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PY2015 California Statewide On-Bill Finance

Impact Evaluation

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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
ESPI	Energy Savings and Performance Incentive
FR	Freeridership
GRR	Gross realization rate
kW	Kilowatt (equals 1,000 watts)
kWh	Kilowatt hour (equals 1,000 watt hours)
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
PY	Program year
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) 2015 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 (PY2015), 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.

It should be noted that while this study focuses on the 2015 program year, our participant survey included both 2015 and 2016 participants. In addition, the net-to-gross (NTG) analysis, the ratio analysis, and the funding source analysis presented in this report are all based on responses to the survey and therefore include both 2015 and 2016 participants.[1]

This analysis is a follow-up to a similar analysis, conducted by Opinion Dynamics, for the 2013/14 OBF programs.[2]

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)

[1] While we were able to include 2016 participants in our participant survey and the associated analyses, we could not conduct the gross impact, net impact, incremental impact, and gap analyses for PY2016 because incentive program evaluation results, which are a key input to these analyses, were not available at the time this study was finalized.

[2] Opinion Dynamics. 2017. "PY 2013/14 On-Bill Finance Programs: Impact Evaluation." June 1, 2016. http://www.calmac.org/publications/PY2013-14_On-Bill_Finance_Impact_Evaluation.pdf.

To participate in the 2015 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. In 2015, the PAs did not directly claim savings for the OBF programs.

1.2 Study Objectives

The primary research objectives of the evaluation of the PY2015 programs were the same as for Phase II of the PY2013/14 OBF impact evaluation:

1. Develop an estimate of gross energy savings associated with projects that were completed and received an OBF loan during PY2015;
2. Develop an estimate of freeridership and net-to-gross ratios (NTGRs) for the PY2015/16 OBF programs;
3. Develop an estimate of incremental net savings of the PY2015 OBF programs, relative to net impacts 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.

In addition, one new research objective was added for this study:

1. Determine how many OBF participants (at the project and measure levels) are included in the gross impact verification efforts for the incentive programs, for PY2013-15.

1.3 Overview of Analyses

To develop the findings in this report, we utilized OBF loan databases, provided by the four PAs, and the California statewide Claims database for the non-residential incentive programs. We also collected primary data via a telephone survey with PY 2015/16 OBF program participants (130 completed interviews).

The evaluation included the following analyses:

Gap Analysis. The objective of this analysis was to determine the extent to which OBF projects have been included in the gross impact verification efforts for the California non-residential incentive programs. Since the scope of this impact analysis does not include new gross impact verification work, but rather applies gross realization rates (GRR) from the incentive program evaluations, this analysis was intended to determine whether OBF projects are sufficiently represented in those GRRs. In support of this analysis, we reviewed OBF program tracking data as well as Itron's databases of projects included in the PY2013-15 incentive program impact evaluations and matched both to the statewide Claims database for PY2013-15.

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. We matched PY2015 OBF projects to PY2015 Claims data and utilized Claims-tracked ex post gross savings to determine gross impacts for OBF projects completed in PY2015.

Net Impact Analysis. The primary objective of this analysis was 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. This analysis consisted of (1) development of freeridership rates and net-to-gross ratios (NTGRs) and (2) estimation of net program savings. The freeridership analysis was based on responses to the participant survey, i.e., it utilized a customer self-report approach. We employed the same methodology as in the evaluation of the PY2013/14 programs, which closely followed the methodology 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.[3] This method was adapted to incorporate consideration of the OBF loan. Where possible, 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. We compared the OBF NTGRs and net savings—developed in the net impact analysis above—with NTGRs and net savings developed in the incentive program evaluations (for the same set of OBF projects). The goal of this analysis was to estimate the incremental net impacts from the OBF programs (i.e., net savings that are attributable to the OBF programs but that have not already been claimed by the PAs through the incentive programs).

