PAs through the incentive programs. This analysis compares net savings claimed for OBF projects through the incentive programs with the net savings developed in this evaluation – for the same set of OBF projects.

OBF Loan-to-Incentive Ratio Analysis. The primary objectives of this analysis were to determine the importance of the OBF loan relative to the importance of the program incentive in customers' decision to install energy-efficient equipment. This analysis is based on the responses to the freeridership questions in the participant

[1] The Nonresidential Net-to-Gross Ratio Working Group. Methodological Framework for Using the Self-report Approach to Estimating Net-to-Gross Ratios for Nonresidential Customers. October 16, 2012. http://www.energydataweb.com/cpucFiles/pdaDocs/910/Nonresidential%20NTGR%20Methods%202010-12%20101612.docx.

survey. We compared survey responses to questions about the importance of the loan with responses to equivalent questions about the importance of the program incentive and developed relative importance ratios.

Funding Source Analysis. The objective of this analysis was to develop an understanding of other sources of funding used, or initially considered, for the completed OBF projects. This analysis is based on responses to the participant survey.

1.4 Key Results

OBF Program Participation

During the 2013/14 program cycle, the four PAs issued a total of 1,812 loans, providing over $64 million in financing. Compared to the 2010-12 program cycle, the number of loans increased three-fold and the total loan volume increased four-fold. Most of this increase came from PG&E's program, which launched during the 2010-12 program cycle, but SCE also experienced a significant increase in program activity. Both SDG&E and SCG had reduced program activity during 2013/14.

Not all loans issued during the 2013/14 program cycle were associated with projects that were completed during 2013/14. PG&E, SDG&E, and SCG all provided loans for projects completed during the previous program cycle. We removed these loans and associated projects from consideration in this evaluation, as the savings they generated were already captured during the 2010-12 program cycle. Table 1-1 summarizes the loans associated with 2013/14 projects.

Table 1-1. Loans Associated with 2013/14 Projects

PA	# Loans	Loan Amount	Average Loan
PG&E	688	$26,666,180	$38,759
SCE	713	$14,202,298	$19,919
SDG&E	252	$11,711,986	$46,476
SCG	2	$153,497	$76,749
Statewide	1,655	$52,733,961	$31,863

Source: 2013/14 OBF tracking data; 2013/14 Claims database.

The majority of 2013/14 loan funding was associated with custom projects (61%) and with lighting projects (67%). The average loan amount was higher for custom projects compared to deemed projects; the statewide average loan size for lighting and non-lighting was comparable. Table 1-2 summarizes loan statistics by program type and by technology.

Table 1-2. 2013/14 Loans – by Program Type and Technology

PA	# Loans[A]	% of Total	Loan Amount	% of Total	Average Loan
By Program Type					
Deemed	1,015	46%	$20,781,673	39%	$20,475
Custom	1,208	54%	$31,952,288	61%	$26,451
By Technology					
Lighting	1,536	65%	$35,286,618	67%	$22,973
Non-Lighting	827	35%	$17,447,343	33%	$21,097

[A] Note that the number of loans by program type and by technology does not add up to the total number of loans as each loan can be associated with more than one project. Loan amounts were allocated by program type and technology, based on savings.
Source: 2013/14 OBF tracking data; 2013/14 Claims database.

Gross Impacts

The gross impact analysis included two analyses. The first analysis determined the share of OBF-tracked savings that is associated with 2013/14 projects. We found that, statewide, 75% of savings tracked by the OBF programs could be matched to 2013/14 projects (the remaining 25% were associated with projects completed prior to 2013).[2] By PA, this "match rate" ranges from 27% for SCG to 100% for SCE.

In the second analysis, we estimated ex post gross savings for OBF projects completed in 2013/14 by multiplying Claims-tracked ex ante gross savings (kW, kWh, and therms) by Claims-tracked evaluated GRRs (developed through the incentive program evaluations), for each Claims record associated with an OBF loan. We then aggregated the Claims-level data to determine the PA- and technology-level GRRs for OBF projects. We found that ex post savings are, on average, 79% of ex ante savings. By PA, this value ranges from 49% for SCG to 83% for PG&E.

Table 1-3 summarizes the results of the gross impact analysis, statewide and by PA.

Table 1-3. Summary of Gross Impact Results

Metric	Statewide	PG&E	SCE	SDG&E	SCG
OBF Loans Matched to Claims					
a. Total OBF-Tracked Savings (MMBtu)	579,742	268,367	101,343	150,962	59,069
b. OBF-Tracked Savings for Projects Matched to 2013/14 Claims (MMBtu)	437,366	220,335	101,343	99,765	15,923
c. OBF-Claims Match Rate (c = b / a)	0.75	0.82	1.00	0.66	0.27
Claims Ex Post Savings					
d. Claims Ex Ante Gross Savings (MMBtu)	370,266	204,415	89,649	61,872	14,330
e. Claims Ex Post Gross Savings (MMBtu)	294,163	170,274	72,145	44,723	7,022
f. Claims Ex Post GRR (f = e / d)	0.79	0.83	0.80	0.72	0.49

Note: MMBtu stands for one million British Thermal Units (Btus). It is a way of combining electric and gas savings into one measurement of total energy. We used the following conversion rates: 1 therm = 100,000 Btu; 1 kWh = 3,412 Btu; 1 MMBtu = 1,000,000 Btu.
Source: 2013/14 Claims database; OBF evaluation analysis.

[2] Note that this analysis did not consider any loans issued after the 2013/14 evaluation period that might be associated with 2013/14 incentive program projects.

It should be noted that the OBF-tracked savings are not always consistent with savings for the same projects in the Claims database. In some cases, the OBF program determines savings based on the replaced equipment, rather than using deemed values used by the incentive programs, to better reflect actual savings realized by each participant. This is done to make sure that loans are bill neutral, i.e., that the bill savings from reduced energy usage are at least equal to the customer's loan payments. The IOUs do not use OBF-tracked savings for claiming savings.

Net Impacts

Our net impact analysis included a NTG analysis and a net savings analysis.

The overall estimated NTGR for 2013/14 OBF projects is 0.67, based on 167 valid NTG points and with a relative precision of 4%. The NTGR for lighting projects (0.70) is slightly higher than that for non-lighting projects (0.63), although the difference is not statistically significant at 90% confidence. The sampled projects represent 12% and 8% of MMBtu savings of all lighting and non-lighting projects, respectively.

Table 1-4. Weighted Statewide Net-to-Gross Ratios

	Overall	Lighting	Non-Lighting
Mean NTGR	**0.67**	**0.70**	**0.63**
90 Percent CI	0.64 to 0.69	0.67 to 0.73	0.59 to 0.68
Relative Precision	0.04	0.04	0.07
Valid NTG Points (n)	167	120	47
OBF Projects (N)	2,644	1,713	931
Percent of MMBtu Sampled	10%	12%	8%

Source: OBF participant survey; OBF evaluation analysis.

By PA, NTGRs range from 0.57 for SDG&E[3] to 0.69 for PG&E. PG&E and SDG&E have higher NTGRs for lighting projects, while SCE has a higher NTGR for non-lighting projects. However, these differences by technology are not statistically significant at 90% confidence. Note that our analysis did not develop NTG results for SCG because neither of the two 2013/14 OBF participants responded to our survey. SCG projects are therefore excluded from the OBF net impact analyses.

Table 1-5. Net-to-Gross Ratios by PA

	Overall	Lighting	Non-Lighting
Statewide	**0.67**	**0.70**	**0.63**
PG&E	0.69	0.74	0.65
SCE	0.67	0.65	0.71
SDG&E	0.57	0.64	0.52

Source: OBF participant survey; OBF evaluation analysis.

We developed OBF ex post net savings by applying these PA/technology-specific NTGRs to OBF ex post gross savings. Table 1-6 presents the results of this analysis.

[3] Note that there is some uncertainty around the SDG&E estimate, due to a relatively low number of survey responses by participants with non-lighting projects. See also discussion in Section 6.2.

Table 1-6. OBF Net Impacts

	# OBF Projects	Calculated Ex Post Gross Savings[A]		OBF-Evaluated NTGR	OBF Evaluated Ex Post Net Savings[B]	
		MMBtu	kW		MMBtu	kW
	(1)	*(2a)*	*(2b)*	*(3)*	*(2a x 3)*	*(2b x 3)*
Statewide	**2,642**	**287,142**	**8,445**	**0.667**	**191,476**	**5,649**
PG&E	972	170,274	4,660	0.692	117,878	3,237
SCE	1,299	72,145	2,058	0.666	48,062	1,380
SDG&E	371	44,723	1,727	0.571	25,535	1,029

[A] Ex post gross savings in this table are different from those presented in Table 1-3 because this table excludes SCG's 7,022 MMBtu in ex post gross savings.
[B] Ex post net savings are not equal to the product of ex post gross savings and the NTGR due to rounding of the NTGR.
Source: 2013/14 Claims database; OBF participant survey; OBF evaluation analysis.

Incremental Net Impacts

For the purposes of this analysis, "OBF incremental net impacts" are defined as net savings that are attributable to the OBF programs but that have not already been claimed by the PAs through the incentive programs. To determine incremental OBF net impacts, we compared the OBF net savings developed in the net impact analysis with a second estimate of net savings, referred to as "incentive program ex post net savings." This second estimate represents the net savings the PAs claim through their incentive programs for projects that received an OBF loan. OBF incremental net savings is the difference between the OBF-evaluated net savings and the incentive program ex post net savings – for the same set of OBF projects. We developed incremental values for net savings and for NTGRs.

Based on this analysis, statewide incremental net savings from OBF projects are 25,539 MMBtu and 694 kW. The overall incremental NTGR is 0.09 for energy savings and 0.08 for demand savings. By PA, the incremental energy (MMBtu) NTGR ranges from -0.03 for SDG&E to 0.13 for SCE; the incremental demand (kW) NTGR ranges from -0.03 for SDG&E[4] to 0.11 for SCE. Table 1-7 presents the results of this analysis.

[4] Note that there is some uncertainty around the SDG&E estimate, due to a relatively low number of survey responses by participants with non-lighting projects. See also discussion in Section 6.2.

Table 1-7. OBF Incremental Net Impacts

	OBF-Evaluated			Incentive Program (for OBF Projects)				Incremental			
	Net Savings		NTGR	Net Savings		NTGR		Net Savings		NTGR	
	MMBtu	kW		MMBtu	kW	MMBtu	kW	MMBtu	kW	MMBtu	kW
	(1a)	*(1b)*	*(1c)*	*(2a)*	*(2b)*	*(2c)*	*(2d)*	*(1a-2a)*	*(1b-2b)*	*(1c-2c)*	*(1c-2d)*
Statewide	**191,476**	**5,649**	**0.67**	**165,937**	**4,955**	**0.58**	**0.59**	**25,539**	**694**	**0.09**	**0.08**
PGE	117,878	3,237	0.69	100,595	2,762	0.59	0.59	17,283	474	0.10	0.10
SCE	48,062	1,380	0.67	38,470	1,155	0.53	0.56	9,592	225	0.13	0.11
SDGE	25,535	1,029	0.57	26,872	1,038	0.60	0.60	(1,336)	(9)	(0.03)	(0.03)

Source: 2013/14 Claims database; OBF participant survey; OBF evaluation analysis.

Relative Importance of the OBF Loan and the Incentive

Overall, OBF participants provided higher importance ratings to the OBF loan than to the incentive, resulting in a statewide average loan score of 6.2 (out of a possible 10 points), a statewide average incentive score of 5.6, and a statewide Loan-to-Incentive Ratio (LIR) of 1.10. The relative importance of the loan and the incentive is similar for lighting and non-lighting projects: both technologies have similar LIRs (1.09 for lighting and 1.11 for non-lighting.

When comparing responses by PA, we found that PG&E's participants have the highest average loan score (6.5) and the lowest average incentive score (5.4), resulting in the highest LIR (1.22). SCE participants have almost equal average loan and incentive scores (5.8 versus 5.6) and a resulting LIR (1.03) that indicates equal importance of the loan and incentive. Notably, SDG&E participants' ratings indicate higher importance of the incentive relative to the loan. SDG&E has the lowest loan importance ratings of the three PAs (5.5) and is the only PA with an LIR less than 1.0, indicating that SDG&E participants considered the incentive more important than the OBF loan).

Sources of Project Funding

For most OBF participants (64%), the program incentive and the OBF loan covered the full cost of the new equipment. Of those who also used other sources of funding, most (81%) relied on internal funding sources.

When asked how they would have paid for the project if the OBF loan had not been available, a majority of participants (63%) reported that they would not have completed the project at all. Of those who would still have completed the project, most (72%, or 27% of all participants) would have used internal funding. Just over a quarter (26%, or 9% of all participants) would have taken out a loan.

1.5 Conclusions and Recommendations

Based on the analyses and key findings from this study, we provide the following conclusions and recommendations:

Gross Impacts

- Claims-tracked incentive projects and OBF loan disbursements do not always occur in the same program year because loans are sometimes issued after project savings are claimed by the incentive programs. As a result, a mismatch between the OBF tracking databases and the Claims database is

expected and unavoidable. However, our review of the OBF tracking data found that, in some cases, the mismatch is significant and loans are issued many months after the projects are finalized in Claims. The PAs should account for this mismatch when determining how savings from OBF projects might be claimed in the future and strive to reduce the lag time between when an incentive project is finalized and when an OBF loan is issued.

- At the time of this analysis PG&E's OBF program did not track any unique identifiers of incentive program projects associated with its OBF loans. As a result, matching OBF loans with Claims records was a difficult and time-consuming process. We recommend that all PAs track the ClaimIDs associated with OBF loans as part of their OBF databases. This would facilitate future evaluation efforts and would also allow program staff easier access to the information included in the Claims database, which could be useful in monitoring program progress over time.

- To achieve bill neutrality for OBF loans, the PAs currently develop OBF-specific savings for OBF-financed projects. These OBF-specific savings are based on existing equipment baselines and are often higher than Claims-tracked savings. While these OBF-specific savings are not intended for claiming savings, we recommend that, in addition to the OBF-specific savings, PAs also track the incentive program ex ante Claims savings in their OBF databases. This would provide the OBF programs with a better measure of claimable savings under current impact estimation frameworks and would facilitate reporting of OBF program achievements while allowing more accurate comparisons with incentive program achievements.

Incremental Net Impacts

- Based on our analysis, there are incremental net savings associated with OBF loans that exceed those currently being claimed by the PA incentive programs. While the incentive programs do already claim savings from OBF projects based on the incentive program NTGRs, our research shows that the NTGRs for participants who only receive an incentive are generally lower than the NTGRs for participants who receive an incentive *and* an OBF loan. Since this was the first research into the incremental net impacts of the CA OBF programs, we recommend to further explore this issue with 2015 and 2016 program participants to determine if an adjustment of ex ante NTGRs for projects that participate in the OBF programs might be warranted.

Relative Importance of the Incentive and the OBF Loan

- Our research with 2013/14 OBF participants shows that the OBF loan and the incentive are both important in customers' decisions to implement high-efficiency projects. Based on statewide survey responses, customers consider the loan to be slightly more important than the incentive. In addition, a majority of participants reported that they would not have been able to fund the project without the OBF loan. While our research to-date is not sufficient to provide a conclusive recommendation to the PAs with respect to future program designs, we do encourage the PAs to move forward with efforts to pilot alternative loan-incentive structures, as already directed by the Commission.

2. Introduction

2.1 Program Overview

During the 2013/2014 evaluation cycle, OBF was offered to non-residential customers through the following programs:

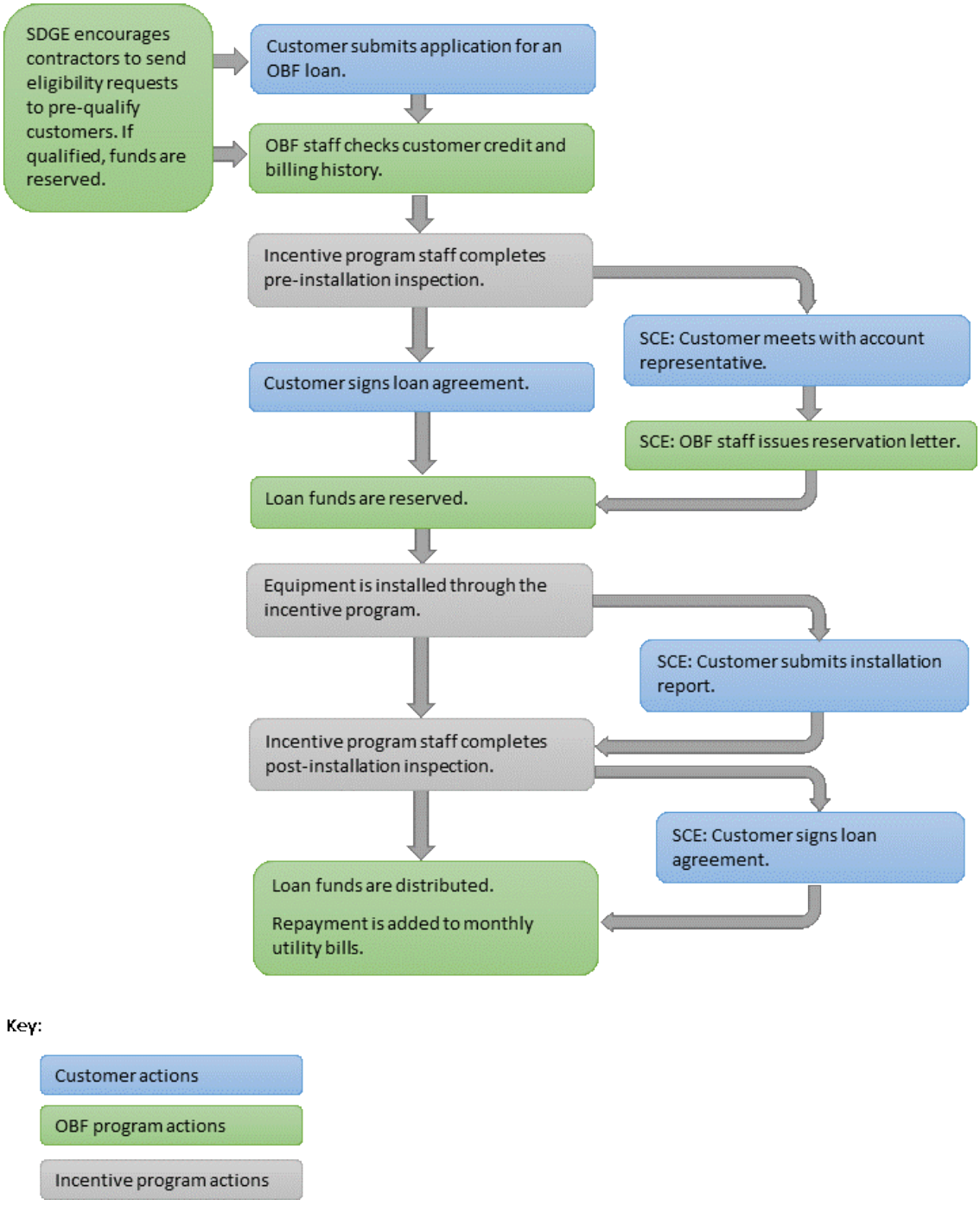
- PG&E On-Bill Financing Program (Program Number PGE2114)
- SCE On-Bill Financing Program (Program Number SCE-13-SW-007a)
- SDG&E On-Bill Financing Program (Program Number 3262)
- SCG On-Bill Financing Program (Program Number SCG3735)

PG&E's OBF program started in 2011. It initially targeted government and institutional customers but shifted its focus to hard-to-reach small and medium business customers during the 2013/14 evaluation cycle. The programs for the other three PAs started in 2006 as pilots focused on small businesses (SDG&E and SCG) and grocery stores (SCE). All four programs are open to all non-residential customers who meet certain eligibility requirements, including having accounts that have been active for two years and have been in good standing over the past 12 months. While implementation details (e.g., delivery channels, loan tracking, application processing) differ, many key elements are the same across all four PA programs, including repayment through the utility bill, 0% interest, bill neutrality, and maximum loan terms and caps. Appendix A provides additional information about the PA's OBF programs.

In order to participate in the 2013/14 OBF programs, customers also had to participate in one of the PA's non-residential incentive programs. Savings from OBF-funded projects are claimed through the incentive programs in which customers participate. The IOUs currently do not directly claim savings for the OBF programs.

Participation in both programs is an integrated process with key project verification actions being performed through the incentive programs. Figure 2-1, next page, shows the key steps of the OBF loan application process. The four PA programs follow the same general processes, with a few exceptions (called out in the diagram).

Figure 2-1. OBF Loan Application Process



2.2 OBF Program Participation

During the 2013/14 program cycle, the four PAs issued a total of 1,812 loans, providing over $64 million in financing. PG&E had the highest loan volume, accounting for 43% of all loans and half of all financing provided. Compared to the 2010-12 program cycle, the number of loans increased three-fold and the total loan volume increased four-fold. Most of this increase came from PG&E's program, which launched during the 2010-12 program cycle, but SCE also experienced a significant increase in program activity. Both SDG&E and SCG had reduced program activity during 2013/14.