OBF Loan-to-Incentive Ratio Analysis. The primary objective of this analysis was 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 was based on the responses to the freeridership questions in the participant 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.

Funding Source Analysis. This analysis examined 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 was based on responses to the participant survey.

Table 1-1 summarizes the program year(s) for which each analysis was conducted as well as the data sources used.

[3] 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.

Table 1-1. Data Sources, Analyses, and Associated Program Years.

Analysis	Program Year(s)	Data Source
(1) Gap Analysis	• 2013-15	• 2013-2015 Claims database • 2013-2015 OBF tracking data • 2013-2015 Itron impact evaluation database
(2) Gross Impacts	• 2015	• 2015 Claims database *(for matched OBF projects)*
(3a) Net-to-Gross Ratio Analysis	• 2015-16	• 2015-2016 OBF participant survey
(3b) Net Impacts	• 2015	• 2015 OBF Gross Impacts (2) • 2015-2016 OBF NTGRs (3a)
(4) Incremental Net Impacts	• 2015	• 2015-2016 OBF NTGRs (3a) • 2015 Net Impacts (3b) • 2015 Claims database *(for matched OBF projects)*
(5) Loan-to-Incentive Ratio Analysis	• 2015-16	• 2015-2016 OBF participant survey
(6) Funding Source Analysis	• 2015-16	• 2015-2016 OBF participant survey

1.4 Key Results

OBF Program Participation

During 2015, the four PAs issued a total of 808 loans, providing over $30 million in financing, with an average loan of just over $38,000 statewide. Not all loans issued during the 2015 program cycle were associated with projects that were completed during 2015. All four PAs provided loans for projects that were completed as early as 2014 and as late as 2016. We removed these loans and associated projects from consideration in this evaluation, as savings associated with non-2015 projects have already been captured during a previous program cycle or will be captured during a later one.

Table 1-2 summarizes all 2015 loans as well as those associated with 2015 projects. Except where noted, this evaluation only includes 2015 loans associated with 2015 projects.

Table 1-2. 2015 Loans Associated with 2015 Projects

PA	All 2015 Loans		2015 Loans Associated with 2015 Claims		
	# Loans	Loan Amount	# Loans[A]	Loan Amount	Average Loan
Statewide	**808**	**$30,811,508**	**446**	**$17,095,256**	**$38,159.05**
PG&E	367	$17,821,958	266	$9,540,529	$35,598.99
SCE	400	$9,665,226	152	$5,680,628	$37,372.55
SDG&E	37	$3,235,300	24	$1,809,675	$75,403
SCG	4	$89,024	4	$64,423	$16,105.73

[A] Some loans reflected in these counts were associated with both 2015 and non-2015 claims.
[B] Loan amounts were allocated, by program type and technology, in proportion to incentive amounts.
Source: 2015 OBF tracking data; 2015 Claims database.

The majority of 2015 loan funding was associated with custom projects (58%) and with lighting projects (20%). The statewide average loan amount was comparable for custom and deemed projects, at around $32,000.

However, the average loan size for lighting projects was approximately $8,000 higher compared to non-lighting projects. Table 1-3 summarizes loan statistics by program type and by technology.

Table 1-3. 2015 Loans—by Program Type and Technology

PA	# Loans[A]	% of Total	Loan Amount	% of Total	Average Loan
By Program Type					
Deemed	223	50%	$7,112,986	42%	$31,897
Custom	308	69%	$9,982,270	58%	$32,410
By Technology					
Lighting	379	85%	$13,710,840	80%	$36,176
Non-Lighting	120	27%	$3,384,415	20%	$28,203

[A] Note that the number of loans by program type and by technology does not add up to the total number of loans (446) as each loan can be associated with more than one project. The "% of Total" was calculated based on the unique total of 446.
[B] Loan amounts were allocated, by program type and technology, in proportion to incentive amounts.
Source: 2015 OBF tracking data; 2015 Claims database.

OBF Gap Analysis

The statewide non-residential Claims database included 4.6 million claims and 49 million MMBtu of gross energy savings, for program years 2013, 2014, and 2015. OBF-backed claims accounted for 0.6% of these claims and for 1.2% of gross energy savings. In comparison, OBF projects accounted for 1.6% of claims included in the PY2013-2015 incentive program impact evaluations and for 1.3% of the evaluated gross energy savings.

Overall, the number of claims and energy savings associated with OBF projects comprise a very small fraction of the statewide non-residential claims. In incentive program impact evaluation studies, OBF projects are slightly over-represented relative to their share of statewide claims. However, their absolute representation in incentive program impact evaluation studies is low. If there are systematic differences between GRRs of OBF and non-OBF projects, then applying incentive program GRRs to OBF projects may not accurately reflect gross savings achieved by OBF projects.

Gross Impacts

After matching 2015 OBF loans to 2015 claims, we were able to determine the evaluated ex-post gross energy savings for each Claims record associated with an OBF loan. We then aggregated the Claims-level data, by PA and by technology, to determine the PA- and technology-level GRRs for OBF projects. We found that ex post savings are, on average, 74% of ex ante savings. By PA, this value ranges from 67% for SCE to 80% for PG&E. Table 1-4 summarizes the results of the gross impact analysis, statewide and by PA.

Table 1-4. Summary of PY2015 Gross Impact Results

Metric	Statewide	PG&E	SCE	SDG&E	SCG
a. Claims Ex Ante Gross Savings (MMBtu)	107,335	55,760	45,068	5,020	1,487
b. Claims Ex Post Gross Savings (MMBtu)	79,183	44,523	29,999	3,632	1,029
c. Claims Ex Post GRR (c = b / a)	0.74	0.80	0.67	0.72	0.69

Source: 2015 OBF tracking data; 2015 Claims database.

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 PAs 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 2015/16 OBF projects is 0.64, based on 154 valid NTG points and with a relative precision of 5%. The NTGR for lighting projects (0.69) is higher than that for non-lighting projects (0.56; the difference is statistically significant at 90% confidence). The sampled projects represent 14% and 16% of MMBtu savings of all lighting and non-lighting projects, respectively. Table 1-5 summarizes these results.

Table 1-5. Weighted Statewide Net-to-Gross Ratios (PY2015/16)

	Overall	Lighting	Non-Lighting
Mean NTGR	**0.64**	**0.69**	**0.56**
90 Percent CI	0.61 to 0.67	0.65 to 0.73	0.51 to 0.60
Relative Precision	0.05	0.06	0.08
Valid NTG Points (n)	154	113	41
OBF Projects (N)	1,382	1,004	378
Percent of MMBtu Sampled	15%	14%	16%

Source: 2015/16 OBF participant survey.

By PA, NTGRs range from 0.64 for SCE to 0.68 for SDG&E (Table 1-6). PG&E has a higher NTGR for lighting projects, while SCE has a higher NTGR for non-lighting projects (both differences are statistically significant at 90% confidence). SCG had only eleven OBF projects associated with 2015/2016 Claims. Despite enhanced outreach efforts, we were only able to complete one interview with SCG participants.

Table 1-6. Net-to-Gross Ratios by PA (PY2015/16)

	Overall	Lighting	Non-Lighting
Statewide	**0.64**	**0.69**	**0.56**
PG&E	0.65	0.80	0.49
SCE	0.64	0.61	0.77
SDG&E	0.68	*Not estimated by technology*[A]	
SCG	*Not estimated*[B]		

[A] Due to small sample sizes, we did not estimate technology-specific NTGRs for SDG&E.
[B] Due to small sample sizes, we did not estimate a separate NTGR for SCG.
Source: 2015/16 OBF participant survey.

We developed OBF ex post net savings by applying the PA/technology-specific NTGRs to OBF ex post gross savings and aggregating ex post net savings to the PA level and the statewide level. Table 1-7 presents the results of this analysis.