Table 2-1. Comparison of 2013/14 and 2010-12 Program Participation

PA	2013/14 Program Cycle			2010-12 Program Cycle		
	# Loans	Loan Amount	Average Loan	# Loans	Loan Amount	Average Loan
PG&E	782	$32,025,868	$40,954	4	$210,140	$52,535
SCE	713	$14,202,298	$19,919	78	$2,012,717	$25,804
SDG&E	308	$16,746,493	$54,372	506	$13,541,298	$26,761
SCG	9	$1,219,617	$135,513	15	$459,301	$30,620
Statewide	1,812	$64,194,275	$35,427	603	$16,223,456	$26,905

Source: 2013/14 OBF tracking data; *California 2010-2012 On-Bill Financing Process Evaluation and Market Assessment*, The Cadmus Group, March 2012.

Not all loans issued during the 2013/14 program cycle were associated with projects that were completed during 2013/14. PG&E, SDG&E, and SCG all provided loans for projects completed during the previous program cycle, accounting for between 17% (PG&E) and 87% (SCG) of disbursed loan amounts. We removed these loans and associated projects from consideration in this evaluation, because the savings they generated were already captured during the 2010-12 program cycle and analysis of loans associated with pre-2013 projects was outside the scope of this evaluation. Table 2-2 summarizes the loans associated with 2013/14 projects, including total and average loan amounts, and the share of all 2013/14 loans they represent.

Table 2-2. Loans Associated with 2013/14 Projects

PA	# Loans	% of Total	Loan Amount	% of Total	Average Loan
PG&E	688	88%	$26,666,180	83%	$38,759
SCE	713	100%	$14,202,298	100%	$19,919
SDG&E	252	82%	$11,711,986	70%	$46,476
SCG	2	22%	$153,497	13%	$76,749
Statewide	1,655	91%	$52,733,961	82%	$31,863

Source: 2013/14 OBF tracking data; 2013/14 Claims database.

The OBF loans included in this evaluation are associated with 2,644 projects, with an average loan amount of just under $20,000 per project. Recipients of these loans also received $12 million in incentives. The average loan amount per incentive dollar was $4.39. The projects supported with the loans achieved 294,163 MMBtu of ex post gross savings in 2013/14. On average, $179 in loan funds was disbursed for each MMBtu realized. SCG's two loans were the highest per project ($76,749), but the lowest on a per incentive dollar basis ($0.96) and a per MMBtu basis ($22). SDG&E were the highest in average amount ($31,569), loan amount per incentive dollar ($5.91), and loan amount per MMBtu ($262). Table 2-3 summarizes these statistics.

Table 2-3. 2013/14 OBF Loan Statistics

PA	# Loans	Loan Amount	# Projects	Loan $ / Project	Incentives	Loan $ / Incentive $	Ex Post Gross Savings (MMBtu)	Loan $ / MMBtu
PG&E	688	$26,666,180	972	$27,434	$7,249,996	$3.68	170,274	$157
SCE	713	$14,202,298	1,299	$10,933	$2,611,403	$5.44	72,145	$197
SDG&E	252	$11,711,986	371	$31,569	$1,981,980	$5.91	44,723	$262
SCG	2	$153,497	2	$76,749	$159,225	$0.96	7,022	$22
Statewide	1,655	$52,733,961	2,644	$19,945	$12,002,604	$4.39	294,163	$179

Source: 2013/14 OBF tracking data; 2013/14 Claims database.

In 2013/14, the majority of loan funding was associated with custom projects (61%) and with lighting projects (67%). SDG&E is the exception, with only 38% of loan funding associated with custom projects. The average loan amount was higher for custom projects compared to deemed projects. The statewide average loan size for lighting and non-lighting was comparable, but differed by PA, with PG&E issuing larger loans for non-lighting projects (average of $42,205 versus $27,859 for lighting projects) and SCE issuing larger loans for lighting projects (average of $15,067 versus $7,429 for non-lighting projects).

Table 2-4 summarizes these statistics. Note that the number of loans by program type and by technology does not add up to the total number of loans presented above, as each loan can be associated with more than one project. (Loan amounts were allocated by program type and technology, based on MMBtu savings.) As a result, average loan amounts presented in this table are smaller than actual loans issued by the PAs, in cases where a loan covers more than program type or technology.

Table 2-4. 2013/14 OBF Loans – by Program Type and Technology

PA	# Loans	Loan Amount	Average Loan	# Loans	Loan Amount	Average Loan
Program Type	**Deemed**			**Custom**		
PG&E	268	$9,268,947	$34,586	477	$17,397,233	$36,472
SCE	561	$4,302,018	$7,668	637	$9,900,280	$15,542
SDG&E	186	$7,210,707	$38,767	92	$4,501,278	$48,927
SCG	0	$0	$0	2	$153,497	$76,749
Statewide	1,015	$20,781,673	$20,475	1,208	$31,952,288	$26,451
Technology	**Lighting**			**Non-Lighting**		
PG&E	636	$17,718,620	$27,859	212	$8,947,560	$42,205
SCE	702	$10,576,810	$15,067	488	$3,625,488	$7,429
SDG&E	198	$6,991,188	$35,309	125	$4,720,798	$37,766
SCG	0	$0	$0	2	$153,497	$76,749
Statewide	1,536	$35,286,618	$22,973	827	$17,447,343	$21,097

Source: 2013/14 OBF tracking data; 2013/14 Claims database.

Table 2-5 provides additional PA-level information on 2013/14 OBF loans, by program type and by technology.

Table 2-5. 2013/14 OBF Loan Statistics – by Program Type and Technology

PA	# Loans	Loan Amount	# Projects	Loan $ / Project	Incentives	Loan $ / Incentive $	Ex Post Gross Savings (MMBtu)	Loan $ / MMBtu
Deemed								
PGE	268	$9,268,947	487	$19,033	$2,682,906	$3.45	80,911	$115
SCE	561	$4,302,018	938	$4,586	$884,585	$4.86	24,207	$178
SDGE	186	$7,210,707	278	$25,938	$928,779	$7.76	23,046	$313
SCG	0	$0	0	n/a	$0	n/a	0	n/a
Statewide	1,015	$20,781,673	1,703	$12,203	$4,496,270	$4.62	128,164	$162
Custom								
PGE	477	$17,397,233	537	$32,397	$4,567,090	$3.81	89,363	$195
SCE	637	$9,900,280	652	$15,184	$1,726,818	$5.73	47,938	$207
SDGE	92	$4,501,278	99	$45,467	$1,053,201	$4.27	21,676	$208
SCG	2	$153,497	2	$76,749	$159,225	$0.96	7,022	$22
Statewide	1,208	$31,952,288	1,290	$24,769	$7,506,333	$4.26	165,999	$192
Lighting								
PGE	636	$17,718,620	740	$23,944	$4,452,955	$3.98	80,489	$220
SCE	702	$10,576,810	726	$14,569	$2,079,349	$5.09	53,246	$199
SDGE	198	$6,991,188	247	$28,304	$860,322	$8.13	18,945	$369
SCG	0	$0	0	n/a	$0	n/a	0	n/a
Statewide	1,536	$35,286,618	1,713	$20,599	$7,392,626	$4.77	152,680	$231
Non-Lighting								
PGE	212	$8,947,560	232	$38,567	$2,797,041	$3.20	89,785	$100
SCE	488	$3,625,488	573	$6,327	$532,054	$6.81	18,899	$192
SDGE	125	$4,720,798	124	$38,071	$1,121,658	$4.21	25,778	$183
SCG	2	$153,497	2	$76,749	$159,225	$0.96	7,022	$22
Statewide	827	$17,447,343	931	$18,740	$4,609,978	$3.78	141,483	$123

Source: 2013/14 OBF tracking data; 2013/14 Claims database.

2.3 Evaluation Objectives

The OBF evaluation was conducted in two phases. Phase I included an assessment of available data and early data collection efforts. Phase II consisted of the assessment of gross and net energy savings and incremental net impacts, attributable to the OBF program, for the 2013-2014 period.

The primary objectives of Phase I were to:

1. Understand what data is available for the OBF programs;
2. Understand which business segments are impacted by the programs;
3. Characterize which energy-efficient measures are being financed through OBF and document the ex-ante savings associated with these projects; and

4. Determine the best evaluation methods to address the unique challenges regarding attribution for the OBF program in light of the overlap with utility incentive programs.

The primary objectives of Phase II were to:

1. Develop an estimate of gross energy savings associated with projects that were completed and received an OBF loan during the 2013-2014 evaluation period;
2. Develop an estimate of freeridership and net savings for the OBF programs;
3. Develop an estimate of incremental net savings of the OBF program, relative to net savings already claimed by the incentive programs;
4. Assess the relative importance of the OBF loan and the incentive in customer decision-making; and
5. Determine sources of OBF project funding.

2.4 Organization of Report

The remainder of this report presents a detailed description of the data sources and methodologies employed for this study as well as evaluation findings. The report is organized as follows:

- **Section 3** summarizes the data sources used in this evaluation and the sample design of the participant survey.
- **Section 4** summarizes the methodologies used for the analyses of gross impacts, net impacts, incremental net impacts, and OBF Loan-to-Incentive ratios.
- **Section 5** presents results of the gross impact analysis.
- **Section 6** presents results of the OBF net impact analysis.
- **Section 7** presents results of the OBF incremental net impact analysis.
- **Section 8** presents results of the analysis of the relative importance of the loan and the program incentive (i.e., the ratio analysis).
- **Section 9** summarizes survey responses about the sources of funding used or considered by OBF participants.
- **Section 10** provides conclusions and recommendations.
- **Appendix A** presents additional detail about the four OBF programs.
- **Appendix B** presents a comparison of OBF-tracked and Claims-tracked savings.
- **Appendix C** presents participant survey dispositions and response rates.
- **Appendix D** provides the final NTG survey instrument.

3. Data Sources

To develop the findings in this report, the Evaluation Team relied on several secondary data sources and conducted primary data collection activities. Each source of data is described below.

3.1 Secondary Data Sources

OBF Program Materials

To inform our research activities, we reviewed OBF program materials provided by the four PAs. Materials included program implementation plans, OBF handbooks, presentations, fact sheets, applications, worksheets, and other information explaining the OBF programs, eligibility criteria, and participation processes. We also reviewed the process evaluation, conducted for the 2010-2012 program cycle.[5]

OBF Tracking Data

Through a series of data request, we obtained program tracking data for the 2013/14 program cycle from the four PAs. OBF tracking data included the following information (where available): unique identifiers for loans and projects; loan issue date; loan amount; loan terms, including length of loan; project costs, incentives, and savings; customer information, including account number, business name, address, and contact information (contact name, phone number, email address); contractor information, if any; and identifiers allowing us to link the OBF data to the Claims database.

OBF tracking data provided the basis for all impact analyses and supported survey sampling and implementation.

Claims Data

Claims is a statewide database that houses information for California's incentive programs. It contains detailed measure-level information on projects completed through the incentive programs. We linked the OBF data to the 2013/14 Claims database and appended the following Claims data to the OBF data: unique identifiers for measures and projects; Claim year; measure name, group, and end use; quantity installed; incentives; ex ante savings (kW, kWh, and therms); evaluated gross realization rates (GRR) and net-to-gross ratios (NTGR); program name and type (deemed or calculated); and business name, address, and contact information (contact name, phone number).

We used two different versions of the Claims data in our evaluation. We used an initial version (as of April 2015) to link OBF loans to Claims data and to develop our sample frame. To support sampling, we used Claims data on measure end use and ex ante savings. We used ex post (evaluation) data from an updated version of Claims (as of August 2016) to develop post-stratification weights and determine incentive program gross and net savings for projects that included an OBF loan.

3.2 Primary Data Collection Activities

We conducted three primary data collection activities: interviews with OBF program managers, exploratory interviews with OBF participants, and a computer-assisted telephone interviewing (CATI) survey with OBF

[5] California 2010-2012 On-Bill Financing Process Evaluation and Market Assessment. The Cadmus Group, March 2012.

participants. Table 3-1 summarizes these activities. The subsections following the table provide additional information.

Table 3-1. Summary of Primary Data Collection Activities

Activity	Method	Target	Number of Respondents	Timing
OBF Program Manager Interviews	In-depth interview	Program managers	4	May 2015
Exploratory Customer Interviews	In-depth interview	Participating customers	7	August – September 2015
CATI Participant Survey	Telephone survey	Participating customers	136	May – September 2016

Source: OBF evaluation.

OBF Program Manager Interviews

We conducted interviews with the managers of the four OBF programs in May 2015. These interviews served to obtain a complete understanding of the OBF programs, including details on program design and implementation, program accomplishments in 2013/14, and changes relative to the 2010-12 program cycle. We also asked PA-specific questions following up on our earlier data requests, including any outstanding issues in linking OBF data to the Claims database.

Exploratory Customer Interviews

We conducted exploratory in-depth interviews with seven participants in the OBF programs. The purpose of these interviews was to understand customer decision-making with respect to energy efficient improvements and the role the OBF loan played in those decisions, relative to the role of the incentive.

In addition to the qualitative exploration, the interviews were designed to test the freeridership questions anticipated for use in the OBF participant telephone survey. While the OBF questions were based on well-vetted net impact surveys conducted in support of the incentive program evaluations, we augmented and modified the incentive program module to explicitly explore the role of the OBF loan and to enable differentiation of the relative influences of the OBF loan versus the incentive. We fielded these questions as part of the in-depth interviews, but used a Computer-Assisted Telephone Interviewing (CATI) format to better mimic the anticipated full survey administration.

OBF Participant Telephone Survey

We fielded a CATI survey with OBF participants between May and September 2016. The survey collected customer decision-making information to support the analyses of freeridership and the relative importance of the loan and the incentive, as well as additional information, e.g., about other sources of project funding either used or considered.

We conducted an extensive pretest with 32 participants in May 2016. As part of the pretest, we listened to several interviews and conducted a thorough review of the response data. Based on the findings from the pretest, we made a number of changes to the survey instrument. These changes did not materially affect the type of data collected, nor the freeridership algorithm developed in earlier tasks of this evaluation. Rather, the changes were designed to reduce survey length, improve survey flow, and eliminate potential respondent confusion, with the goal of maximizing survey completion rates and the quality of the collected data.

Appendix D provides the final NTG survey instrument.

Sampling Approach

For the participant survey, we used a stratified random sampling approach. The sampling unit was the project. We developed seven sampling domains, defined by PA and by technology (lighting and non-lighting).[6] We stratified each domain into five strata, using the total energy savings (in MMBtu), with Stratum 1 containing the largest projects and Stratum 5 containing the smallest projects. We set stratum boundaries so that each stratum included approximately 20% of domain MMBtu savings.

Table 3-2 and Table 3-3 show the sampling strata for lighting and non-lighting projects, respectively, including the number of projects in each stratum, stratum boundaries (in ex ante MMBtu savings), and the average project savings (in ex ante MMBtu).

Table 3-2. Sampling Strata for OBF Lighting Projects

Stratum	# Projects	Stratum Boundaries (Ex Ante MMBtu)		Average Ex Ante Savings (MMBtu)
		Lower	Upper	
PG&E Total				
PGE_LC[B]	1	8,169	8,169	8,169
PGE_L1	7	835	3,896	1,537
PGE_L2	40	333	807	471
PGE_L3	91	154	330	210
PGE_L4	165	89	154	115
PGE_L5	436	0.3	89	44
SCE Total				
SCE_L1	13	725	1,406	1,031
SCE_L2	34	294	661	413
SCE_L3	67	157	292	209
SCE_L4	136	70	155	101
SCE_L5	476	0.2	70	29
SDG&E Total				
SDGE_L1	6	488	955	682
SDGE_L2	13	243	470	360
SDGE_L3	23	146	233	193
SDGE_L4	44	68	144	102
SDGE_L5	161	2	67	28

[A] For sampling purposes, MMBtu savings for lighting projects exclude negative therm savings due to interactive effects.

[B] PG&E had one very large lighting project that we assigned to its own certainty stratum.

Source: OBF evaluation.

[6] Each PA has a lighting and non-lighting domain, except SCG which, as a gas-only utility, does not incent lighting measures.

Table 3-3. Sampling Strata for OBF Non-Lighting Projects

Stratum	# Projects	Stratum Boundaries (Ex Ante MMBtu)		Average Ex Ante Savings (MMBtu)
		Lower	Upper	
PG&E Total				
PGE_NL1	2	8,754	8,763	8,759
PGE_NL2	13	1,278	5,113	2,045
PGE_NL3	25	773	1,210	925
PGE_NL4	37	450	772	603
PGE_NL5	155	0.5	450	147
SCE Total				
SCE_NL1	25	84	475	175
SCE_NL2	66	57	83	68
SCE_NL3	91	44	57	49
SCE_NL4	128	28	43	35
SCE_NL5	263	2	28	17
SDG&E Total				
SDGE_NL1	1	6,213	6,213	6,213
SDGE_NL2	3	2,182	5,017	3,281
SDGE_NL3	4	1,682	2,177	1,969
SDGE_NL4	8	758	1,648	1,120
SDGE_NL5	108	0.7	605	80
SCG Total				
SCG	2	5,998	8,332	7,165

Source: OBF evaluation.

While the sampling unit was the project, the survey targeted customer contacts. Because many customers completed more than one OBF project during the evaluation period, the number of unique customer contacts available for calling was much smaller (1,214) than the number of projects (2,644). However, the survey asked each respondent about a specific project; we, therefore, selected one project in cases where a contact had completed more than one during the evaluation period. Given their smaller incidence, we prioritized larger projects (Strata 1 and 2) and non-lighting projects, to ensure that they would be adequately represented in our analysis. If a contact had more than one project of the same priority level, we selected one project at random.

Completed Interviews

Overall, we completed 136 interviews, 93 with contacts with a lighting project and 43 with a contact with a non-lighting project. The completed interviews represent 5% of all OBF projects and 7% of MMBtu savings, for both lighting and non-lighting. Note that we tried to contact all unique customers (a census attempt), although we did not attempt to complete an interview for each project, due to respondent burden.

On average, interviews took just under 15 minutes to complete. The overall response rate (2-level AAPOR RR3) for the survey was 16.1%. PA-specific response rates were 19.2% for PG&E, 14.2% for SCE, and 14.6% for SDG&E. By technology, response rates were 16.8% for customers called about lighting projects and 14.6% for customers called about non-lighting projects. Appendix C provides more detailed information on survey dispositions and response rate calculations for the participant survey.

Table 3-4 summarizes the sampling strata for lighting projects, including the number of projects and their combined MMBtu savings in the population, the number of completed interviews and their combined MMBtu savings, and the percentage of the population that the completed interviews represent.

Table 3-5 summarizes the same information for non-lighting projects.

Table 3-4. Completed Interviews for OBF Lighting Projects

Stratum	Population (N)		NTG Sample (n)			
	Projects	MMBtu Savings[A]	Projects	% of Pop.	MMBtu Savings[A]	% of Pop.
Statewide	**1,713**	**186,114**	**93**	**5%**	**19,821**	**7%**
PG&E Total	740	94,916	45	6%	15,030	16%
PGE_LC[B]	1	8,169	1	100%	8,169	100%
PGE_L1	7	10,762	1	14%	898	8%
PGE_L2	40	18,840	4	10%	1,813	10%
PGE_L3	91	19,128	9	10%	2,119	11%
PGE_L4	165	19,027	9	5%	1,061	6%
PGE_L5	436	18,990	21	5%	970	5%
SCE Total	726	69,061	39	5%	3,908	6%
SCE_L1	13	13,400	1	8%	901	7%
SCE_L2	34	14,029	-	0%	-	0%
SCE_L3	67	14,000	6	9%	1,273	9%
SCE_L4	136	13,754	12	9%	1,109	8%
SCE_L5	476	13,878	20	4%	624	4%
SDG&E Total	247	22,137	9	4%	883	4%
SDGE_L1	6	4,090	-	0%	-	0%
SDGE_L2	13	4,681	1	8%	363	8%
SDGE_L3	23	4,443	1	4%	169	4%
SDGE_L4	44	4,474	2	5%	161	4%
SDGE_L5	161	4,449	5	3%	190	4%

[A] For sampling purposes, MMBtu savings for lighting projects exclude negative therm savings due to interactive effects.

[B] PG&E had one very large lighting project that we assigned to its own certainty stratum.

Source: OBF evaluation.

Table 3-5. Completed Interviews for OBF Non-Lighting Projects

Stratum	Population (N)		NTG Sample (n)			
	Projects	MMBtu Savings	Projects	% of Pop.	MMBtu Savings	% of Pop.
Statewide	**931**	**190,571**	**43**	**5%**	**13,874**	**7%**
PG&E Total	232	112,379	15	6%	12,066	11%
PGE_NL1	2	17,517	-	0%	-	0%
PGE_NL2	13	26,590	2	15%	3,508	13%
PGE_NL3	25	23,137	7	28%	6,876	30%
PGE_NL4	37	22,298	1	3%	544	2%
PGE_NL5	155	22,837	5	3%	1,138	5%
SCE Total	573	22,291	22	4%	801	4%
SCE_NL1	25	4,382	1	4%	90	2%
SCE_NL2	66	4,520	4	6%	297	7%
SCE_NL3	91	4,462	2	2%	87	2%
SCE_NL4	128	4,455	3	2%	97	2%
SCE_NL5	263	4,472	12	5%	230	5%
SDG&E Total	124	41,571	6	5%	1,008	2%
SDGE_NL1	1	6,213	-	0%	-	0%
SDGE_NL2	3	9,843	-	0%	-	0%
SDGE_NL3	4	7,875	-	0%	-	0%
SDGE_NL4	8	8,959	-	0%	-	0%
SDGE_NL5	108	8,681	6	6%	1,008	12%
SCG Total	2	14,330	-	0%	-	0%

Source: OBF evaluation.