Table 1-7. OBF Net Impacts (PY2015)

	# OBF Projects	Calculated Ex Post Gross Savings		OBF Evaluated Ex Post Net Savings	
		MMBtu	kW	MMBtu	kW
Statewide	**491**	**78,154**	**1,747**	**51,780**	**1,127**
PGE	334	44,523	1,096	30,227	703
SCE	134	29,999	515	19,099	333
SDGE	23	3,632	136	2,453	92

[A] The number of OBF projects and the ex post gross savings in this table are different from those presented in Table 1-4, because this table excludes SCG's projects that account for 1,029 MMBtu in ex post gross savings.
Source: 2015 Claims database; 2015/16 OBF participant survey.

Incremental Net Impacts

Statewide incremental net savings from OBF projects are 9,968 MMBtu and 148 kW. The statewide incremental NTGR is 0.11 for energy savings and 0.08 for demand savings. By PA, the incremental MMBtu NTGR ranges from 0.09 for SCE to 0.13 for SDG&E; the incremental kW NTGR ranges from 0.06 for SDG&E to 0.09 for PG&E. Table 1-8 summarizes the OBF incremental net impact results.

Table 1-8. Incremental Impacts of On-Bill Financing (PY2015)

	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	**51,780**	**1,127**	**0.64**	**41,811**	**980**	**0.53**	**0.56**	**9,968**	**148**	**0.11**	**0.08**
PGE	30,227	703	0.65	23,257	605	0.52	0.55	6,971	98	0.12	0.09
SCE	19,099	333	0.64	16,565	291	0.55	0.57	2,534	42	0.09	0.08
SDGE	2,453	92	0.68	1,990	84	0.55	0.62	463	8	0.13	0.06

Source: 2015 Claims database; 2015/16 OBF participant survey.

Loan-to-Incentive Ratio Analysis

Overall, participants gave higher importance ratings to the OBF loan (6.2) than to the incentive (5.6), resulting in a statewide loan-to-incentive ratio (LIR) of 1.09. Respondents who undertook lighting projects provided an average loan score of 6.9 and an average incentive score of 5.9, resulting in an average LIR of 1.17. By comparison, the average loan and incentive scores for non-lighting projects were 5.0 and 5.2, respectively, resulting in a LIR of 0.95.

Notably, 72% of respondents said they needed both the loan and the incentive to move forward with their project.

Sources of Project Funding

For most OBF participants (54%), the program incentive and the OBF loan covered the full cost of the new equipment. Of those who used other sources of funding in addition to the loan and incentive, the majority (80%) relied on internal funding sources.

When asked how they would have paid for the project if the OBF loan had not been available, about half of participants (47%) reported that they would not have completed the project at all. Another 40% would have used internal funding – either cash on hand or other internal funding. A small percentage (5%) would have sought a bank loan.

1.5 Conclusions and Recommendations

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

OBF Project Inclusion in Impact Verifications (Gap Analysis)

- Our findings indicate that OBF claims are represented in proportion (or in slightly greater proportion) to their representation in statewide claims. OBF-backed claims represented 1.3% of energy savings considered in the 2013-15 incentive program verification studies, which matches the proportion of OBF-backed energy savings across all non-residential rebate programs (1.2%). However, their

absolute representation in impact verification studies is low. If there are systematic differences between GRRs of OBF and non-OBF projects, then applying incentive program GRRs to OBF projects may not accurately reflect gross savings achieved by OBF projects. As long as the utilities do not claim savings for OBF projects, other than through the incentive programs, we see no need to oversample OBF projects in the incentive program gross impact evaluations. However, if OBF-specific savings are going to be claimed, we would recommend conducting an OBF-specific gross impact analysis to ascertain that there are no systematic differences in realization rates between OBF and non-OBF projects.

Gross Impacts

- Similar to the PY2013/14 OBF impact evaluation, we found that Claims-tracked incentive projects and OBF loan disbursements often do not occur in the same program year because loans are sometimes issued after project savings are claimed by the incentive programs. This lag time is due to program features such as post-installation reviews. In some cases, loans are issued many months after claims are made through incentive programs—this is especially true for large projects that can take months to complete and review. As a result, a mismatch between OBF tracking databases and the claims database is sometimes unavoidable. We continue to recommend that the PAs should account for this lag time when determining how savings from OBF projects might be claimed in the future and ensure that OBF loans are issued in a manner as timely as possible given program requirements. In addition, we recommend that in future impact evaluations, the evaluator, PAs, and the CPUC establish clear guidelines for analyzing multi-year OBF projects, which will be critical for ensuring that large projects are included in evaluations.
- 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 continue to 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

- 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.
- Based on our analysis, there are incremental net savings associated with OBF loans that exceed those currently being claimed by the PA incentive programs. The only exception to this finding was for PG&E non-lighting projects, which showed negative incremental impacts in PY2015. Because PG&E accounts for 70% of all non-lighting ex post gross savings, this result also drives negative incremental savings for non-lighting projects at the statewide level.
- It should be noted that the incremental net impact analysis is based on a comparison of NTGRs and net savings for two different time periods: the OBF-evaluated values are based on PY2015/16 participants while the incentive program values are based on PY2015 participants only. While this is

technically not correct, this approach was necessary due to data limitations. As such, the incremental net impact results should be considered directional and should not be used for Energy Savings and Performance Incentive (ESPI) purposes.

Relative Importance of the Incentive and the OBF Loan

- Our research with 2015/16 OBF participants shows that the OBF loan and the incentive are both important in customers' decisions to implement high-efficiency projects: 72% of participants reported that they needed both the loan and the incentive to move forward with the projects. Based on statewide survey responses, customers consider the loan to be slightly more important than the incentive. In addition, and nearly half of participants reported that they would not have been able to fund the project without the OBF loan.
- While our research was not designed to provide recommendations to the PAs with respect to future program designs, we continue to encourage the PAs to move forward with efforts to pilot (and evaluate) alternative loan-incentive structures, as already directed by the Commission. [4]

It should be noted that the conclusions and recommendations from this study may not be applicable to gas-only OBF projects. Overall, only 18 of over 10,000 claims associated with 2015-16 OBF loans were gas-only claims. As a result, developing results for gas-only OBF projects was not possible.

[4] We note that in July 2016, PG&E received approval to implement an OBF program that does not provide incentives.

2. Introduction

2.1 Program Overview

During PY2015, on-bill loans were 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.

To participate in the 2015 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. In 2015, the PAs did not directly claim savings for the OBF programs.

2.2 OBF Program Participation

This section presents background information on participation in the OBF program. While this study focuses on PY2015, our participant survey included both 2015 and 2016 participants. In addition, the net-to-gross (NTG) analysis, the ratio analysis, and the funding source analysis presented in this report are all based on responses to the survey and therefore include both 2015 and 2016 participants. In contrast, we could not conduct the gross impact, net impact, incremental impact, and gap analyses for PY2016 because incentive program evaluation results, which are a key input to these analyses, were not available at the time this study was finalized. Due to the different evaluation periods used for the different analyses, this section presents OBF participation information for both 2015 and 2016, before focusing in on the 2015 matched loans that are the basis for the gross, net, and incremental impact analyses.

OBF Participation in PY2015/16

In 2015 and 2016, the four PAs issued a total of 1,508 loans, providing over $63 million in financing. PG&E had the highest loan volume, accounting for 51% of all loans and nearly $35 million in financing. Compared to the 2013-14 program cycle, statewide loan activity decreased by approximately 300 loans and $1 million. This decrease is largely driven by SDG&E, which experienced a steep decline in loans (from 308 to 76) and loan amounts (from close to $17 million to less than $6 million). In contrast, both PG&E and SCE saw increases in their loan amounts in 2015/16 even though their loan numbers decreased slightly. SCG, while having a comparable number of loans to the 2013/14 program cycle (11 in 2015/16 versus 9 in 2013/14), had a considerably lower total and average loan amount in 2015/16.