4. Methodology

4.1 Gross Impact Analysis

The objective of this analysis was to determine ex ante and ex post gross energy savings, as well as realization rates, associated with projects that received an OBF loan. The gross impact analysis was based on savings tracked in the Claims database, i.e., savings the IOUs claim for their incentive programs.

It should be noted that the OBF programs also track savings. However, these savings are not always consistent with savings for the same projects in the Claims database. In some cases, the OBF program determines savings based on the replaced equipment, rather than using deemed values used by the incentive programs, to better reflect actual savings realized by each participant. This is done to make sure that loans are bill neutral, i.e., that the bill savings from reduced energy usage are at least equal to the customer's loan payments. While OBF-tracked savings are not intended for claiming savings, comparing them to the savings tracked in the Claims database is instructive. We provide this comparison in Appendix B.

We conducted the gross impact analysis in two steps. In the first step, we developed an OBF-Claims match rate. This rate reflects the share of 2013/14 OBF-tracked savings that is associated with 2013/14 claims projects (some loans were issued for projects completed in prior program years).

In the second step, we estimated ex post gross savings for OBF projects completed in 2013/14 and determined GRRs by PA and technology. It should be noted that this evaluation did not include an independent verification of gross savings, as this is already done as part of the evaluation of the incentive programs in which OBF participants also participate. To develop gross savings for the OBF programs, we therefore relied on data tracked in the statewide Claims database. We developed OBF-specific ex post gross savings and GRRs as follows:

- For each OBF loan that we could match to the 2013/14 Claims database, we developed ex post gross savings by multiplying Claims-tracked ex ante gross savings (kW, kWh, and therms) – at the measure level – by Claims-tracked evaluated GRRs (developed through the incentive program evaluations).
- We aggregated measure-level ex post gross savings to the PA/technology level.
- We developed PA/technology-level GRRs by dividing total ex post savings for each PA/technology group by its total ex ante savings.

4.2 Net Impact Analysis

The primary objectives of this analysis were to determine the overall influence of the OBF programs (including the OBF loan, the incentive, and other support provided by the programs) on customers' decision to install energy-efficient equipment and to develop net-to-gross ratios (NTGRs) and net program savings. The methodologies used for these analyses are described below.

NTG Analysis

The NTG analysis for the OBF programs only included consideration of freeridership; it did not include spillover or market effects.[7] The net-to-gross ratio (NTGR) is therefore defined as:

$$NTGR = 1 - FR$$

The primary objectives of the NTG analysis were to determine the overall influence of the OBF programs (including the OBF loan, the incentive, and other support provided by the programs) on customers' decision to install energy-efficient equipment and to develop NTGRs.

The freeridership analysis was based on responses to the participant survey, i.e., it used a customer self-report approach. We used a methodology that closely follows the methodology developed by the CA Nonresidential Net-to-Gross Working Group and employed in the net impact evaluations for the CA large non-residential incentive programs.[8] This methodology is based on three program attribution indices (PAIs) which can range from 0 (full freerider) to 1.0 (not a freerider). We adapted this method to incorporate consideration of the OBF loan. We developed NTGRs by PA and by technology (i.e., lighting and non-lighting).

The three PAIs are defined as follows:

- **Program Attribution Index 1 (PAI–1)** reflects the influence of the most important of various program-related elements in the customer's decision to select a given program measure. The PAI-1 score is calculated as the highest program influence factor (rated on a scale of 0 to 10) divided by the sum of the highest program influence factor and the highest non-program influence factor. In the participant survey, we asked respondents to rate the following program and non-program influence factors:

  - **Program factors:** OBF loan, program rebate, information from PA-provided audit, information from PA-provided training, information from program marketing materials, assistance from a program contractor, recommendation from an account representative, and other program factors (based on open-ended response).

  - **Non-program factors:** Age or condition of the old equipment, recommendation from a non-program contractor or vendor, previous experience with energy-efficient products, previous experience with energy efficiency programs, standard industry practice, corporate policy, improved product quality, government regulations, organization's remodeling or equipment replacement practices, and other non-program factors (based on open-ended response).

  In addition, we asked respondents to rate the importance of financial criteria (payback or return-on-investment) in their decision to install the program measure. Financial criteria are considered financial a program factor if the rebate moved the energy-efficient project within the acceptable range of their financial criteria (based on a follow-up question), but it is considered a non-program factor if it did not.

- **Program Attribution Index 2 (PAI–2)** captures the perceived importance of program factors relative to non-program factors in the decision to implement the program measure. This score is determined by

[7] Participant spillover is assessed through the incentive program evaluations and therefore not included as part of this analysis.

[8] Nonresidential Net-to-Gross Working Group. Methodological Framework for Using the Self-report Approach to Estimating Net-to-Gross Ratios for Nonresidential Customers.

asking respondents to divide a total of 10 points between the OBF program and other factors.[9] The points given to the program are adjusted (i.e., divided by 2) if the respondent reports that they had made the decision to implement the measure *before* learning about the program. This adjusted score is divided by 10 to convert it into decimal format, thus making it consistent with PAI-1.

- **Program Attribution Index 3 (PAI–3)** reflects the likelihood that the respondent would have implemented the exact same project if the OBF program had not been available (the counterfactual).[10] This score is calculated as 10 minus the likelihood that the respondent would have implemented the same measure in the absence of the OBF program. This score is divided by 10 to convert it into decimal format, thus making it consistent with PAI-1 and PAI-2.

Table 4-1 summarizes the three PAIs and the adjustments made to support the OBF freeridership analysis.

Table 4-1. Changes to Nonresidential Incentive Program Freeridership Algorithm

	Description of Nonresidential Incentive Program Algorithm	Changes to Determine Overall Influence of OBF Program	
		Survey Questions	NTG Algorithm
PAI–1	Max Program Factor / (Max Program Factor + Max Non-Program Factor)	Add question about importance of loan: "How important was the on-bill finance loan in your decision to install this equipment?"	Same algorithm; include loan as an additional program factor
PAI–2	Points given to program / 10 (divided by 2, if respondents made decision about equipment before they found out about the program)	Ask respondent to allocate 10 points between two factors: 1) the OBF program 2) other factors Add new timing of decision-making question: "Did your organization make the decision to install this new equipment before or after you became aware of the OBF loan?"	Same algorithm; program points refer to the OBF program (which includes the incentive) rather than the incentive program Timing adjustment (division by 2) is applied if respondents made decision about equipment before they found out about the loan or the incentive
PAI–3	(10 - Likelihood they would have installed the exact same EE equipment if the incentive program had not been available) / 10	Ask likelihood question about OBF program: "What is the likelihood that you would have installed exactly the same program qualifying energy-efficient equipment if you had received neither the loan, nor the rebate, nor any other support from the On-Bill Finance Program?"	Same algorithm; likelihood rating refers to the overall OBF program

Source: OBF evaluation.

We estimated the respondent-level NTGR as the average of these three scores. In cases where PAI-3 is equal to zero (0) or one (1.0), PAI-1 is dropped, and the NTGR is calculated as the average of PAI-2 and PAI-3. If one of the three scores was not available (generally due to respondents giving a "don't know" response or refusing

[9] To support the Loan-to-Incentive Ratio Analysis, a follow-up question asked the respondent to divide the points given to the OBF program between the OBF loan, the rebate, and other OBF program support.

[10] To support the Loan-to-Incentive Ratio Analysis, two follow-up questions asked the respondent about the likelihood that they would have implemented the exact same project if (1) the OBF program had not included the incentive and (2) the OBF program had not included the loan.

to answer the question), then the NTGR was estimated as the average of the two available scores. If two or more scores were missing, we dropped the respondent from the freeridership analysis.

We asked participants who completed similar projects, through the OBF program, at other facilities owned by their company if the decision-making process was the same for those other projects. If the answer was "yes", we assigned the same NTGR to those other projects. This added a total of 33 projects to our NTG analysis.

We calculated separate NTGRs for each sampling domain, i.e., by PA and technology (lighting and non-lighting projects). To develop these domain-level NTGRs, we applied savings-based weights to the sampled projects within each sampling domain. We then developed PA-level NTGRs by applying technology-level savings weights that reflect the relative contribution to program savings from lighting and non-lighting measures. We also developed statewide NTGRs by applying PA-level savings weights that reflect the relative contribution to statewide OBF savings by the each PA.

Net Savings Analysis

We developed OBF ex post net savings by applying the PA/technology-specific NTGRs (developed in the NTG analysis) to the ex post gross savings (developed in the gross impact analysis) at the Claims level. We then aggregated Claims-level savings to the PA/technology level and the state level.

4.3 Incremental Net Impact Analysis

The primary objective of this analysis was to quantify savings that are attributable to the OBF programs but that have not already been claimed by the PAs through the incentive programs. To quantify these savings, we developed a second estimate of net savings, hereafter called incentive program ex post net savings. This estimate of net savings is based on results of the incentive program evaluations and represents the net savings the PAs claim for OBF projects through their incentive programs. We calculated incentive program ex post net savings, for projects that received an OBF loan, as follows:

- We multiplied the Claims-level ex post gross savings estimates (developed in the OBF gross impact analysis) by Claims-tracked evaluated first year NTGRs (developed through the incentive program evaluations).
- We aggregated Claims-level ex post net savings to the PA/technology level.
- We developed PA/technology-level NTGRs by dividing total incentive program ex post net savings for each PA/technology group by the group's total ex post gross savings.

We then subtracted these Claims-based NTGRs from the OBF-evaluated NTGRs to determine the incremental NTGR. Similarly, we subtracted incentive program ex post net savings from the OBF-evaluated net savings to determine incremental net savings. These analyses were done at the PA/technology level.

4.4 OBF Loan-to-Incentive Ratio Analysis

The primary objectives of this analysis were to determine the relative importance of the OBF loan and the program incentive in customers' decision to install energy-efficient equipment and to develop relative importance ratios.

The analysis was based on the responses to the freeridership questions in the participant survey. We used three concepts to develop an overall importance score for the OBF loan and for the program incentive. The

concepts are the same as those used to develop the three PAI scores discussed above. For each concept, we developed a score that can range from 0 to 10, where 0 means not important and 10 means very important. The three scores are defined as follows:

- **Score 1** reflects the importance ratings of the OBF loan and of the incentive (based on PAI–1 questions). The scores are equal to the importance ratings.
- **Score 2** reflects the points allocated to the OBF loan and to the incentive (based on additional PAI–2 questions). The scores are equal to the allocated points.
- **Score 3** reflects the likelihood to install the exact same equipment without the OBF loan and without the incentive (based on additional PAI–3 questions). The scores are equal to 10 minus the likelihood ratings.

For both the OBF loan and the incentive, we averaged the three scores and developed a respondent-level Loan-to-Incentive Ratio (LIR) by dividing the average score for the loan by the average score for the incentive. Similar to the freeridership analysis, if one of the scores was missing, then the ratio was estimated as the average of the two available scores. If two or more scores were missing, we dropped the respondent from the ratio analysis.[11]

We developed PA-level and technology-level LIRs by applying MMBtu-weights to the respondent-level average loan and incentive scores. The weights reflect both the savings of the respondent's project as well as the relative contribution of the respondent's sampling domain to overall OBF savings. We then developed the aggregate LIRs by dividing the sum of the weighted loan scores by the sum of the weighted incentive scores.

4.5 Funding Source Analysis

The objective of this analysis was to develop an understanding of other sources of funding used, or initially considered, for the completed OBF projects. This analysis is based on responses to the participant survey.

[11] We used the average of two available scores for 20 respondents (15%) and dropped 4 respondents (3%) due to two or more missing scores.

5. Gross Impact Results

This section summarizes the results of our gross impact analysis. As described in Section 4.1, this analysis involved two parts: (1) a comparison of OBF data with 2013/14 Claims data and (2) development of OBF ex post gross savings estimates and realization rates. We describe results of both analyses in the subsections below.

5.1 OBF-Claims Data Comparison

At the outset of this evaluation, developing gross impact estimates for the OBF programs seemed to be a straight-forward exercise of applying incentive program gross realization rates (GRRs) to OBF-tracked ex ante gross savings estimates. However, as we received and processed the PAs' OBF data, we realized that this was not the case for all four PAs. We encountered a number of issues:

1. **Not all loans issued in 2013/14 are associated with projects completed in 2013/14.** When trying to link OBF data to Claims data, we were unable to match a number of loans. These loans were issued for projects completed in prior program years. Since the 2013/14 evaluation only includes projects completed during the 2013/14 program cycle, we excluded these loans from this evaluation.[12]

2. **Savings tracked by the OBF program are not the same as savings for the same projects tracked in the Claims database.** In some cases, the OBF program determines savings based on the replaced equipment (rather than based on deemed values used by the incentive programs) to better reflect actual savings realized by each participant. This is done to ensure that loans are bill neutral, i.e., that the bill savings from reduced energy usage are at least equal to the customer's loan payments. However, consistent with evaluation guidelines for the incentive programs, our evaluation needed to be based on agreed-upon values in the Claims database.

3. **In some cases, there is a many-to-many relationship between loans and Claims projects.** SCE, SDG&E, and SCG all provided identifiers that allowed us to link OBF records to Claims records, either matching directly on Claims IDs or matching on other identifiers, such as project IDs. In some cases, these matches were not unique as a Claim could be associated with more than one loan.

4. **PG&E did not include unique Claims identifiers in their OBF databases.** When we originally received OBF tracking data from PG&E, there were no identifiers that allowed us to link OBF projects to Claims records, and PG&E noted that providing those identifiers would not be possible. We therefore developed a matching algorithm, which allowed us to link approximately 80% of PG&E's OBF loans to Claims records based on account numbers, names, addresses, and incentive amounts. However, for the remaining loans, we were not able to find Claims matches. Over several months of back-and-forth with PG&E, we received additional identifiers that improved our matching success somewhat. In addition, PG&E manually matched some of the loans for us. Eventually, more than a year after our initial request, PG&E was able to provide identifiers that allowed us to link the remaining unmatched loans.

To create an OBF dataset that was usable for our gross impact evaluation, we used the PA-provided information and linked the OBF data to the 2013/14 Claims data. We developed an OBF-Claims match rate,

[12] Note that this analysis did not consider any loans issued after the 2013/14 evaluation period that might be associated with 2013/14 incentive program projects.

which is defined as the percentage of all OBF-tracked savings that could be linked to 2013/14 Claims data. It measures the share of 2013/14 OBF loan activity that is eligible for consideration in this evaluation.

To develop the match rate for each PA, we first identified loans that were associated with 2013/14 Claims. The share of OBF loans associated with 2013/14 incentive projects varied widely between the four PAs: While all of SCE's OBF loans were associated with 2013/14 Claims, only 2 out of 9 SCG loans were. We then developed the match rate for each PA by dividing OBF-tracked savings for matched loans by all OBF-tracked savings. The match rate ranged from 0.27 for SCG to 1.0 for SCE, with SDG&E (0.66) and PG&E (0.82) falling in-between.

Table 5-1 summarizes the results of the OBF-Claims data comparison, statewide and by PA.

Table 5-1. Summary of the OBF-Claims Data Comparison

Metric	Statewide	PG&E	SCE	SDG&E	SCG
a. Total OBF-Tracked Savings (MMBtu)	579,742	268,367	101,343	150,962	59,069
b. OBF-Tracked Savings for Projects Matched to 2013/14 Claims (MMBtu)	437,366	220,335	101,343	99,765	15,923
c. OBF-Claims Match Rate (c = b / a)	0.75	0.82	1.00	0.66	0.27

Source: 2013/14 Claims database; OBF tracking data; OBF evaluation analysis.

5.2 Estimation of OBF Ex Post Gross Savings

The second part of the OBF gross impact analysis consisted of developing OBF ex post gross savings:

- For each OBF loan that we could match to the 2013/14 Claims database, we developed ex post gross savings by multiplying Claims-tracked ex ante gross savings (kW, kWh, and therms) by Claims-tracked evaluated GRRs (developed through the incentive program evaluations). This analysis was done at the Claims-record level.
- We then aggregated Claims-level ex post gross savings to the PA/end use level.
- We developed Claims ex post GRRs, at the PA/technology-level, by dividing total ex post savings for each PA/technology group by its total ex ante savings.

Table 5-2 summarizes gross impact results at the PA, technology, and end use levels, as well as for the statewide OBF program.

Table 5-2. Summary of OBF Gross Impact Results

	# OBF Projects	Claims Ex Ante Savings		Claims Calculated Ex Post Savings		Claims Ex Post Realization Rate	
		MMBtu	kW	MMBtu	kW	MMBtu	kW
Statewide	2,644	370,266	10,556	294,163	8,445	79%	80%
Lighting	1,713	183,164	5,612	152,680	4,765	83%	85%
Non-Lighting	931	187,103	4,944	141,483	3,680	76%	74%
PGE	972	204,415	5,970	170,274	4,660	83%	78%
Lighting	740	93,424	2,639	80,489	2,324	86%	88%
Non-Lighting	232	110,991	3,331	89,785	2,336	81%	70%
Refrigeration	161	60,576	2,035	57,212	1,697	94%	83%
HVAC	34	23,452	835	15,054	397	64%	48%
Process	23	15,589	374	9,957	168	64%	45%
Water Heating	1	8,754	-	5,428	-	62%	--
Pool	2	1,049	-	651	-	62%	--
Other	1	865	25	865	25	100%	100%
New Construction	2	604	60	515	48	85%	79%
Vending	3	79	-	79	-	100%	--
Appliances	4	12	0.3	12	0.3	100%	100%
Food Service	1	10	1	10	1	100%	100%
SCE	1,299	89,649	2,610	72,145	2,058	80%	79%
Lighting	726	69,173	1,859	53,246	1,370	77%	74%
Non-Lighting	573	20,476	751	18,899	688	92%	92%
Refrigeration	425	16,507	652	15,555	624	94%	96%
Vending	133	2,281	-	2,281	-	100%	--
Process	7	1,293	57	816	39	63%	69%
HVAC	5	346	35	197	18	57%	53%
Envelope	3	49	7	49	7	100%	100%
SDGE	371	61,872	1,975	44,723	1,727	72%	87%
Lighting	247	20,566	1,113	18,945	1,071	92%	96%
Non-Lighting	124	41,306	862	25,778	657	62%	76%
HVAC	40	33,697	693	20,339	531	60%	77%
Pool	20	3,385	125	1,714	94	51%	75%
Envelope	2	1,959	10	1,914	6	98%	63%
Refrigeration	27	1,203	23	865	17	72%	75%
Food Service	3	728	-	728	-	100%	--
Process	3	270	9	153	6	57%	70%
Appliances	25	47	3	47	3	100%	100%
Vending	2	17	-	17	-	100%	--
Other	2	1	0	1	0	100%	100%
SCG	2	14,330	-	7,022	-	49%	--
Non-Lighting	2	14,330	-	7,022	-	49%	--
HVAC	1	8,332	-	4,083	-	49%	--
Process	1	5,998	-	2,939	-	49%	--

Source: 2013/14 Claims database; OBF evaluation analysis.

6. Net Impact Results

This section summarizes the results of the OBF net impact analysis, including NTGRs and overall net impacts. This section also presents key drivers of the OBF NTG results and results of a sensitivity analysis.

For this evaluation, NTG includes consideration of freeridership but it does not include consideration of spillover or market effects. This section presents net impact results for each sampling domain (i.e., by PA and technology), as well as statewide results.

6.1 Number of NTG Points

The OBF freeridership results are based on NTGRs for 167 projects for which survey respondents provided valid information.[13] Table 6-1 presents the number of valid NTG points included in the analysis, by PA, including the share of 2013/14 OBF projects and OBF ex post MMBtu savings represented. PG&E and SCE account for the largest number of OBF project and the largest number of NTG points. SCG only completed two OBF projects in 2013/14, and neither participant responded to the survey. The NTG points included in the analysis represent 6% of all OBF projects and 10% of ex post MMBtu claims.

Table 6-1. Valid NTG Points by Program Administrator

Program Administrator	OBF Projects (N)	Valid NTG Points (n)	Percent of OBF Projects	Percent of OBF Ex Post MMBtu Claims
PG&E	972	81	8%	15%
SCE	1,299	68	5%	5%
SDG&E	371	18	5%	3%
SCG	2	-	0%	0%
Statewide	2,644	167	6%	10%

Source: OBF participant survey; OBF tracking data; OBF evaluation analysis.

Because we do not have OBF evaluated NTG results for SCG, the two 2013/14 SCG OBF projects will be excluded from the remainder of this analysis.