Despite the slight statewide decline in 2015/16, both loan volume and the amount financed have grown considerably since the 2010-12 program cycle, driven by PG&E and SCE. Table 2-1 presents loan statistics by program cycle.

Table 2-1. Program Participation Trends 2010-2016

PA	2010-12 Program Cycle			2013-14 Program Cycle			2015-16 Program Cycle		
	# Loans	Loan Amount	Average Loan	# Loans	Loan Amount	Average Loan	# Loans	Loan Amount	Average Loan
Statewide	**603**	**$16,223,456**	**$26,905**	**1,812**	**$64,194,275**	**$35,427**	**1,508**	**$63,255,056**	**$41,946**
PG&E	4	$210,140	$52,535	782	$32,025,868	$40,954	763	$34,495,441	$45,210
SCE	78	$2,012,717	$25,804	713	$14,202,298	$19,919	658	$22,654,516	$34,429
SDG&E	506	$13,541,298	$26,761	308	$16,746,493	$54,372	76	$5,822,403	$76,611
SCG	15	$459,301	$30,620	9	$1,219,617	$135,513	11	$282,695	$25,700

Source: 2015/16 OBF tracking data; *PY2013/14 On-Bill Finance Programs: Impact Evaluation*, Opinion Dynamics, 2016.

PY2015/16 loan activity was fairly evenly split between 2015 and 2016, with 2016 seeing 100 fewer loans but a $1.6 million increase in loan amounts. Table 2-2 presents the distribution of 2015/16 loans by program year.

Table 2-2. PY2015 and PY2016 Loans

PA	PY2015		PY2016	
	# Loans	Loan Amount	# Loans	Loan Amount
Statewide	**808**	**$30,811,508**	**700**	**$32,443,548**
PG&E	367	$17,821,958	396	$16,673,484
SCE	400	$9,665,226	258	$12,989,290
SDG&E	37	$3,235,300	39	$2,587,103
SCG	4	$89,024	7	$193,671

Source: 2015/16 OBF tracking data.

Loans issued during 2015 and 2016 were associated with projects completed between 2014 and 2016. Claims-tracked incentive projects and OBF loan disbursements often do not occur in the same program year because loans are sometimes issued after project savings are claimed by the incentive programs. This lag time is due to program features such as post-installation reviews, which ensure ratepayer funds are being used appropriately. In some cases, loans are issued many months after claims are made through incentive

programs—this is especially true for large projects that can take months to complete and review. As a result, a mismatch between OBF tracking databases and the claims database is sometimes unavoidable.

For the analyses presented in this report, we only included loans that were issued during the same time frame as the claims projects they supported: For the analyses based on 2015/16 loans, we only included those that could be matched to 2015/16 claims; for the analyses based on 2015 loans, we only included those that could be matched to 2015 claims. We dropped non-matching loans and associated projects from consideration in this evaluation, as their savings are being captured in a previous or future program year.

Of the 1,508 loans originated in 2015-16, we matched 1,122 (or 74%) to PY2015/16 claims. Of the 808 loans originated in 2015, we matched 448 (or 55%) to PY2015 claims. Most of the unmatched loans were associated with claims from previous program years. Table 2-3 summarizes these loans, including total and average loan amounts, and the share of all 2015/16 loans they represent.