6.2 Weighted NTG Results

This section presents statewide and PA-specific weighted NTGRs, separately for lighting and non-lighting projects. To develop these aggregate NTGRs, we applied savings-based weights to the sampled projects within each sampling domain. We then developed (1) PA-level NTGRs by applying technology-level savings weights that reflect the relative contribution to program savings from lighting and non-lighting measures and (2) statewide NTGRs by applying PA-level savings weights that reflect the relative contribution to program savings

[13] A total of 125 unique OBF participants answered the freeridership questions for 136 OBF projects completed in 2013 and 2014 (11 participants completed the survey for two projects). Of these 136 responses, 101 NTGRs are based on all three PAIs and 33 NTGRs are based on two PAIs. We dropped two projects from the NTG analysis due to incomplete information. In addition, we applied freeridership estimates to another 33 projects – of the same technology as the survey project and owned by the same company – that went through a joint decision-making process with the survey project.

by each PA.[14] Separate reporting by fuel type (i.e., electric vs. gas) is not feasible since the sample of electric and gas projects was developed based on one common metric, MMBtu savings.

In the following subsections, we present statewide and PA-specific NTG results, including the final weighted NTGRs, precision estimates, and basic statistics for the population and the NTG sample.

Statewide NTG Results

The overall estimated NTGR for 2013/14 OBF projects is 0.67, based on 167 valid NTG points and with a relative precision of 4%. The NTGR for lighting projects (0.70) is slightly higher than that for non-lighting projects (0.63), although the difference is not statistically significant at 90% confidence. The sampled projects represent 12% and 8% of MMBtu savings of all lighting and non-lighting projects, respectively. Table 6-2Table 6-3 summarizes these results.

Table 6-2. Weighted Statewide Net-to-Gross Ratios

	Overall	Lighting	Non-Lighting
Mean NTGR	0.67	0.70	0.63
90 Percent CI	0.64 to 0.69	0.67 to 0.73	0.59 to 0.68
Relative Precision	0.04	0.04	0.07
Valid NTG Points (n)	167	120	47
OBF Projects (N)	2,644	1,713	931
Percent of MMBtu Sampled	10%	12%	8%

Source: OBF participant survey; OBF evaluation analysis.

PG&E NTG Results

The estimated program-level NTGR for PG&E is 0.69, based on 81 valid NTG points and with a relative precision of 5%. The NTGR for lighting (0.74) is slightly higher than that for non-lighting (0.65), although the difference is not statistically significant at 90% confidence. The sampled projects represent 18% and 12% of MMBtu savings of all PG&E lighting and non-lighting projects, respectively.

Table 6-3 summarizes these results.

[14] Note that even though we developed savings-based sampling strata within each PA-technology domain, the final analysis was done without savings-based stratification because (1) stratum boundaries did not line up well across PAs; (2) some strata had low numbers of responses; and (3) correlation between NTG results and savings was weak.

Table 6-3. Weighted PG&E Net-to-Gross Ratios

	Overall	Lighting	Non-Lighting
Mean NTGR	**0.69**	**0.74**	**0.65**
90 Percent CI	0.66 to 0.73	0.7 to 0.77	0.59 to 0.71
Relative Precision	0.05	0.05	0.10
Valid NTG Points (n)	81	61	20
OBF Projects (N)	972	740	232
Percent of MMBtu Sampled	15%	18%	12%

Source: OBF participant survey; OBF evaluation analysis.

SCE Results

The estimated program-level NTGR for SCE is 0.67, based on 68 valid NTG points and with a relative precision of 8%. The NTGR for lighting (0.65) is slightly lower than that for non-lighting (0.71), although the difference is not statistically significant at 90% confidence. The sampled projects represent 6% and 4% of MMBtu savings of all SCE lighting and non-lighting projects, respectively.

Table 6-4 summarizes these results.

Table 6-4. Weighted SCE Net-to-Gross Ratios

	Overall	Lighting	Non-Lighting
Mean NTGR	**0.67**	**0.65**	**0.71**
90 Percent CI	0.61 to 0.72	0.59 to 0.72	0.62 to 0.8
Relative Precision	0.08	0.10	0.13
Valid NTG Points (n)	68	46	22
OBF Projects (N)	1,299	726	573
Percent of MMBtu Sampled	5%	6%	4%

Source: OBF participant survey; OBF evaluation analysis.

SDG&E Results

The estimated program-level NTGR for SDG&E is 0.57, based on 18 valid NTG points and with a relative precision of 6%. This is the lowest NTGR estimate of any of the three PAs for whom we were able to collect survey data. While SDG&E's lighting NTGR (0.64) is comparable to that estimated for SCE (0.65), SDG&E's NTGR for non-lighting (0.52) is the lowest of any of the six PA-technology sampling domains.

While the precision estimate around the non-lighting NTGR is good (an error of +/- 7% at 90% confidence), it should be noted that the NTGR is based on only five sample points, representing only 1% of SDG&E OBF non-lighting savings. These five sample points achieved good precision because three of the five, accounting for 98% of domain savings, had virtually identical NTGRs of between 0.50 and 0.53. However, since the addition of a single sample point with a higher or lower NTGR could substantially affect the overall NTGR, this result

should be interpreted with caution.[15] Because of this uncertainty, we do not recommend that SDG&E base OBF program design decisions on these results.

Interestingly, SDG&E OBF participants provided the lowest loan importance ratings of the three PAs, and they are the only OBF participants to give lower average importance ratings to the loan than to the incentive (see also analysis in Section 8). These results suggest that for SDG&E customers, the loan might be less important in their choice of equipment than for customers of the other PAs.

Table 6-5 summarizes these results.

Table 6-5. Weighted SDG&E Net-to-Gross Ratios

	Overall	Lighting	Non-Lighting
Mean NTGR	**0.57**	**0.64**	**0.52**
90 Percent CI	0.53 to 0.61	0.57 to 0.72	0.48 to 0.55
Relative Precision	0.06	0.12	0.07
Valid NTG Points (n)	18	13	5
OBF Projects (N)	371	247	124
Percent of MMBtu Sampled	3%	6%	1%

Source: OBF participant survey; OBF evaluation analysis.

6.3 Key Factors Influencing NTG Results

As described in Section 4.2, a number of inputs go into the development of the NTGRs. Not only is each NTGR comprised of three program attribution indices (PAIs), each PAI consist of a number of different inputs. In addition, the participant survey collected other information about the customers' decision to install the energy-efficient equipment that can help contextualize the NTG results. This section takes a closer look at the key factors driving the NTG results reported above.

The first part of Table 6-6 shows the unweighted distribution of NTGRs by PA and for the OBF program overall. The table shows that few OBF participants (3%) have a low NTGR (defined as 0.25 or less) and about equal proportions have medium-high (between 0.50 and 0.75) or high (between 0.75 and 1.00) NTGRs. The largest share of participants, 39%, has a medium-high NTGR of between 0.50 and 0.75. While SDG&E follows this pattern, it has twice the share of low NTGRs and less than half the share of high NTGRs, relative to the statewide average.

The second part of Table 6-6 summarizes survey responses to questions about key factors influencing participants' decision to install the energy efficient equipment. The table compares responses by participants with a low or medium-low NTGR (n=44) to those with a medium-high or high NTGR (n=123). The percentages in the two right-most columns indicate the share of respondents in the two groups who assigned a high importance to a given project driver. Significant differences between the two groups (at 90% confidence) are indicated with a blue circle. The second column indicates the expected direction of the influence. A "+" indicates an expected positive influence on the NTGR, i.e., we would expect a higher share of participants in the higher NTGR group to have been influenced by the factor compared to the lower NTGR group. Conversely, a "-" indicates an expected negative influence on the NTGR. Results that follow the expected direction of

[15] For example, adding a sample point with MMBtu savings of 46.4 MMBtu (the average of the five current sample points) and a NTGR of 0.70 would increase the domain NTGR from 0.52 to 0.55 and would increase the sampling error from 6% to 11%.

influence are marked in green; results that are opposite of the expected direction of influence are marked in orange.

Table 6-6. Distribution of Net-to-Gross Ratios

	Expected Direction of Influence	Low (0.00 – 0.25)	Medium-Low (>0.25 – 0.50)	Medium-High (>0.5 – 0.75)	High (>0.75 – 1.00)
Distribution of NTGRs					
Statewide (n=167)		3%	23%	39%	35%
PGE (n=81)		1%	22%	38%	38%
SCE (n=68)		4%	24%	37%	35%
SDGE (n=18)		6%	28%	50%	17%
Key NTGR Drivers					
Decision Timing					
Decision to install was made after learning about the OBF program	+	55%		90%	
Program Provided Assistance/Information Was Important (Rating of 8-10)					
Information from PA audit	+	9%		18%	
PA training	+	23%		29%	
PA marketing	+	36%		50%	
Assistance from program contractor	+	18%		33%	
Other Non-Program Factors Were Important (Rating of 8-10)					
Corporate policy or guidelines	-	36%		49%	
Company's remodeling/equipment replacement practices	-	52%		58%	
Industry standard practice	-	48%		53%	
Recommendation from a non-program contractor	-	20%		28%	
Improved product quality	-	68%		79%	
Age or condition of the old equipment	-	61%		54%	
Other Program Influences					
Program influenced project size	+	27%		49%	
Program influenced project timing	+	30%		77%	

Source: OBF participant survey; OBF evaluation analysis.

A few themes emerge from this analysis:

- Participants in the higher NTGR group are significantly more likely to have made the decision to install the energy-efficient equipment *after* learning about the OBF program (90% versus 55%). This strong correlation is not surprising as, in theory, the program cannot have influenced the installation decision,

if the decision had already been made when the participant became aware of the program. In addition, the PAI-2 score is halved, if the participant reports having made the decision before learning of the program, directly reducing the overall NTGR.

- As expected, participants in the higher NTGR group are more likely to have been influenced by information and assistance provided by the program, including program training and marketing, a program-provided audit, or assistance from a program contractor (the only difference that is significant is for "assistance from a program contractor").
- Unexpectedly, higher NTGR ratios are also correlated with many factors generally thought of as "non-program" factors, including corporate policy, the company's remodeling/equipment replacement practices, industry standard practice, recommendations from a non-program contractor, and product quality. However, the observed differences are not statistically significant.
- Finally, there are two additional aspects of customer decision making that are not directly captured in the NTGR algorithm but that appear to be correlated with higher NTGRs: project size and project timing. Participants in the higher NTGR group are significantly more likely than those in the lower NTGR group to report that the program influenced the quantity of equipment installed (49% versus 27%) and the project timing (77% versus 30%).

6.4 NTG Sensitivity Analysis

The results reported Sections 6.2 and 6.3 are based on equal weighting of the three PAIs.[16] To assess the sensitivity of the NTG results to changes in the weighting scheme, we developed alternative specifications of the NTGR, using a number of different PAI weighting schemes.

Table 6-7 summarizes these weighting schemes and the resulting NTGRs. To put the NTGR results into context, the table also presents the average score for each PAI. Weighting scheme 1 represents the main approach of equally weighting all three PAIs. Schemes 2 through 4 give more weight to one of the three PAIs, while Scheme 5 drops PAI-1, and Scheme 6 drops PAI-1 and PAI2 for respondents who meet certain conditions.

To allow for a comparison of the different weighting schemes, this analysis only includes NTG points that had a valid estimate for all three PAIs (n=123). In contrast, the results presented in Sections 6.2 and 6.3 include all NTG points that had a valid estimate for at least two of the three PAIs (n=167). As a result, the NTGR presented for Weighting Scheme 1 in Table 6-7 differs slightly from the statewide NTGR presented in Section 6.2, even though both are based on the same weighting scheme.

[16] In cases where PAI-3 is equal to zero (0) or one (1.0), PAI-1 is dropped, and the NTGR is calculated as the average of PAI-2 and PAI-3.

Table 6-7. Results of NTG Sensitivity Analysis

	Weighted Average PAI Score			
	PAI-1	PAI-2	PAI-3	
	0.50	0.65	0.84	
Weighting Scheme	PAI Weight			NTGR[A]
	PAI-1	PAI-2	PAI-3	
1[B]	33%	33%	33%	0.72
2	50%	25%	25%	0.62
3	25%	50%	25%	0.66
4	25%	25%	50%	0.71
5	--	50%	50%	0.74
6[C]	--	--	100%	0.72

[A] Based on NTG points with a valid estimate for all three PAIs (n=123).

[B] In cases where PAI-3 is equal to zero (0) or one (1.0), PAI-1 is dropped, and the NTGR is calculated as the average of PAI-2 and PAI-3.

[C] Weighting scheme only applies to respondents who report a 10 in 10 likelihood of implementing the same project without the program, i.e., who have a PAI-3 score of 0. For all other respondents, weighting scheme 1 applies.

Source: OBF participant survey; OBF evaluation analysis.

The results of this sensitivity analysis indicate that NTGRs are somewhat sensitive to the selected weighting scheme. This is due to large differences between the average PAI scores, which range from 0.50 for PAI-1 to 0.84 for PAI-3. Consequently, weighting schemes that assign higher weights to PAI-1 have the lowest NTGRs (Scheme 2), while schemes that assign higher weights to PAI-3 and/or drop PAI-1 have the highest NTGRs. Weighting Scheme 6 – which drops PAI-1 and PAI-2 for respondents who report a 10 in 10 likelihood of implementing the same project without the program (i.e., a PAI-3 score of 0) – is only different from Scheme 1 at the third decimal place, as less than 1% of respondents included in this analysis provided that likelihood rating of 10.

6.5 OBF Net Impacts

We developed OBF ex post net savings by applying the PA/technology-specific NTGRs (presented in Section 6.2) to OBF ex post gross savings (presented in Section 5.2) at the Claims level. We then aggregated Claims-level savings to the PA/technology level and the state level.

Based on this analysis, we estimate OBF ex post net impacts of 191,476 MMBtu and 5,649 kW. Table 6-8 presents the results of this analysis.

Table 6-8. OBF Net Impacts

	# OBF Projects	Calculated Ex Post Gross Savings[A]		OBF-Evaluated NTGR	OBF Evaluated Ex Post Net Savings[B]	
		MMBtu	kW		MMBtu	kW
Statewide	2,642	287,142	8,445	0.67	191,476	5,649
Lighting	1,713	152,680	4,765	0.70	106,331	3,319
Non-Lighting	929	134,461	3,680	0.63	85,145	2,330
PGE	972	170,274	4,660	0.69	117,878	3,237
Lighting	740	80,489	2,324	0.74	59,471	1,717
Non-Lighting	232	89,785	2,336	0.65	58,408	1,519
SCE	1,299	72,145	2,058	0.67	48,062	1,380
Lighting	726	53,246	1,370	0.65	34,670	892
Non-Lighting	573	18,899	688	0.71	13,393	487
SDGE	371	44,723	1,727	0.57	25,535	1,029
Lighting	247	18,945	1,071	0.64	12,191	689
Non-Lighting	124	25,778	657	0.52	13,344	340

[A] The number of OBF projects and the ex post gross savings in this table are different from those presented in Table 5-2 because this table excludes SCG's two projects that account for 7,022 MMBtu in ex post gross savings.
[B] Ex post net savings are not equal to the product of ex post gross savings and the NTGR due to rounding of the NTGR.

Source: 2013/14 Claims database; OBF tracking data; OBF participant survey; OBF evaluation analysis.

7. Incremental Net Impact Analysis

OBF incremental net impacts are defined as net savings that are attributable to the OBF programs but that have not already been claimed by the PAs through the incentive programs. To determine incremental net savings from the OBF programs, we developed a second estimate of net savings, for the same set of OBF projects, referred to as "incentive program ex post net savings." This estimate is based on Claims-level NTGRs developed through the incentive program evaluations, which are applied to the Claims-level estimate of OBF ex post gross savings. This estimate represents the net savings the PAs claim for their incentive programs for projects that received an OBF loan. We also calculated incentive program NTGRs, which are weighted average NTGRs, at the PA/technology level as well as statewide, for OBF projects.

Based on this analysis, the statewide incentive program MMBtu NTGR for OBF projects is 0.58 (0.56 for lighting projects and 0.59 for non-lighting projects); the kW NTGR is 0.59 (0.58 for lighting projects and 0.60 for non-lighting projects). By PA, the MMBtu NTGR ranges from 0.53 for SCE to 0.60 for SDG&E; the kW NTGR ranges from 0.56 for SCE to 0.60 for SDG&E. Table 7-1 presents the results of this analysis. Total incentive program ex post net savings for OBF projects are 165,937 MMBtu and 4,955 kW.

Table 7-1. Incentive Program Net Impacts

	Calculated Ex Post Gross Savings		Incentive Program Ex Post Net Savings		Incentive Program NTGR (for OBF Projects)	
	MMBtu	kW	MMBtu	kW	MMBtu	kW
	(1a)	*(1b)*	*(2a)*	*(2b)*	*(2a / 1a)*	*(2b / 1b)*
Statewide	287,142	8,445	165,937	4,955	0.58	0.59
Lighting	152,680	4,765	85,962	2,746	0.56	0.58
Non-Lighting	134,461	3,680	79,976	2,209	0.59	0.60
PGE	170,274	4,660	100,595	2,762	0.59	0.59
Lighting	80,489	2,324	46,322	1,333	0.58	0.57
Non-Lighting	89,785	2,336	54,274	1,429	0.60	0.61
SCE	72,145	2,058	38,470	1,155	0.53	0.56
Lighting	53,246	1,370	27,368	745	0.51	0.54
Non-Lighting	18,899	688	11,102	409	0.59	0.59
SDGE	44,723	1,727	26,872	1,038	0.60	0.60
Lighting	18,945	1,071	12,272	668	0.65	0.62
Non-Lighting	25,778	657	14,600	370	0.57	0.56

Source: 2013/14 Claims database; OBF evaluation analysis.

To determine incremental net savings, we subtracted incentive program ex post net savings from the OBF-evaluated net savings. Similarly, we subtracted the incentive program NTGRs from the OBF-evaluated NTGRs to determine the incremental NTGRs. Both analyses were done at the PA/technology level. The incremental net savings represent savings attributable to the OBF program, above and beyond net savings achieved by the incentive programs.

Based on this analysis, statewide incremental net savings from OBF projects are 25,539 MMBtu and 694 kW. The statewide incremental NTGR is 0.09 for energy savings and 0.08 for demand savings. By PA, the incremental MMBtu NTGR ranges from -0.03 for SDG&E to 0.13 for SCE; the incremental kW NTGR ranges from -0.03 for SDG&E to 0.11 for SCE.[17] PG&E's lighting projects have the largest OBF-evaluated NTGR (0.74) and also have the largest incremental NTGRs (0.16 for energy savings and 0.17 for demand savings). Table 7-2 summarizes the OBF incremental net impact results.

Table 7-2. OBF Incremental Net Impacts

	OBF-Evaluated			Incentive Program (for OBF Projects)				Incremental			
	Net Savings		NTGR	Net Savings		NTGR		Net Savings		NTGR	
	MMBtu	kW		MMBtu	kW	MMBtu	kW	MMBtu	kW	MMBtu	kW
	(1a)	*(1b)*	*(1c)*	*(2a)*	*(2b)*	*(2c)*	*(2d)*	*(1a-2a)*	*(1b-2b)*	*(1c-2c)*	*(1c-2d)*
Statewide	191,476	5,649	0.67	165,937	4,955	0.58	0.59	25,539	694	0.09	0.08
Lighting	106,331	3,319	0.70	85,962	2,746	0.56	0.58	20,370	572	0.13	0.12
Non-Lighting	85,145	2,330	0.63	79,976	2,209	0.59	0.60	5,169	121	0.04	0.03
PGE	117,878	3,237	0.69	100,595	2,762	0.59	0.59	17,283	474	0.10	0.10
Lighting	59,471	1,717	0.74	46,322	1,333	0.58	0.57	13,149	384	0.16	0.17
Non-Lighting	58,408	1,519	0.65	54,274	1,429	0.60	0.61	4,134	90	0.05	0.04
SCE	48,062	1,380	0.67	38,470	1,155	0.53	0.56	9,592	225	0.13	0.11
Lighting	34,670	892	0.65	27,368	745	0.51	0.54	7,302	147	0.14	0.11
Non-Lighting	13,393	487	0.71	11,102	409	0.59	0.59	2,291	78	0.12	0.11
SDGE	25,535	1,029	0.57	26,872	1,038	0.60	0.60	(1,336)	(9)	(0.03)	(0.03)
Lighting	12,191	689	0.64	12,272	668	0.65	0.62	(81)	21	(0.00)	0.02
Non-Lighting	13,344	340	0.52	14,600	370	0.57	0.56	(1,256)	(30)	(0.05)	(0.05)

Source: 2013/14 Claims database; OBF tracking data; OBF participant survey; OBF evaluation analysis.

[17] As noted above, there is uncertainty around the SDG&E incremental impact estimate. We therefore do not recommend that SDG&E base OBF program design decisions on these results.

8. OBF Loan-to-Incentive Ratio Results

This section summarizes the results of the loan-to-incentive ratio (LIR) analysis. The objectives of this analysis were to determine the relative importance of the OBF loan and the program incentive in customers' decision to install energy-efficient equipment and to develop relative importance ratios. The analysis was based on the responses to the freeridership questions in the participant survey. We compared survey responses to three questions about the importance of the loan with responses to three equivalent questions about the importance of the program incentive. Section 4.4 provides more detail on the methodology used for this analysis.

This section presents the results of this analysis, including average loan and incentive scores and the resulting LIRs. In addition to these aggregate results, a series of scatter plots shows the distribution of participant responses. Each scatter plot shows the loan importance score on the y-axis and the incentive importance score on the x-axis. Values on both axes range from 0 to 10, where 0 means not important and 10 means very important. The diagonal line shows score equality, where a particular loan score is equivalent to the corresponding incentive score. Respondents plotted above this line indicate a higher relative importance of the OBF loan, whereas those falling below this line indicate a higher relative importance of the incentive. The relative size of each circle corresponds to the size of the respondent's project. Each scatter plot also shows the weighted average loan and incentive scores (calculated as the average of Scores 1, 2, and 3 for the loan and the incentive, respectively) and the weighted average LIR (calculated as the weighted average loan score divided by the weighted average incentive score).[18]

The following three subsections show LIR results at the state level, by PA, and by technology.

8.1 Statewide LIR Results

Overall, participants provided higher importance ratings to the OBF loan than to the incentive, resulting in a statewide average loan score of 6.2, a statewide average incentive score of 5.6, and a statewide LIR of 1.10. The top left quadrant of Figure 8-1. shows the distribution of the combined important scores (i.e., the average of Scores 1, 2, and 3). The figure shows a clustering of circles around the middle of the graph, with slightly more of the volume of respondent's circles falling above the equality line.

The other three quadrants of Figure 8-1 show scatter plots for the three component scores:

- Score 1 compares each respondent's importance rating of the loan with that of the incentive. Participants generally gave high importance ratings to both the loan and the incentive, resulting in a clustering of circles in the upper right hand portion of the graph, centered around the equality line. The resulting Score 1 weighted averages are 8.9 for the loan and 8.8 for the incentive with an LIR of 1.01, indicating almost equal importance of the loan and the incentive for this measurement.

- Score 2 compares the number of points each respondent allocated to the loan with points allocated to the incentive. In contrast to Score 1, circles are centered around the bottom left corner of the graph. This is not an indication of low importance of the loan and incentive but a function of how the score is constructed: While the ratings underlying Score 1 can each range from 0 to 10, for Score 2, the respondent is asked to *divide* 10 points, between the OBF loan, the incentive, and other OBF program factors, as well as non-program factors. Because the 10 points are split between three facets of the OBF program and other non-program factors, the average scores for the loan (3.8) and incentive (3.2)

[18] All averages presented in this section are weighted. The weights reflect both the savings of the respondent's project as well as the relative contribution of the respondent's sampling domain to overall OBF savings.

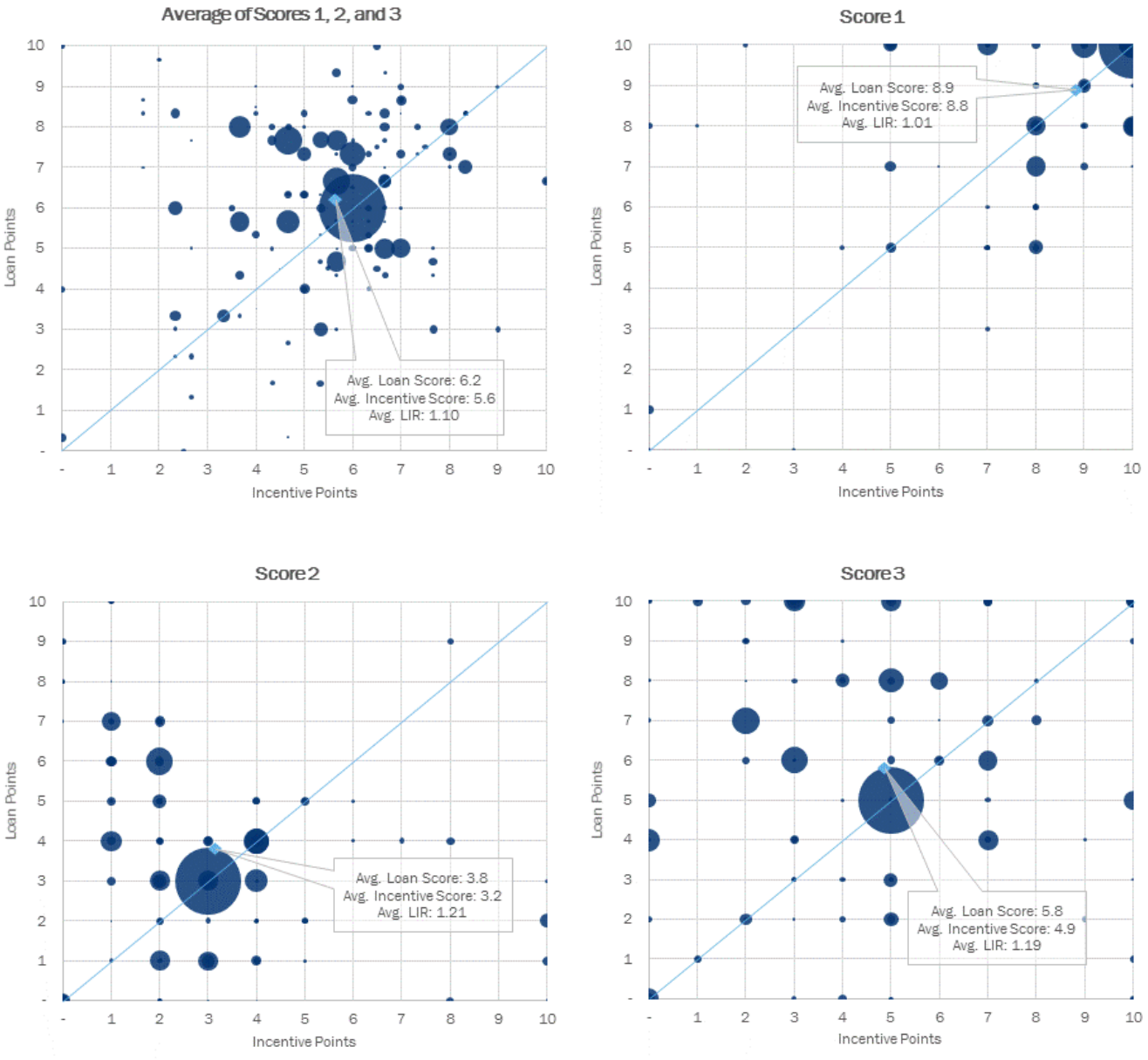
are significantly lower than those for Score 1. Importantly, however, it is not the magnitude of the loan and incentive scores that is the focus of this analysis, but the scores in relation to one-another, i.e., their ratio. While Score 1 shows equal importance of the loan and incentive, Score 2 shows a clustering of circles above the diagonal equality line and an LIR of 1.21, indicating a higher relative importance of the OBF loan.

- Score 3 compares the likelihood that a respondent would have completed the exact same project without the OBF loan and without the incentive.[19] Responses for Score 3 are more dispersed compared to Scores 1 and 2, with an average loan score of 5.8 and an average incentive score of 4.9. The resulting LIR is 1.19, again indicating a higher relative importance of the OBF loan.

Figure 8-1 summarizes the results of the LIR analysis statewide, by score and combined.

[19] Based on the survey question, a higher likelihood to install the same equipment without the program means lower program importance. In order for higher scores to indicate higher importance, the scores were calculated as 10 minus the likelihood rating.

Figure 8-1. Statewide Loan-to-Incentive Ratio, Average and by Score



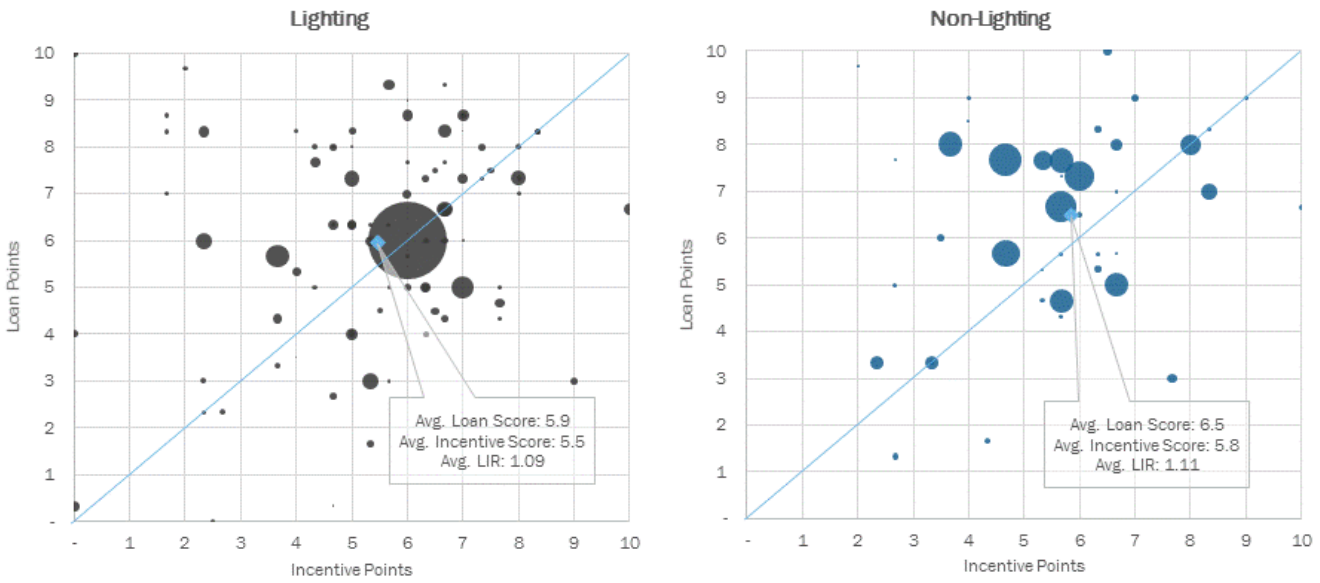
Source: OBF participant survey; OBF evaluation analysis.

8.2 LIR Results by Technology

The relative importance of the loan and the incentive is similar for lighting and non-lighting projects. Both technologies have similar LIRs (1.09 for lighting and 1.11 for non-lighting), although non-lighting projects have higher average loan scores and incentive scores.

Figure 8-2 summarizes the weighted average OBF loan and incentive scores and resulting LIR, by technology.

Figure 8-2. Loan-to-Incentive Ratio, by Technology



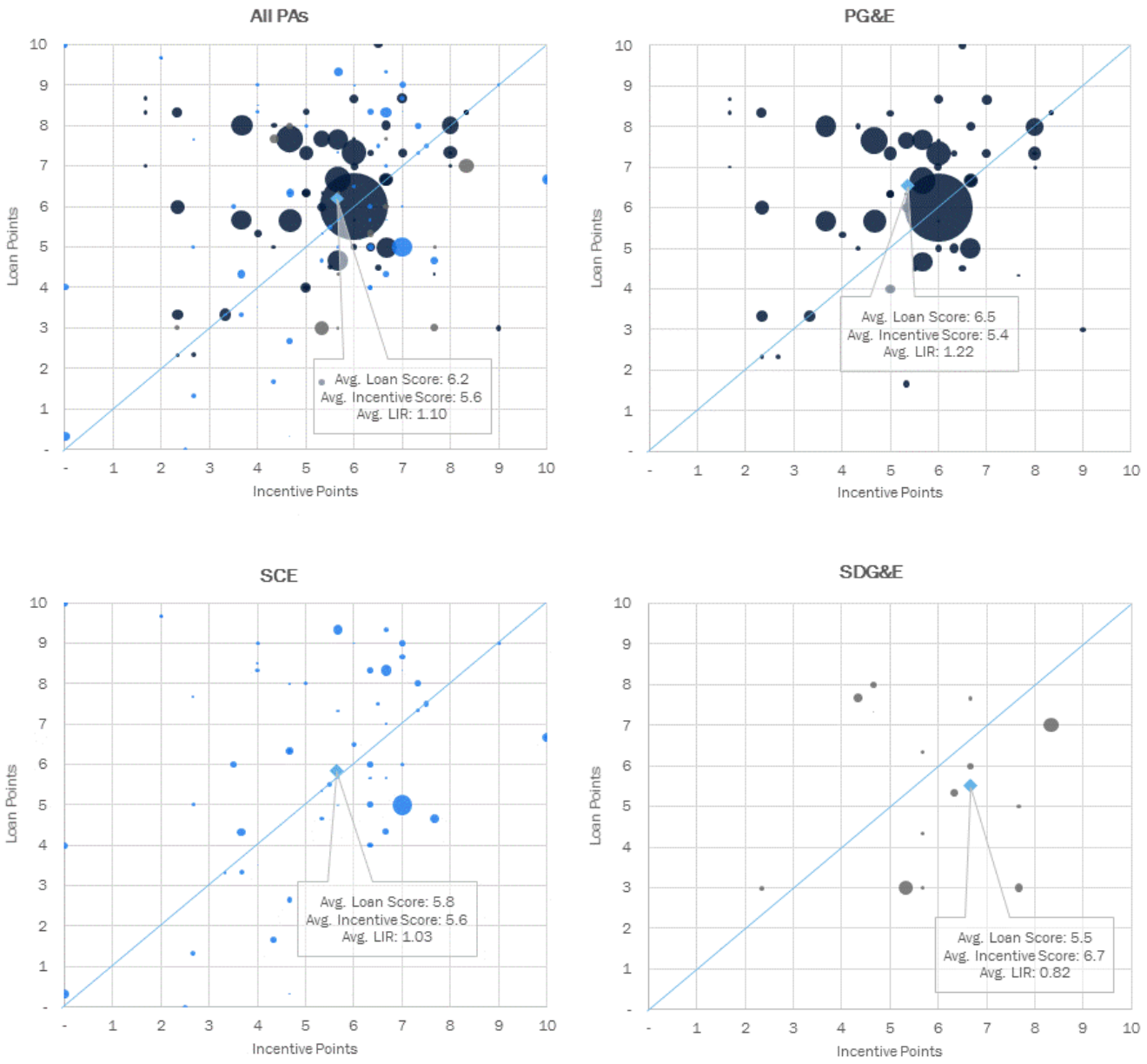
Source: OBF participant survey; OBF evaluation analysis.

8.3 LIR Results by Program Administrator

We also calculated the average loan and incentive scores and resulting LIRs for each PA. PG&E's participants have the highest average loan score (6.5) and the lowest average incentive score (5.4), resulting in the highest LIR (1.22). SCE participants have almost equal average loan and incentive scores (5.8 versus 5.6) and a resulting LIR (1.03) that indicates equal importance of the loan and incentive. Notably, SDG&E participants' ratings tend to fall below the equality line, indicating higher importance of the OBF incentive. SDG&E has the lowest loan importance ratings of the three PAs (5.5) and is the only PA with an LIR less than 1.0.

Figure 8-3 summarizes the weighted average OBF loan and incentive scores and resulting LIR, by PA.

Figure 8-3. Loan-to-Incentive Ratio, by PA



Source: OBF participant survey; OBF evaluation analysis.

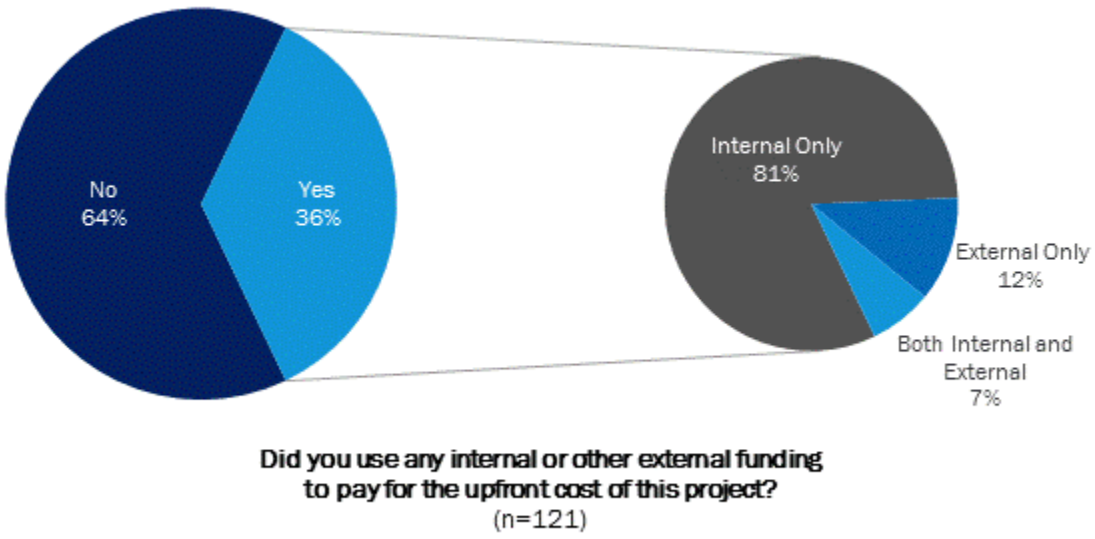
9. Funding Source Results

This section summarizes additional information about sources of funding, other than the OBF loan and the program incentive, used or initially considered by program participants in the implementation of their OBF projects. This analysis is based on responses to the participant survey.

For most OBF participants (64%), the program incentive and the OBF loan covered the full cost of the new equipment. Of those who also used other sources of funding, the vast majority (81%) relied on internal funding sources. Only 12% used other external sources of funding to pay for their project, and 7% used a combination of internal and external sources (see Figure 9-1). The few OBF participants who used other sources of external funding (n=8), relied on a line of credit, contractor financing, equipment financing or leasing, another energy efficiency incentive program, and/or a secured loan from a bank.

For most participants who used an additional funding source, the OBF loan covered the majority of the project cost. Few participants (3%) who did not use any additional external funding initially considered other sources.

Figure 9-1. Other Sources of Funding Used

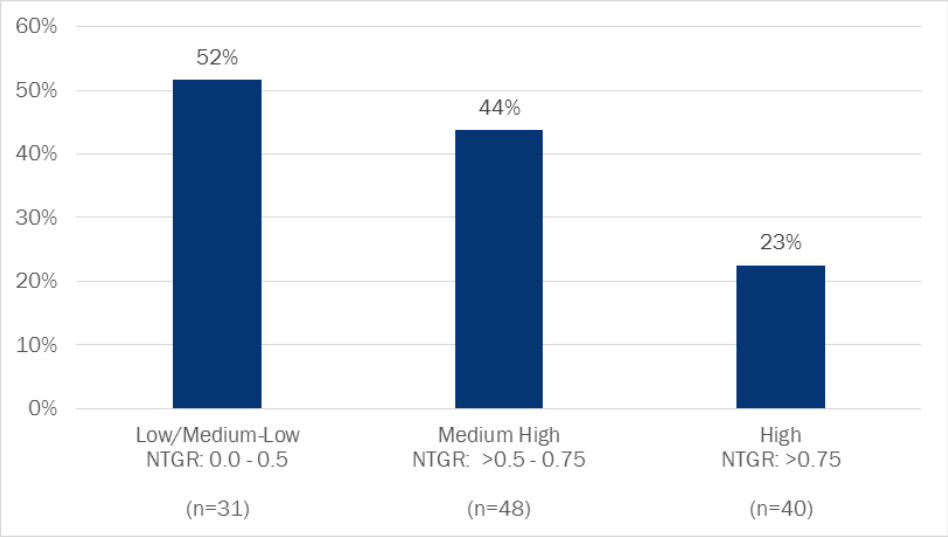


Source: OBF participant survey; OBF evaluation analysis.

Participants with higher NTGRs were significantly less likely to use other sources of funding than participants with lower NTGRs, reflecting their reliance on the OBF loan to implement their energy efficiency projects.

Figure 9-2 shows the share of participants who used another source of funding, by level of NTGR.

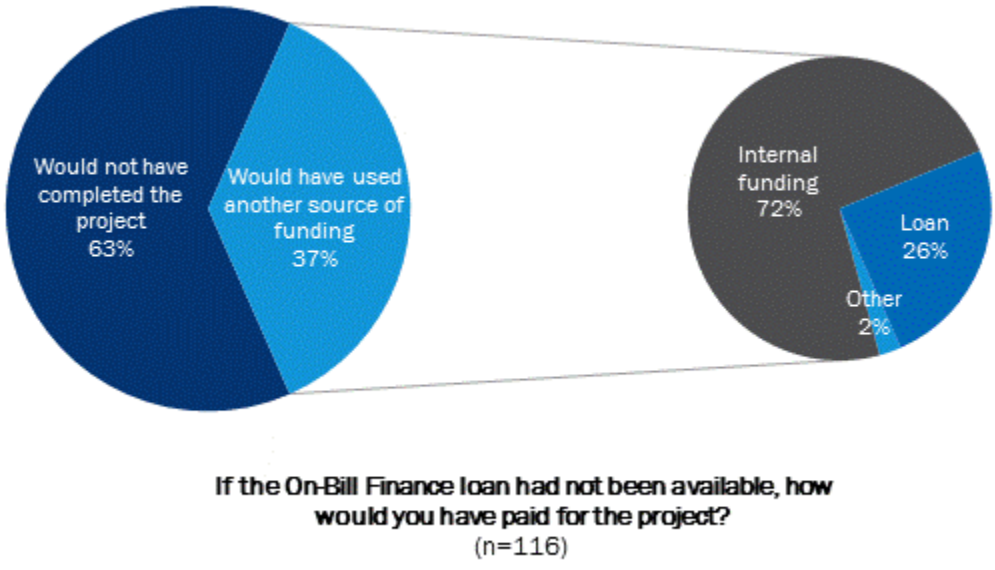
Figure 9-2. Share of Participants Who Used of Other Sources of Funding by NTGR



Source: OBF participant survey; OBF evaluation analysis.

When asked how they would have paid for the project if the OBF loan had not been available, a majority of participants (63%) reported that they would not have completed the project at all. Of those who would still have completed the project, most (72%) would have used internal funding – either cash on hand or other internal funding. Just over a quarter (26%) would have taken out a loan (see Figure 9-3).

Figure 9-3. Funding Source Had the On-Bill Finance Loan Not Been Available



Source: OBF participant survey; OBF evaluation analysis.

10. Conclusions and Recommendations

Based on the analyses and key findings from this study, we provide the following conclusions and recommendations. Our recommendations are also summarized in the standardized recommendations matrix at the end of this section.

Gross Impacts

- Claims-tracked incentive projects and OBF loan disbursements do not always occur in the same program year because loans are sometimes issued after project savings are claimed by the incentive programs. As a result, a mismatch between the OBF tracking databases and the Claims database is expected and unavoidable. However, our review of the OBF tracking data found that, in some cases, the mismatch is significant and loans are issued many months after the projects are finalized in Claims. The PAs should account for this mismatch when determining how savings from OBF projects might be claimed in the future and strive to reduce the lag time between when an incentive project is finalized and when an OBF loan is issued.

- At the time of this analysis PG&E's OBF program did not track any unique identifiers of incentive program projects associated with its OBF loans. As a result, matching OBF loans with Claims records was a difficult and time-consuming process. We recommend that all PAs track the ClaimIDs associated with OBF loans as part of their OBF databases. This would facilitate future evaluation efforts and would also allow program staff easier access to the information included in the Claims database, which could be useful in monitoring program progress over time.

- To achieve bill neutrality for OBF loans, the PAs currently develop OBF-specific savings for OBF-financed projects. These OBF-specific savings are based on existing equipment baselines and are often higher than Claims-tracked savings. While these OBF-specific savings are not intended for claiming savings, we recommend that, in addition to the OBF-specific savings, PAs also track the incentive program ex ante Claims savings in their OBF databases. This would provide the OBF programs with a better measure of claimable savings under current impact estimation frameworks and would facilitate reporting of OBF program achievements while allowing more accurate comparisons with incentive program achievements.

Incremental Net Impacts

- Based on our analysis, there are incremental net savings associated with OBF loans that exceed those currently being claimed by the PA incentive programs. While the incentive programs do already claim savings from OBF projects based on the incentive program NTGRs, our research shows that the NTGRs for participants who only receive an incentive are generally lower than the NTGRs for participants who receive an incentive *and* an OBF loan. Since this was the first research into the incremental net impacts of the CA OBF programs, we recommend to further explore this issue with 2015 and 2016 program participants to determine if an adjustment of ex ante NTGRs for projects that participate in the OBF programs might be warranted.

Relative Importance of the Incentive and the OBF Loan

- Our research with 2013/14 OBF participants shows that the OBF loan and the incentive are both important in customers' decisions to implement high-efficiency projects. Based on statewide survey responses, customers consider the loan to be slightly more important than the incentive. In addition,

a majority of participants reported that they would not have been able to fund the project without the OBF loan. While our research to-date is not sufficient to provide a conclusive recommendation to the PAs with respect to future program designs, we do encourage the PAs to move forward with efforts to pilot alternative loan-incentive structures, as already directed by the Commission.

Table 10-1. Standardized Recommendations Matrix

Study ID	Study Type	Study Title	Study Manager
ED_0_FIN4	Impact Evaluation	PY 2013/14 On-Bill Finance Programs: Impact Evaluation	CPUC

#	Program	Summary of Findings	Additional Supporting Information	Best Practice / Recommendations	Recommendation Recipient	Affected Workpaper or DEER
1	OBF	Claims-tracked incentive projects and OBF loans do not always occur in the same program year because loans are sometimes issued after projects are accounted for by the incentive programs. As a result, a mismatch between the OBF tracking databases and the Claims database is expected and unavoidable. However, our review of the OBF tracking data found that, in some cases, the mismatch is significant and loans are issued many months after the projects are finalized in Claims.		The PAs should account for this mismatch when determining how savings from OBF projects might be claimed in the future and strive to reduce the lag time between when an incentive project is finalized and when an OBF loan is issued.	PG&E SDG&E SCG	None
2	OBF	At the time of this analysis PG&E's OBF program did not track any unique identifiers of incentive program projects associated with its OBF loans. As a result, matching OBF loans with Claims records was a difficult and time-consuming process.		We recommend that all PAs track the ClaimIDs associated with OBF loans as part of their OBF databases.	PG&E	None
3	OBF	To achieve bill neutrality for OBF loans, the PAs currently develop OBF-specific savings for OBF-financed projects. These OBF-specific savings are based on existing equipment baselines and are often higher than Claims-tracked savings.		PAs should begin to track the incentive program ex ante Claims savings in their OBF databases (in addition to the OBF-specific savings).	PG&E SCE SDG&E SCG	None
4	OBF	There are net savings associated with OBF loans that are not currently being claimed by the PA incentive programs. Our research shows that the NTGRs for participants who only receive an incentive are generally lower than the NTGRs for participants who receive an incentive and an OBF loan.		We recommend to further explore this issue with 2015 and 2016 program participants to determine if an adjustment of ex ante NTGRs for projects that participate in the OBF programs might be warranted.	CPUC	None
5	OBF	Our research shows that the OBF loan and the incentive are both important in customers' decisions to implement high-efficiency projects. However, our research to-date is not sufficient to provide a conclusive recommendation to the PAs with respect to future program designs.		The PAs should move forward with efforts to pilot alternative loan-incentive structures, as already directed by the Commission	PG&E SCE SDG&E SCG	None

Appendix A. OBF Program Details

To inform our impact evaluation of the OBF programs, we conducted interviews with the four IOU OBF program managers (PM). The main purpose of these interviews was to gain a better understanding of program processes and goals as well as changes made to the programs relative to the 2010-2012 program cycle. This appendix summarizes key findings from the PM interviews that are relevant to this evaluation. It also includes a summary table that presents key information for the four PA programs.

Key Findings from PM Interviews

- **Measure eligibility:** All measures that are eligible for the utility's incentive programs are eligible for an OBF loan. The loan can cover costs associated with the equipment as well as the installation.
- **Eligibility requirements:** Customers must meet eligibility requirements to be granted an OBF loan:
  - Project must be bill neutral
  - Customer must have an account that has been active for two years
  - Customer's account must be in good standing for 12 months, with slightly different conditions between IOUs. Conditions include: no return payment; no more than one payment arrangement; no broken payment arrangements; no disconnect notice; no deposits pending or on hand
- **Loan terms:** 0% interest rate
  - Commercial: $5,000 - $100,000 over 5 years (3 years for lighting projects)
  - Government/Institutional: $5,000 - $250,000 over 10 years or expected useful life (EUL) of installed equipment
- **Lighting cap:** As of November 2013, basic lighting measures (defined as all non-LED lighting retrofits) and basic lighting control measures cannot exceed 20% of the final loan amount.
  - Only SCE and PG&E reported having observed effects of the 2013 lighting cap on their program, including:
  - Possible "manipulation" of project costs to get more basic lighting in; e.g., apparent "low-balling" of basic lighting measures and reallocation of cost to other measures, to stay within 20% basic lighting;
  - A shift to LEDs by some contractors, but complaints about the restriction by others.
  - SDG&E reports mostly LED lighting, so the cap is not an issue.

- **OBF savings:**
  - SCE reports using incentive program savings to determine loan terms
  - The other utilities allow re-estimation of savings for purposes of determining bill neutrality (i.e., OBF savings can be different from Claims savings)
- **Analysis of possible OBF program design options to find an appropriate balance between rebates/incentives and financing:** SCE reports analysis of de-coupling incentives and loans. The other IOUs cite upcoming financing pilots.
- **Efforts to develop methods to capture and report incremental energy savings:** None reported by the IOUs. PG&E refers to Workpaper "On Bill Repayment Energy Efficiency Financing Pilots" (PGECOALL110) which proposes a "Financing Benefits Factor" of 5%, applied to gross project savings, to estimate net incremental finance savings.
- **Matching loans to 2013/14 Claims data:** Some 2013 loans are not in the 2013 Claims database because the incentive programs can grandfather projects into a prior year (if process started in 2012 but installation didn't complete until 2013).
- **Other findings:**
  - SCE allows project cost buy-down to achieve bill neutrality; SCG allows it for G&I customers, not for commercial customers.
  - SCE has slightly different application processes compared to the other IOUs: SCE enters into loan agreement after installation but provides reservation letter upfront.
  - SCE cites analysis of the projects that get declined: less than 10% actually go through without the loan.
  - SCG relies on an one-on-one process to guide the project through the loan process, due to the low loan volume.
  - SCE, SDG&E, PG&E: Contractors are the main source of customer awareness of the OBF programs. Contractors have to be registered with the program; all go through training that includes OBF.
  - PG&E has successfully targeted their OBF program to the small/medium business customer segment.

Table A-1 presents key information for the four PA OBF programs.

Table A-1. Summary of OBF Programs

	PG&E	SCE	SDG&E	SCG
Program Type	Non-resource funding mechanism	Non-resource funding mechanism	Non-resource funding mechanism	Non-resource funding mechanism
First Year OBF Was Offered	2011	2006 (grocer pilot)	2006 (small business pilot)	2006 (small business pilot)
Eligibility Requirements	• Must be bill neutral • No proof of capital restraint required • Account active for two years and in good standing for 12 months	• Must be bill neutral (can buy down loan to achieve bill neutrality) • No proof of capital restraint required • Account active for two years and in good standing for 12 months	• Must be bill neutral • No proof of capital restraint required • Account active for two years and in good standing for 12 months	• Must be bill neutral • No proof of capital restraint required • Account active for two years and in good standing for 12 months
Eligible Measures	Any measure eligible for other utility incentive or rebate program are eligible	Any measure eligible for other utility incentive or rebate program are eligible	Any measure eligible for other utility incentive or rebate program are eligible	Any measure eligible for other utility incentive or rebate program are eligible
Loans Made at the:	Site level	Meter level	Site level	Meter level
Interest Rate	0%	0%	0%	0%
Loan Pool	$50.5 million (revolving pool)	$43.7 million (revolving within program cycle)	$26 million (no hard limit; revolving pool)	$2 million (no hard limit)
Funding Approach	Fixed loan pool within EE portfolio (hard limit)	Fixed loan pool within EE portfolio (hard limit); revolving within program cycle	2-way balancing account outside of EE portfolio (soft limit)	2-way balancing account outside of EE portfolio (soft limit)
Fund Allocation Approach	A minimum of 25% of loan funds reserved for non-G&I customers	$6 million for G&I customers	N/A; no hard limit on loan pool size; indifferent to customer type	N/A; no hard limit on loan pool size; indifferent to customer type
Commercial Loan Cap (per meter)	$5,000 - $100,000	$5,000 - $100,000	$5,000 - $100,000	$5,000 - $100,000
Commercial Loan Term	5 years, can be extended up to EUL	5 years for Business customers (3 years for lighting)	5 years (lighting and low cost measures 3 year maximum)	5 years or effective useful life (EUL), whichever is less
Government/ Institutional Loan Cap (per meter)	$5,000 - $250,000	$5,000 - $250,000	$5,000 - $250,000	$5,000 - $250,000
	Up to $1 million (for unique opportunities to capture energy savings)[a]	Up to $1 million (for eligible State of California accounts)	Up to $1 million (for eligible State of California accounts)	Up to $1 million (for eligible State of California accounts)
Institutional Loan Term	10 years or EUL, whichever is less	10 years or EUL, whichever is less	10 years or EUL, whichever is less	10 years or EUL, whichever is less

	PG&E	SCE	SDG&E	SCG
Pre- and Post-Installation Inspection Required?	Pre-inspection not required of all deemed projects (follows rules of incentive programs)	Yes	Yes	Yes
Most Prevalent Delivery Channel	Integrated approach targeting SMB segment	• Vendors for non-G&I customers • Account Executives for G&I customers	Vendors	Account Executives
Vendor Delivery?	Yes	Yes	Yes	Yes
Vendor Training Offered?	Yes	Yes	Yes	One-on-one (due to small loan volume)
Number of Issued Loans:				
2013	304	36	198	7
2014	479	677	110	2
Fully Subscribed	No	No	n/a	n/a
Rejection Rate	Low	• ~50% (based on eligibility) • 0% (based on loan availability)	38% (disqualified/canceled) 0% (based on loan availability)	No rejections (loans are not offered widely but offered on a case-by-case basis)
Default Rate (cumulative)	Low	0.4% of total funds loaned (since inception)	30 out of 1,418 loan (since inception)	1 loan (since inception)
OBF Savings Same as Claims Savings?	Can be different	Always the same	Can be different	Can be different
Quantitative Goals (PPMs) for 2013/2014	No specific quantitative goals	• Reduce loan defaults to <1% • Improve loan processing times by 20%	None, other than loan metrics provided to CPUC in quarterly reports (including loan activity by segment and measure; loan funds by status)	No specific goals

Source: Based on *California 2010-2012 On-Bill Financing Process Evaluation and Market Assessment*, The Cadmus Group, March 2012. Updated with information from OBF program materials and OBF Program Manager interviews.

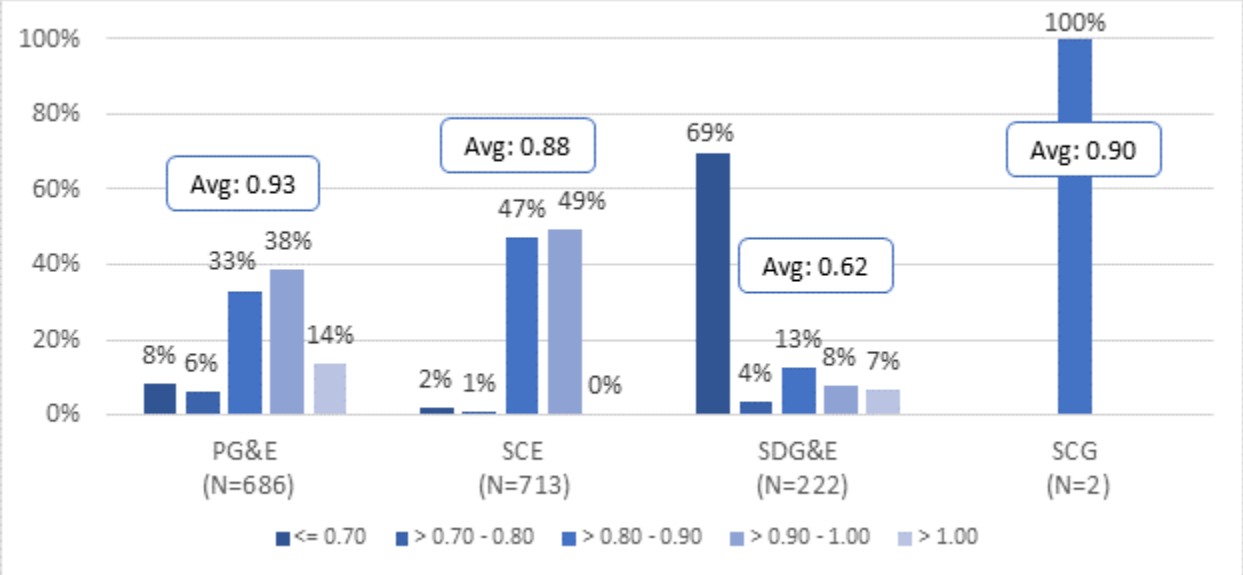
Appendix B. Comparison of OBF-Tracked Savings with Claims Savings

The OBF tracking data received in support of this evaluation included energy savings associated with each loan. However, these savings are not always consistent with savings for the same projects in the Claims database. In some cases, the OBF programs determine savings based on the replaced equipment, rather than using deemed values used by the incentive programs, to better reflect actual savings realized by each participant. This is done to make sure that loans are bill neutral, i.e., that the bill savings from reduced energy usage are at least equal to the customer's loan payments. While OBF-tracked savings are not intended for claiming savings, comparing them to the savings tracked in the Claims database is instructive.

To support the comparison of OBF-tracked savings with Claims savings we developed a ratio of ex ante gross Claims savings to OBF-tracked savings. This ratio is developed for each matched loan or project, depending on the unique identifier used in the PA's OBF database. It is a measure of how well the OBF-tracked savings for each loan/project match savings in the Claims database.

For all four PAs, we observed differences between OBF-tracked savings and Claims savings for the same projects. Matched-project RRs ranged from 0 (meaning no savings for the project/loan in the Claims database) to over 4.0 (meaning Claims savings are more than four time OBF-tracked savings). Figure C-1 shows the distribution of Claims-OBF savings ratios, by PA. For PG&E and SCE, the majority of loans/projects have a Claims-OBF savings ratio 0.80 and 1.00, and both of SCG's matched loans fall into this range. For SDG&E, however, 69% of loans/projects have a Claims-OBF savings ratio of less than 0.70, meaning OBF-tracked savings generally well exceed Claims savings. The average across all matched projects ranges from 0.62 for SDG&E to 0.88, 0.90, and 0.93 for SCE, SCG, and PG&E, respectively.

Figure C-1. Claims-OBF Savings Ratio



Source: 2013/14 Claims database; OBF tracking data; OBF evaluation analysis.

Based on these Claims-OBF savings ratios and the OBF-Claims match rates developed in Section 5.1, we developed an overall ratio of ex ante Claims savings to total tracked OBF savings. This ratio can be calculated in two ways:

- by dividing each PA's ex ante gross Claims savings for matched records by the PA's total OBF-tracked savings (Row d / Row a in Table C-1 below); or
- by multiplying the OBF-Claims match rate by the Claims-OBF savings ratio (Row c x Row e in Table C-1 below).

This ratio thus represents an overall indicator of ex ante Claims savings relative to OBF-tracked savings. It ranges from 0.24 for SCG (driven by the low OBF-Claims match rate of 0.27) to 0.88 for SCE, with a statewide average of 0.64.

Table C-1 summarizes the results of the OBF-Claims data comparison, statewide and by PA.

Table C-1. Summary of the OBF-Claims Data Comparison

Metric	Statewide	PG&E	SCE	SDG&E	SCG
a. Total OBF-Tracked Savings (MMBtu)	579,742	268,367	101,343	150,962	59,069
b. OBF-Tracked Savings for Projects Matched to 2013/14 Claims (MMBtu)	437,366	220,335	101,343	99,765	15,923
c. OBF-Claims Match Rate (c = b / a)	0.75	0.82	1.00	0.66	0.27
d. Claims Ex Ante Gross Savings for Matched Projects (MMBtu)	370,266	204,415	89,649	61,872	14,330
e. Claims-OBF Ratio for Matched Projects (e = d / b)	0.85	0.93	0.88	0.62	0.90
f. Overall Ex Ante Claims-OBF Ratio (f = d / a)	0.64	0.76	0.88	0.41	0.24

Source: 2013/14 Claims database; OBF tracking data; OBF evaluation analysis.

Appendix C. Survey Dispositions and Response Rates

The survey response rate is the number of completed interviews divided by the total number of potentially eligible respondents. We calculated the response rate (Response Rate 3, or RR3) using the standards and formulas set forth by the American Association for Public Opinion Research (AAPOR). The formulas used to calculate RR3 are presented below. The definitions of the letters used in the formulas are displayed in the survey disposition table (Table B-1) presented on the following page.

Equation B-1. Response Rate Calculation

$$RR3 = \frac{I}{\left(I + N + e1(U1 + e2 * U2)\right)}$$

Where:

$$e1 = \frac{(I + N)}{(I + N + X1)}$$

$$e2 = \frac{(I + N + X1 + U1)}{(I + N + X1 + U1 + X2)}$$

Table B-1. Participant Survey Dispositions and Response Rates

Disposition		Statewide	PG&E	SCE	SDG&E	SCG	Lighting	Non-Lighting
I	Complete	125	58	53	14	-	87	38
N	Partial complete	59	18	34	7	-	29	30
U1	Initial refusal	243	100	115	26	2	158	85
U1	Not available callback	194	63	99	32	-	131	63
U1	Gatekeeper callback	45	16	21	8	-	28	17
U1	Answering machine	35	13	16	6	-	29	6
U1	Gatekeeper refusal	33	16	13	4	-	22	11
U1	Language problems	31	3	28	-	-	11	20
U1	Mid-interview terminate	25	9	14	2	-	14	11
U1	Non-specific callback/secretary	23	11	9	3	-	11	12
U1	Respondent scheduled appointment	20	10	6	4	-	14	6
U1	Callback to complete	12	1	8	3	-	7	5
U1	Contact not available	7	4	3	-	-	6	1
U1	Cell phone... Refused b/c of cell phone	5	-	5	-	-	3	2
U1	Hard refusal - do not call	6	4	2	-	-	5	1
U2	No answer	104	38	53	13	-	79	25
U2	Privacy line/Number blocked	4	1	2	1	-	2	2
U2	Busy	3	2	1	-	-	2	1
X1	Not involved in installation decision	38	7	27	4	-	17	21
X1	Not an employee	17	12	3	2	-	14	3
X1	Cannot confirm enduse	1	0	-	1	-	-	1
X2	Customer said wrong number	83	52	27	4	-	61	22
X2	Disconnected phone	72	25	35	12	-	47	25
X2	Computer tone	25	4	21	-	-	12	13
X2	Customer indicated called already	3	3	-	-	-	2	1
X2	Residential phone	1	-	-	1	-	-	1
	Total Contacts in Sample	1,214	470	595	147	2	791	423
	Response Rate (RR3)	16.1%	19.2%	14.2%	14.6%	n/a	16.8%	14.6%

Appendix D. Final NTG Survey Instrument

California Public Utility Commission
On-Bill Finance Participant Survey
July 27, 2016 – Full Launch Version

VARIABLES

<PA_Long>	Program Administrator – Full Name
<PA>	Program Administrator – Abbreviation
<CONTACT>	Contact name
<HASBUS>	Flag indicating a viable business name for the project exists
<BUSINESS>	Name of organization; "your organization" if business name is not available
<MONTH-YEAR>	Month and Year project implemented
<ADDRESS>	Address of facility
<MULTI_LOCATION>	Flag indicating the facility has multiple locations for the same project
<ENDUSEa>	Project enduse on which the FR questions focus
<ENDUSEb>	Second enduse that was part of the same project, if any; the second loop of the survey will ask about this enduse
<ENDUSEc>	Third enduse that was part of the same project, if any
<MEASURE_Xa>	Measure groups that were part of the ENDUSEa project
<MEASURE_Xb>	Measure groups that were part of the ENDUSEb project; the second loop of the survey will ask about these measures
<NBR_MEASa>	Number of measure groups installed
<INCENTIVE_AMTa>	Total rebate amount for ENDUSEa measures
<INCENTIVE_AMTb>	Total rebate amount for ENDUSEb measures
<INCENTIVE_AMTc>	Total rebate amount for ENDUSEc measures
<LOAN_AMT>	Total loan amount
<NSAME>	Number of similar projects the company completed
<NSAMEb>	Number of similar projects the company completed; for second loop project
<LOOP2>	1=Project included a second enduse 0=Project did not include a second enduse
*	Questions asked in the second loop are marked with "*"

Color Key:

- Black: Itron NTG Participant Survey
- Blue: New OBF Specific Questions

INTRODUCTION

Hi, this is _____ from Opinion Dynamics Corporation, calling on behalf of <PA_Long> and the California Public Utilities Commission. THIS IS NOT A SALES CALL NOR A SERVICE CALL. May I please speak with [READ IF CONTACT NAME IS AVAILABLE: <CONTACT>; READ IF NO CONTACT: "the person that is most

knowledgeable about the <ENDUSEa> project that <BUSINESS> undertook at <ADDRESS>. You completed this project around <MONTH-YEAR> and received a rebate and an on-bill finance loan from <PA_Long>."]?

[READ WHEN CORRECT CONTACT IS ON THE PHONE]
I am calling about an energy efficiency project that <BUSINESS> completed through <PA_Long>'s On-Bill Financing program at <ADDRESS> around <MONTH-YEAR>. Based on our records, your organization received a loan and a rebate from <PA> for this project. I have some questions about the project and your decision to apply for the on-bill finance loan and the rebate.

For quality control purposes, this call may be monitored or recorded.

VERIFICATION

I would first like to verify some information.

Ver1. Based on our records <BUSINESS> completed a <ENDUSEa> project at <ADDRESS> around <MONTH-YEAR>. Is that correct? [MULTIPLE RESPONSE, UP TO 3; ONLY CHECK 1 RESPONSE IF 1, 8, OR 9] (IF ONLY DATE IS INCORRECT, SELECT 1)

1 Yes (all correct)
2 (Business name is incorrect)
3 (Address is incorrect)
4 (Enduse is incorrect)
8 (Don't know)
9 (Refused)

[IF NEEDED:

- Other enduses included in project: <ENDUSEb>, <ENDUSEc>; only check "4" if <ENDUSEa> was NOT part of the project,
- Measures included in <ENDUSEa> project: <MEASURE_1a>, <MEASURE_2a>, <MEASURE_3a>, <MEASURE_4a>]

[ASK IF Ver1=2 OR HASBUS = 0]
C_NAME. What is the (correct) name of the organization? **[RECORD NAME; 98=Don't know, 99=Refused]**

[REPLACE BUSINESS = C_NAME IF AN ANSWER IS PROVIDED]
[REPLACE BUSINESS = "the organization" IF C_NAME=98,99]

[ASK IF Ver1=3]
C_ADD. May I have the correct address? **[RECORD ADDRESS; 98=Don't know, 99=Refused]**

[READ IF C_ADD=98,99]
We were attempting to reach <PA>'s customer at <ADDRESS> and since you cannot confirm this address, those are all the questions that we have for you today. On behalf of the California Public Utilities Commission, thank you for your time. **[TERMINATE]**

[ASK IF Ver1=4]
C_ENDUSE. What type of project did <BUSINESS> complete? [MULTIPLE RESPONSE; UP TO 3]

1 (<ENDUSEb>)
2 (<ENDUSEc>)
00 (Other, specify)
98 (Don't know)

99 (Refused)

[IF C_ENDUSE = 1 OR (1 AND 2): REPLACE ENDUSEa = ENDUSEb AND SET LOOP2=0]
[IF C_ENDUSE = 2 ONLY: REPLACE ENDUSEa = ENDUSEc AND SET LOOP2=0]

[READ IF C_ENDUSE = 00 ONLY OR 98,99]
We were attempting to collect information for a <ENDUSEa> project. Since you cannot confirm that such a project was completed, those are all the questions that we have for you today. On behalf of the California Public Utilities Commission, thank you for your time. **[TERMINATE]**

[ASK IF Ver1=1, ELSE SKIP TO SC0b]
VERIFY. May I please have your name? **[RECORD NAME; 99=Refused]**

SC0a Are you an employee of <BUSINESS> [IF <BUSINESS> = the organization, READ: at <ADDRESS>] or are you affiliated with a third party, such as a contractor or a provider of energy-related services?
1 Employee (THIS CATEGORY INCLUDES THE OWNER/PRESIDENT/PARTNER ETC. OF THE COMPANY.)
2 Third party (contractor, service provider, etc.)
00 (Other, specify) (PUT OWNER/PRESIDENT/PARTNER ETC. OF THE COMPANY IN 1)
98 (Don't know)
99 (Refused)

[ASK IF SC0a=2,00,98,99 OR Ver1=8,9]
SC0b. Could you provide us with contact information for an employee or owner who is knowledgeable about the <V_ENDUSE> project that <BUSINESS> undertook at <ADDRESS>? **[RECORD: Name, Phone Number, Email Address, Role within the company, Department] [THANK AND TERMINATE]**

According to our records the <V_ENDUSE> project received a loan of <LOAN_AMT> and a rebate of [READ IF VER1<>4: <INCENTIVE_AMTa>; READ IF C_ENDUSE=1: <INCENTIVE_AMTb; READ IF C_ENDUSE=2: <INCENTIVE_AMTc>] through <PA>'s On-Bill Financing Program. The loan is being paid back on your utility bill. (IF NEEDED: The loan might have included energy efficient upgrades other than <V_ENDUSE>, or additional <V_ENDUSE> upgrades at other facilities.)

SC1a. Were you involved in the decision to apply for the loan and the rebate for this project?
1 Yes
2 No
3 (loan only)
4 (rebate only)
8 (Don't Know)
9 (Refused)

[ASK IF SC1a=2]
SC1b. Do you know who at this location was involved in the decision to apply for the rebate and the loan? **[RECORD: Name, Phone Number, Email Address, Role within the company, Department] [THANK AND TERMINATE]**

Today's survey is part of a very important study on the energy needs and decisions of organizations like yours. For the remainder of this survey, I will refer to <PA>'s On-Bill Financing Program as the "program." As a reminder, the on-bill finance program included a loan that is being paid back on your monthly utility bill, a

rebate, and might have included other program support. In some of my questions I will ask you to think separately about the on-bill finance loan and the rebate.

Your responses will remain confidential and will not be connected with your organization in any way.

BUSINESS TYPE

[SKIP IF MULTI_LOCATION=1]
FM050. What is the main business ACTIVITY at this facility? (DO NOT READ; PROMPT IF NECESSARY)

1 (Offices, non-medical)
2 (Restaurant/Food Service)
3 (Food Store: grocery/liquor/convenience)
4 (Agricultural: farms, greenhouses)
5 (Retail Stores)
6 (Warehouse)
7 (Health Care)
8 (Education)
9 (Lodging: hotel/rooms)
10 (Public Assembly: church, fitness, theatre, library, museum, convention)
11 (Services: hair, nail, massage, spa, gas, repair)
12 (Industrial: food processing plant, manufacturing)
13 (Laundry: Coin Operated, Commercial Laundry Facility, Dry Cleaner)
14 (Condo Assoc./Apartment Mgr: Garden Style, Mobile Home Park, High-rise, Townhouse)
15 (Public Service: fire/police/postal/military)
00 (Other: Specify)
98 (Don't know)
99 (Refused)

[READ IF LOOP2=1: Our records show that the project at <ADDRESS/C_ADD> also included other upgrades. For the next set of questions, please think about the <ENDUSEa> part of the project only, which included:
<MEASURE_1a>
<MEASURE_2a>
<MEASURE_3a>
<MEASURE_4a>
READ IF NBR_MEASa > 4: And other <ENDUSEa> measures.]

ROLE OF CONTRACTORS

*V1 Did you use a contractor or vendor to select or install any of the <V_ENDUSE> measures that were purchased through the program?

1 Yes
2 No
8 Refused
9 Don't Know

[ASK IF V1=1]

*V1a Was that contractor a <PA> program contractor? (IF NEEDED: A program contractor is a contractor that is associated with <PA>'s On-Bill Finance Program.)

1 Yes
2 No
8 Refused
9 Don't Know

ENERGY AUDIT

[SKIP IF MULTI_LOCATION=1]

ID0. To the best of your knowledge, has the facility located at this address received a <PA>-sponsored energy audit within the past 3 years? An audit involves a visit by a field technician who looks at your facility and provides recommendations for ways to reduce your facility's energy usage.

1 Yes
2 No
8 (Don't Know)
9 (Refused)

SOURCES OF FUNDING

My next few questions are about how your organization funded the <ENDUSEa> project. Funding could include EXTERNAL financing such as a company credit card, getting financing through a contractor or retailer, getting a bank loan, or using INTERNAL sources, such as cash on hand.

FIN0. In addition to the <PA> rebate and on-bill finance loan, did you use any internal or other external funding to pay for the upfront cost of this project?

1 Yes - Internal
2 Yes - Other external
3 Yes - Both internal and other external
4 No - No other sources of funding
8 (Don't Know)
9 (Refused)

[ASK IF FIN0=1,2,3]

FIN1. Thinking about the cost of the project, net of the rebate, approximately what percentage of the cost was covered by… (IF NEEDED: The remaining cost of the project, once the value of the rebate has been subtracted from the initial total cost. An approximate % is fine.)
[NUMERIC OPEN END 0-100%; 998=Don't know, 999=Refused]

a. the On-Bill Finance loan?
b. [ASK IF FIN0=2,3] other external sources of funding?
c. [ASK IF FIN0=1,3] internal sources of funding?

[ASK IF FIN0=2,3]

FIN2. What other external sources of funding did you use? Did you use … [READ THROUGH FULL LIST, RECORD 1=Yes, 2=No, 8=Don't Know, 9=Refused]

a Contractor financing

b Vendor financing [FOR INTERVIEWER: for example, taking a store loan from SEARS to buy an appliance]
c Secured loan from bank [FOR INTERVIEWER: a loan using property or assets as collateral or lien on the business]
d Unsecured loan from bank [FOR INTERVIEWER: a loan which does not require a collateral]
e Line of credit
f Equipment financing or leasing [FOR INTERVIEWER: Any method of securing capital for the purposes of acquiring equipment; vendor financing is one form of this, but from a specific source]
g Company credit card
h Energy efficiency financing program (please specify)
i BLANK
j Property Assessed Clean Energy or PACE Financing
k Any other sources of external funding (please specify)

[SKIP TO FIN8 IF FIN0=2,3]

FIN4. Did you consider any other external sources of funding?
1 Yes
2 No
8 (Don't Know)
9 (Refused)

[ASK IF FIN4=1, ELSE SKIP TO FIN8]

FIN5. What other sources did you consider? Did you consider … [READ THROUGH FULL LIST, RECORD 1=Yes, 2=No, 98=Refused, 99=Don't Know]
a Contractor financing
b Vendor financing [FOR INTERVIEWER: for example, taking a store loan from SEARS to buy an appliance]
c Secured loan from bank [FOR INTERVIEWER: a loan using property or assets as collateral or lien on the business]
d Unsecured loan from bank [FOR INTERVIEWER: a loan which does not require a collateral]
e Line of credit
f Equipment financing or leasing [FOR INTERVIEWER: Any method of securing capital for the purposes of acquiring equipment; vendor financing is one form of this, but from a specific source]
g Company credit card
h Energy efficiency financing program (please specify)
i BLANK
j Property Assessed Clean Energy (PACE) Financing
k Any other sources of external funding (please specify)

FIN7. Why did you choose the On-Bill Finance loan over other options of external funding? [MULTIPLE RESPONSE, UP TO 3]
1. (Better interest rate)
2. (Better loan term/duration)
3. (More convenient)
4. (Contractor recommended it)
00. (Other, specify)
98. (Don't know)

99. (Refused)

FIN8. If the On-Bill Finance loan had not been available, how would you have paid for the <V_ENDUSE> project? [MULTIPLE RESPONSE, UP TO 3]
1. (Internal funding)
2 (Contractor financing)
3 (Vendor financing) [FOR INTERVIEWER: for example, taking a store loan from SEARS to buy an appliance]
4 (Secured loan from bank) [FOR INTERVIEWER: a loan using property or assets as collateral or lien on the business]
5 (Unsecured loan from bank) [FOR INTERVIEWER: a loan which does not require a collateral]
6 (Line of credit)
7 (Equipment financing or leasing) [FOR INTERVIEWER: Any method of securing capital for the purposes of acquiring equipment; vendor financing is one form of this, but from a specific source]
8 (Company credit card)
9 (Cash on hand)
00. (Other, specify)
96. (Would not have completed the project)
98. (Don't know)
99. (Refused)

PROGRAM AWARENESS

AP9 How did you FIRST learn about <PA>'s On-Bill Financing Program?
1 (Bill insert)
2 (Program literature)
3 (Account representative)
4 (Vendor/contractor)
5 (Program representative)
6 (Utility or program website)
7 (Trade publication)
8 (Conference)
9 (Newspaper article)
10 (Word of mouth)
11 (Previous experience with it)
00 (Other: Specify)
98 (Don't Know)
99 (Refused)

AP9b. Did you learn about the rebate and the loan at the same time?
1 Yes
2 No – rebate first
3 No – loan first
8 (Don't know)
9 (Refused)

N2L. Did your organization make the decision to install this new equipment before or after you became aware of the on-bill finance loan available through <PA>?
1 Before
2 After
8 (Don't know)
9 (Refused)

[SKIP IF AP9b=1 OR IF (AP9b=2 AND N2L=2) OR IF (AP9b=3 AND N2L=1)]
N2. And did your organization make the decision to install this new equipment before or after you became aware of the REBATES available through <PA>?
1 Before
2 After
8 (Don't know)
9 (Refused)

FREE RIDERSHIP

*A3. There are usually a number of reasons why an organization like yours decides to complete an energy efficiency project like this one. Why did your organization decide to implement this project? [MULTIPLE RESPONSE UP TO 3]
1 (To replace old or outdated equipment)
2 (As part of a planned remodeling, build-out, or expansion)
3 (To gain more control over how the equipment was used)
4 (Maintenance downtime/associated expenses for old equip were too high)
5 (Had process problems and were seeking a solution)
6 (To improve equipment performance)
7 (To improve production as a result of the change in equipment)
8 (To comply with codes set by regulatory agencies)
9 (To improve visibility/plant safety)
10 (To comply with company policies regarding regular equipment retrofits or remodeling)
11 (To get a rebate from the program)
12 (To protect the environment)
13 (To reduce energy costs)
14 (To reduce energy use/power outages)
15 (To update to the latest technology)
16 (To improve the comfort level of the facility)
17 (To qualify for the 0% interest loan)
00 (Other, specify)
98 (Don't know)
99 (Refused)

REPLACE_NEW Which of following best applies to this <V_ENDUSE> project? The new <V_ENDUSE> equipment… [CHECK ALL THAT APPLY]
1 replaced existing working equipment
2 replaced existing non-working equipment
3 was additional equipment
6 (Not applicable)
8 (Don't know)
9 (Refused)

***PAI-1: FACTOR RATING**

I am now going to ask you to rate the importance of various factors that might have influenced your decision to install the <V_ENDUSE> equipment. Using a scale of 0 to 10 where 0 means "not at all important" and 10 means "extremely important", how would you rate the importance of… . **[FOR N3a-t, RECORD 0-10; 96=Not Applicable; 98=Don't Know; 99=Refused] [ROTATE]**

N3a The age or condition of the old equipment
N3b Availability of the REBATE you received from <PA>
N3t Availability of the On-Bill Finance LOAN you received through <PA>
N3c **[ASK IF ID0=1]** Information provided through a <PA>-sponsored facility or system audit
N3d **[ASK IF V1=1 AND V1a<>1]** Recommendation from a contractor or vendor that sold you the equipment and/or installed it for you.
N3e Your previous experience with energy efficient projects
N3f Your previous experience with <PA>'s program or a similar utility program
N3g Information from a training course provided by the Program or <PA>
N3h Information from marketing materials produced by the Program or <PA>
N3j Standard practice in your business/industry
N3k **[V1a=1]** Assistance from a program contractor
N3l **[ASK IF AP9=3]** Recommendation by your account representative
N3m Corporate policy or guidelines
N3n Payback or return on investment of installing this equipment
N3o Improved product quality
N3p **[ASK IF FM050=12]** Compliance with state or federal regulations such as Title 24, air quality, OSHA, or FDA regulations
N3r Compliance with your organization's normal remodeling or equipment replacement practices

N3s Were there any other factors we haven't discussed that were influential in your decision to install this <V_ENDUSE> project? **[OPEN END; 96=NOTHING ELSE INFLUENTIAL, 98=DON'T KNOW, 99=REFUSED]**

[ASK IF N3s = 00]
N3ss Using the same zero to 10 scale, how would you rate the influence of this factor? **[RECORD 0-10; 96=Not Applicable; 98=Don't Know; 99=Refused]**

You rated the importance of the rebate a <N3b RESPONSE> on a scale of 0 to 10.

[ASK IF N3b>5 AND <96]
N3bb1 How did the availability of the rebate enter into your decision to complete the project? **[OPEN END; 98=DON'T KNOW, 99=REFUSED]**

[ASK IF N3b<=5]
N3bb2 This suggests that the rebate wasn't very important in your decision to complete the project. Why is that? **[OPEN END; 98=DON'T KNOW, 99=REFUSED]**

You rated the importance of the on-bill finance loan a <N3t RESPONSE> on a scale of 0 to 10.

[ASK IF N3t>5 AND <96]

N3tt1. How did the availability of the loan enter into your decision to complete the project? **[OPEN END; 98=DON'T KNOW, 99=REFUSED]**

[ASK IF N3t<=5]

N3tt2. This suggests that the loan wasn't very important in your decision to complete the project. Why is that? **[OPEN END; 98=DON'T KNOW, 99=REFUSED]**

*PAYBACK BATTERY

P1 What financial calculations does your organization typically make before proceeding with the installation of energy efficient <V_ENDUSE> equipment? Do you use… [MULTIPLE RESPONSE, UP TO 3]

1 Payback [FOR INTERVIEWER: This refers to the period of time required to recoup the funds expended in an investment, or to reach the "break-even point".]
2 Return on investment [FOR INTERVIEWER: Also called "ROI". This is a common profitability ratio, often calculated by dividing net profits by total assets.]
00 Something else (specify)
98 (Don't know)
99 (Refused)

[ASK IF P1 = 1]

P2A What is your threshold in terms of the payback your organization uses before deciding to proceed with installing energy efficient <V_ENDUSE> equipment? Is it…

1 0 to 6 months
2 6 months to 1 year
3 1 to 2 years
4 2 to 3 years
5 3 to 5 years
6 Over 5 years
8 (Don't know)
9 (Refused)

[ASK IF P1 = 2]

P2B What is your required return on investment (or "ROI")? **[NUMERIC OPEN END: 0 – 50.0%; 998=Don't know, 999=Refused; RECORD WITH ONE DECIMAL]**

P3 Did the rebate move your energy efficient project within the acceptable range of your financial criteria?

1 Yes
2 No
8 (Don't know)
9 (Refused)

***PAI-2: RELATIVE IMPORTANCE OF FACTORS**

[READ IF N3a=8,9,10 OR N3d=8,9,10 OR N3e=8,9,10 OR N3f=8,9,10 OR N3j=8,9,10 OR N3m=8,9,10 OR N3n=8,9,10 OR N3o=8,9,10 OR N3p=8,9,10 OR N3r=8,9,10]
You just mentioned that the following factors ***not related to the <PA> rebate and on-bill finance loan*** were important in your decision to implement the <V_ENDUSE> project: **[READ ANY WITH A RATING OF 8 OR HIGHER]**:

- Age or condition of old equipment (<N3a>)
- Your previous experience with energy efficient projects (<N3e>)
- Your previous experience with <PA>'s program or a similar utility program (<N3f>)
- Standard practice in your business/industry (<N3j>)
- Corporate policy or guidelines (<N3m>)
- Payback or return on investment (<N3n>)
- Improved product quality (<N3o>)
- Compliance with state or federal regulations or standards such as Title 24, air quality, OSHA, or FDA regulations (<N3p>)
- Compliance with your organization's normal remodeling or equipment replacement practices (<N3r>)

Keeping these other factors in mind,"

[READ FOR ALL:] I would like you to compare the importance of the <PA> On-Bill Financing Program in your decision to implement the <V_ENDUSE> project with the OTHER FACTORS that may have influenced your decision. To make this comparison, you have a total of 10 points to SPLIT between the importance of (1) the On-Bill Financing Program and (2) those other factors.

How many of the ten points would you give to the importance of… **[RECORD 0-10; 96=Not Applicable; 98=Don't Know; 99=Refused]**

N41a The On-Bill Financing Program, which includes the loan, the rebate, and any other support provided by the program
N42 Other Factors

[If N41a <> 98,99 AND N42 <> 98, 99, COMPUTE SUM1 = N41a + N42.
IF SUM1 <> 10 READ:] We want these numbers to equal 10 but they equal <SUM1>. Do you want to allocate these 10 points again? **[RECORD NEW RESPONSES, IF CHANGED]**

[SKIP IF N41a=0,98,99] Similarly, I would like you to split the <N41a RESPONSE> points that you gave to the On-Bill Financing Program between the REBATE, the LOAN, and OTHER PROGRAM SUPPORT that you received. Of the <N41a RESPONSE> points, how many points would you give to the importance of … **[RECORD 0-10; 96=Not Applicable; 98=Don't Know; 99=Refused] [Randomize Order]**

N41 The Rebate
N41L The On-Bill Finance Loan
N41O Other program support

[If N41 <> 98,99 AND N41L <> 98, 99 AND N41O <> 98,99, COMPUTE SUM2 = N41 + N41L + N41O]

[IF SUM2 <> <N41a RESPONSE> READ:] The points you just allocated between the rebate, the loan, and other program support should add up to the <N41a RESPONSE> total points you previously gave to the On-Bill Financing Program, but they add up to <SUM2>. Do you want to allocate these <N41a RESPONSE> points again? **[RECORD NEW RESPONSES, IF CHANGED]**

***PAI-3: LIKELIHOOD OF INSTALLATION (COUNTERFACTUAL)**

Now I would like you to think about the action you would have taken with regard to the installation of this equipment if the On-Bill Finance Program had NOT been available, or if it had offered different financial support.

N5L2 What is the likelihood that you would have installed exactly the same program qualifying energy efficient equipment if you had received neither the loan, nor the rebate, nor any other support from the On-Bill Finance Program? Please use a scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely". [RECORD 0-10; 98=Don't Know; 99=Refused]

And what is the likelihood that you would have installed exactly the same equipment without… **[RECORD 0-10; 98=Don't Know; 99=Refused]** (If needed: Please use the same scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely")

N5 the rebate – but you would have received the loan and other program support?
N5L1 the loan – but you would have received the rebate and other program support?

CONSISTENCY CHECKS ON N5L2 AND N5/N5L1
[SKIP TO N5A IF QN5=98,99 OR QN5L1=98,99 OR QN5L2=98,99]
[ASK IF N5L2 > N5 OR N5L2 > N5L1]
Based on the responses you just gave me, you would have been MORE likely to install the exact same equipment WITHOUT ANY financial support from <PA> than if:

- **[READ IF N5L2 > N5]** only the loan had been available
- **[READ IF N5L2 > N5L1]** only the rebate had been available

Chk1. Is this what you meant, or would you like for me to change your responses on the likelihood you would have installed the same equipment without the rebate, without the loan, or without both?
1 Yes, change one or more **[GO BACK AND RE-ASK N5, N5L1, AND N5L2]**
2 No, don't change / This is what I meant
8 (Don't know)
9 (Refused)

CONSISTENCY CHECKS ON N3b AND N5
[SKIP TO N3B_NEW CALCULATION IF QN3B=96,98,99 OR QN5=98,99]
[ASK IF N3b > 7 and N5 > 7]
N5a When you answered …<N5 RESPONSE>… for how likely you would be to install the same equipment without the rebate, it sounds like the rebate was not very important in your installation decision. But earlier, when you answered….<N3B RESPONSE> … for the question about the influence of the rebate, it sounded like the rebate was quite important.

I want to check to see if I am misunderstanding your answers or if the questions may have been unclear. Will you explain, the role the rebate played in your decision to install this efficient equipment? **[OPEN END; 98=DON'T KNOW, 99=REFUSED]**

NN5aa Would you like for me to change your score on the importance of the rebate that you gave a rating of <N3B RESPONSE > or change your rating on the likelihood you would have installed the same equipment without the rebate which you gave a rating of <N5 RESPONSE >, or we can change both if you wish?

1. Change importance of the rebate only
2. Change likelihood to install without the rebate
3. Change both
4. No change
8. (Don't know)
9. (Refused)

[RECORD 0-10; 96=NO CHANGE, 98=DON'T KNOW, 99=REFUSED]

N3b_Rev (RECORD NEW RATING FOR N3b – IMPORTANCE OF THE REBATE: On a scale of 0 to 10 where 0 means "not at all important" and 10 means "extremely important", how would you rate the importance of… . the Availability of the REBATE you received from <PA>?)

N5_Rev (RECORD NEW RATING FOR N5 – LIKELIHOOD TO INSTALL WITHOUT THE REBATE: On a scale of 0 to 10 where 0 means Not at all likely and 10 is very likely what is the likelihood that you would have installed exactly the same program qualifying energy efficient equipment if… THE LOAN had been available, but NOT the rebate?)

CALCULATE N3b_New = N3b_Rev IF N3b_Rev =0-10; ELSE N3b_New = N3b;
CALCULATE N5_New = N5_Rev IF N5_Rev =0-10; ELSE N5_New = N5

CONSISTENCY CHECKS ON N3t AND N5L1
[SKIP TO N3t_NEW CALCULATION IF QN3t=96,98,99 OR QN5L1=98,99]
[ASK IF N3t > 7 and N5L1 > 7]

N5aL When you answered …<N5L1 RESPONSE>… for how likely you would be to install the same equipment without the on-bill finance loan, it sounds like the loan was not very important in your installation decision. But earlier, when you answered….<N3T RESPONSE> … for the question about the influence of the loan, it sounded like the loan was quite important.

I want to check to see if I am misunderstanding your answers or if the questions may have been unclear. Will you explain in your own words, the role the loan played in your decision to install this efficient equipment? **[OPEN END; 98=DON'T KNOW, 99=REFUSED]**

NN5aaL Would you like for me to change your score on the importance of the loan that you gave a rating of <N3T RESPONSE > or change your rating on the likelihood you would have installed the same equipment without the loan which you gave a rating of <N5L1 RESPONSE >, or we can change both if you wish?

1. Change importance of the loan only
2. Change likelihood to install without the loan
3. Change both
4. No change
8. (Don't know)

9. (Refused)

[RECORD 0-10; 96=NO CHANGE, 98=DON'T KNOW, 99=REFUSED]

N3t_Rev (RECORD NEW RATING FOR N3t – IMPORTANCE OF THE LOAN: On a scale of 0 to 10 where 0 means "not at all important" and 10 means "extremely important", how would you rate the importance of... Availability of the On-Bill Finance LOAN you received through <PA>?)

N5L1_Rev (RECORD NEW RATING FOR N5L1 – LIKELIHOOD TO INSTALL WITHOUT THE LOAN: On a scale of 0 to 10 where 0 means Not at all likely and 10 is very likely what is the likelihood that you would have installed exactly the same program qualifying energy efficient equipment if...THE REBATE had been available, but NOT the loan?)

CALCULATE N3t_New = N3t_Rev IF N3t_Rev =0-10; ELSE N3t_New = N3t;
CALCULATE N5L1_New = N5L1_Rev IF N5L1_Rev =0-10; ELSE N5L1_New = N5L1

N5b Using the same likelihood scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the REBATE had not been available, what is the likelihood that you would have done this project AT THE SAME TIME as you did? [RECORD 0-10; 98=Don't Know; 99=Refused]

N5bL. And what is the likelihood that you would have done this project at the same time as you did if the ON-BILL FINANCE LOAN had not been available? [RECORD 0-10; 98=Don't Know; 99=Refused]

[ASK IF N5bL<5]

N5c. Without the loan, when would you likely have completed the <V_ENDUSE> project? Would you say...

1 Within a year of when you did?
2 Within 2 years?
3 Within 3 years?
4 More than 3 years later?
00 (Other specify)
98 (Don't know)
99 (Refused)

N6a. Did the availability of the loan in any way affect the SIZE of your <V_ENDUSE> project?

1 Yes
2 No
8 (Don't know)
9 (Refused)

[ASK IF N6a=1]

N6b. How did the loan affect the size of your <V_ENDUSE> project? [OPEN END; 98=Don't Know, 99=Refused]

CONSISTENCY CHECKS ON REBATE & LOAN IMPORTANCE

CALCULATE THESE VARIABLES:

N3_CHECK:

0- N3b_New==N3t_New *(equal rating)*
1- N3b_New>N3t_New *(higher rating for rebate)*
2- N3b_New<N3t_New *(higher rating for loan)*

9- N3B_NEW=96,98,99 OR N3T_NEW=96,98,99

N41_CHECK:
0- N41==N41L *(equal points)*
1- N41>N41L *(more points for rebate)*
2- N41<N41L *(more points for loan)*
9- N41=98,99 OR N41L=98,99

N5_CHECK:
0- N5_New==N5L1_New *(equal likelihood)*
1- N5_New<N5L1_New *(lower likelihood without rebate)*
2- N5_New>N5L1_New *(lower likelihood without loan)*
9- N5_NEW=96,98,99 OR N5L1_NEW=96,98,99

TRIGGER:

TRIGGER	N41_CHECK	N3_CHECK	N5_CHECK
1	1	2	
	2	1	
	1		2
	2		1
		1	2
		2	1
0	ALL OTHER COMBINATIONS OF 0,1,2, AND 9		

[SKIP IF TRIGGER=0]
NEW_CHK2. In your earlier responses some of your answers suggested that the rebate was more important in your decision to install the energy efficient <V_ENDUSE> project but other responses suggested that the on-bill finance loan was more important. More specifically …

The following responses suggest that the REBATE was more important than the on-bill finance loan:

- **[READ IF N41_CHECK=1]** Of the <N41a RESPONSE> points given to the on-bill finance program, you allocated <N41 RESPONSE> points to the rebate and <N41L RESPONSE> points to the loan.
- **[READ IF N3_CHECK=1]** You gave a rating of <N3b_New> for the importance of the rebate and <N3t_New> for the importance of the on-bill finance loan.
- **[READ IF N5_CHECK=1]** You rated your likelihood to install the exact same equipment without the rebate a <N5_New> but the likelihood to make this installation without the on-bill finance loan a <N5L_New>.

But the following responses suggest that the ON-BILL FINANCE LOAN was more important than the rebate:

- **[READ IF N41_CHECK=2]** Of the <N41a RESPONSE> points given to the on-bill finance program, you allocated <N41 RESPONSE> points to the rebate and <N41L RESPONSE> points to the loan.
- **[READ IF N3_CHECK=2]** You gave a rating of <N3b_New> for the importance of rebate and <N3t_New> for importance of the on-bill finance loan.
- **[READ IF N5_CHECK=2]** You rated your likelihood to install the exact same equipment without the rebate a <N5_New> but the likelihood to make this installation without the on-bill finance loan a <N5L_New>.

Overall, which would you say was more important to your decision to install the energy efficient project, the rebate or the on-bill finance loan?

1. Rebate
2. On-bill finance loan
3. (Neither they are equal)
8. (Don't know)
9. (Refused)

[ASK IF NEW_CHK2=1,2,3 ELSE SKIP TO FREERIDERSHIP – SIMILAR PROJECTS]
With this in mind, we would like to update some of your responses…

[ASK IF (NEW_CHK2=1,3 AND N41_CHECK=2) OR (NEW_CHK2=2,3 AND N41_CHECK=1)]

N41_Fin. Of the <N41a RESPONSE> points you gave to the program, how many points would you give to the importance of the REBATE? [RECORD 0-10; 95=Does not want to update responses, 96=Not Applicable; 98=Don't Know; 99=Refused] (IF NEEDED: You previously gave <N41> points to the rebate)

N41L_Fin. And, how many points would you give to the importance of the LOAN? [RECORD 0-10; 95=Does not want to update responses, 96=Not Applicable; 98=Don't Know; 99=Refused] (IF NEEDED: You previously gave <N41L> points to the loan)

N41O_Fin. And, how many points would you give to the importance of the other program support? [RECORD 0-10; 95=Does not want to update responses, 96=Not Applicable; 98=Don't Know; 99=Refused] (IF NEEDED: You previously gave <N41O> points to the loan)

[ASK IF (NEW_CHK2=1,3 AND N3_CHECK=2) OR (NEW_CHK2=2,3 AND N3_CHECK=1)]

N3b_Fin. On a 0-10 scale, where 0 is Not at all important and 10 is very important, how would rate the importance of the REBATE? [RECORD 0-10; 95=Does not want to update responses, 96=Not Applicable; 98=Don't Know; 99=Refused] (IF NEEDED: You previously rated the rebate <qn3b_new>)

N3t_Fin . And, on the same 0-10 scale, how would rate the importance of the LOAN? [RECORD 0-10; 95=Does not want to update responses, 96=Not Applicable; 98=Don't Know; 99=Refused] (IF NEEDED: You previously rated the loan <QN3T_NEW>)

[ASK IF (NEW_CHK2=1,3 AND N5_CHECK=2) OR (NEW_CHK2=2,3 AND N5_CHECK=1)]

N5_Fin. On a 0-10 scale, where 0 is Not at all likely and 10 is Very likely, how likely would you have been to install the same equipment without the REBATE? [RECORD 0-10; 95=Does not want to update responses, 96=Not Applicable; 98=Don't Know; 99=Refused] (IF NEEDED: You previously rated the likelihood at <qn5_new>)

N5L1_Fin. And, on the same a 0-10 scale, how likely would you have been to install the same equipment without the LOAN? [RECORD 0-10; 95=Does not want to update responses, 96=Not Applicable; 98=Don't Know; 99=Refused] (IF NEEDED: You previously rated the likelihood at <qn5l1_new>)

FREERIDERSHIP – SIMILAR PROJECTS OF SAME ENDUSE

[ASK IF NSAME>0 AND QVER1<>4]

SAME Our records show that <BUSINESS> also received an incentive and loan from <PA> for <NSAME> other <V_ENDUSE> projects between 2013 and 2014. Were the driving factors for [IF NSAME=1, read: "this; if NSAME>1, read: "these"] other project(s) the same for the project we have been discussing? E.g., was the importance of the loan and the rebate the same, and your likelihood to complete the project without the On-Bill Finance Program?

1 Yes
2 No (some or all were different)
8 (Don't Know)
9 (Refused)

[ASK IF SAME=1]

SAME2 Why do you say that? **[OPEN END; 98=Don't know, 99=Refused]**

ADDITIONAL CONTRACTOR QUESTIONS

[ASK IF V1=1, ELSE SKIP TO ADDITIONAL SOURCES OF FUNDING]

I have a few additional questions about the contractor you worked with to select or install your <V_ENDUSE> project.

V3 Did the contractor/vendor tell you about or recommend <PA>'s rebate?

1 Yes
2 No
8 (Don't Know)
9 (Refused)

V3L Did the contractor/vendor tell you about or recommend <PA>'s on-bill finance loan?

1 Yes
2 No
8 (Don't Know)
9 (Refused)

V4a0 Did the contractor/vendor recommend the <V_ENDUSE> equipment you installed or help you with the selection of the efficiency level of the equipment?

1 Yes
2 No
8 (Don't Know)
9 (Refused)

[ASK IF V4a0=2]

V4a1 Just to confirm, you are saying that the contractor had no role in your selection of this program qualifying equipment?

1 Yes/Correct: Contractor had no role
2 No/Incorrect: Contractor had role
8 (Don't Know)
9 (Refused)

[ASK IF V4a0=1 OR V4a1=2]

V4a On a scale of 0 - 10, with 0 being NOT AT ALL LIKELY and 10 is VERY LIKELY, how likely is it that your organization would have installed the exact same new energy efficient equipment had the contractor/vendor not been involved in your decision? **[RECORD 0-10; 98=Don't Know, 99=Refused]**

ADDITIONAL SOURCES OF FUNDING QUESTIONS

[ASK IF ANY FIN2a-k=1; ELSE SKIP TO FIN6a]
[LOOP FIN3a AND FIN3b FOR UP TO 3 EXTERNAL SOURCES MENTIONED IN FIN2]

Earlier, you indicated that you had used other sources of external financing for your <ENDUSEa> project.

FIN3a. What was the interest rate of the <FIN2 RESPONSE>? (IF NEEDED: For variable rate loans, ask for the starting rate.) **[NUMERIC OPEN END 1.00% - 50.00%, RECORD WITH 3 DECIMALS;, 98=Don't know, 99=Refused]**

FIN3c. Was this a fixed or variable rate loan?

1 Fixed
2 Variable
8 (Don't know)
9 (Refused)

[SKIP FOR FIN2g]

FIN3b. What was the duration of the <FIN2 RESPONSE>? (IF NEEDED: In years) **[NUMERIC OPEN END 1 - 50; 98=Don't know, 99=Refused]**

[ASK IF ANY FIN5a-k=1; ELSE SKIP TO CUSTOMER/FACILITY CHARACTERISTICS]
[LOOP FIN6a AND FIN6b FOR UP TO 3 EXTERNAL SOURCES MENTIONED IN FIN5]

Earlier, you indicated that you had considered other sources of external financing for your <ENDUSEa> project.

FIN6a. What would have been the interest rate of the <FIN5 RESPONSE>? (IF NEEDED: For variable rate loans, ask for the starting rate.) **[NUMERIC OPEN END 1.00% - 50.00%, RECORD WITH 3 DECIMALS; 98=Don't know, 99=Refused]**

FIN6c. Would this have been a fixed or variable rate loan?

1 Fixed
2 Variable
8 (Don't know)
9 (Refused)

[SKIP FOR FIN5g]

FIN6b. What would have been the duration of the <FIN5 RESPONSE>? (IF NEEDED: In years) **[NUMERIC OPEN END 1 - 50; 98=Don't know, 99=Refused]**

CUSTOMER/FACILITY CHARACTERISTICS

[SKIP TO INTRO TO LOOP 2, IF MULTI_LOCATION=1]
You are almost done! My last few questions are about your facility located at <ADDRESS/C_ADD>.

CC2a. What is the total square footage at this facility? **[NUMERIC OPEN END: 0 - 1,000,000; 999998=Don't know, 9999999=Refused]**

[ASK IF CC2a = 9999998, 9999999]
CC3 Would you say that the floor area is…?
1 less than 1,500 sq. ft.
2 1,500 - 5,000 sq. ft.
3 5,000 - 10,000 sq. ft.
4 10,000 – 25,000 sq. ft.
5 25,000 – 50,000 sq. ft.
6 50,000 – 75,000 sq. ft.
7 75,000 – 100,000 sq. ft.
8 over 100,000 sq. ft. (ag area)
98 (Don't know)
99 (Refused)

CC3a Is your space heated using electricity or gas or something else?
1 (Electricity)
2 (Gas)
3 (Both electricity and gas)
4 (Propane)
00 (Other: Specify)
96 (Not heated)
98 (Don't know)
99 (Refused)

CC4 Does your organization own, lease, or manage the facility?
1 Own
2 Lease/Rent
3 Manage
8 (Don't know)
9 (Refused)

CC5 How many locations does your organization have? Is it….
1 This facility only
2 2 to 4 locations
3 5 to 10 locations
4 11 to 25 locations
5 more than 25 locations
8 (Don't know)
9 (Refused)

CC8 In what year was the facility built? [NUMERIC OPEN END: 1700-2015; 9998=Don't know, 9999=Refused)

[ASK IF CC8=9998, 9999]

CC10 If you don't know exactly, would you say it was…

1 After 2010
2 2000s
3 1990s
4 1980s
5 1970s
6 1960s
7 1950
8 Before 1950
98 (Don't know)
99 (Refused)

INTRO TO LOOP 2

[ASK IF V_LOOP2=1, ELSE SKIP TO END]

Loop. Our records show that the project that <BUSINESS> undertook at < ADDRESS/C_ADD > around <MONTH-YEAR> also included the following <ENDUSEb> improvements:
<MEASURE_1b>
<MEASURE_2b>
<MEASURE_3b>

Would you be able to answer a few more questions about that part of the project? This should only take a few more minutes.

1 Yes [BEGIN SECOND LOOP AT Q. V1]
2 No [MID-INTERVIEW CALLBACK – SCHEDULE TIME]
9 (Refused) [GO TO END]

END *Thank you for taking the time to complete this survey.*