Table 2-3. 2015-16 Loans Associated with 2015-16 Projects

PA	All Loans		Matched Loans		% Matched	
	# Loans	Loan Amount	# Loans	Loan Amount	% Loans	% Loan Amount
2015/16 Loans						
Statewide	**1,508**	**$63,255,056**	**1,122**	**$48,580,456**	**74%**	**77%**
PG&E	763	$34,495,441	654	$25,670,605	86%	74%
SCE	658	$22,654,516	401	$18,290,735	61%	81%
SDG&E	76	$5,822,403	60	$4,361,021	79%	75%
SCG	11	$282,695	7	$258,094	64%	91%
2015 Loans						
Statewide	**808**	**$30,811,508**	**448**	**$17,095,256**	**55%**	**55%**
PG&E	367	$17,821,958	268	$9,540,529	73%	54%
SCE	400	$9,665,226	152	$5,680,628	38%	59%
SDG&E	37	$3,235,300	24	$1,809,675	65%	56%
SCG	4	$89,024	4	$64,423	100%	72%

Source: 2015/16 OBF tracking data; 2015/16 Claims database.

Characteristics of PY2015 Matched Loans

The OBF loans included in the PY2015 analyses are associated with 495 projects, with an average loan amount of close to $35,000 per project. Recipients of these loans also received approximately $3.8 million in incentives. The average loan amount per incentive dollar was $4.51. The projects supported with the loans achieved 79,183 MMBtu of ex post gross savings in 2015. On average, $216 in loan funds were disbursed for each MMBtu realized. SDG&E projects had the highest average loan per project ($78,682), the highest loan per incentive dollar ($8.73), and the highest loan per MMBtu ($498). Table 2-4 summarizes these statistics.

Table 2-4. 2015 OBF Loan Statistics

PA	# Loans	Loan Amount	# Projects	Loan $ / Project	Incentives	Loan $ / Incentive $	Ex Post Gross Savings (MMBtu)	Loan $ / MMBtu
Statewide	**448**	**$17,095,256**	**495**	**$34,536**	**$3,790,305**	**$4.51**	**79,183**	**$216**
PG&E	268	$9,540,529	334	$28,564	$2,340,306	$4.08	44,523	$214
SCE	152	$5,680,628	134	$42,393	$1,220,981	$4.65	29,999	$189
SDG&E	24	$64,423	23	$78,682	$207,221	$8.73	3,632	$498
SCG	4	$1,809,675	4	$16,106	$21,797	$2.96	1,029	$63

Source: 2015 OBF tracking data; 2015 Claims database.

The majority of 2015 loan funding was associated with custom projects (58%) and with lighting projects (20%). The average loan amount was for custom and deemed projects, around $32,000. Notably, the average loan amounts for SDG&E's deemed projects and lighting projects were much higher than for the other PAs, at over $80,000.

Table 2-5 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, in proportion to incentive amount). As a result, average loan amounts presented in this table are smaller than total loan amounts issued by the PAs, in cases where a loan covers more than program type or technology.

Table 2-5. 2015 OBF Loans – by Program Type and Technology

PA	# Loans	Loan Amount	Average Loan	# Loans	Loan Amount	Average Loan
Program Type	**Deemed**			**Custom**		
Statewide	**223**	**$7,112,986**	**$31,897**	**308**	**$9,982,270**	**$32,410**
PGE	175	$5,211,012	$29,777	153	$4,329,517	$28,297
SCE	25	$270,590	$10,824	148	$5,410,038	$36,554
SDGE	20	$1,606,782	$80,339	6	$202,893	$33,815
SCG	3	$24,601	$8,200	1	$39,821	$39,821
Technology	**Lighting**			**Non-Lighting**		
Statewide	**379**	**$13,710,840**	**$36,176**	**120**	**$3,384,415**	**$28,203**
PGE	218	$7,141,010	$32,757	75	$2,399,520	$31,994
SCE	142	$5,000,078	$35,212	31	$680,550	$21,953
SDGE	19	$1,569,752	$82,619	10	$239,923	$23,992
SCG	0	$0	-	4	$64,423	$16,106

Source: 2015 OBF tracking data; 2015 Claims database.

Table 2-6 provides additional PA-level information on 2015 OBF loans, by program type and by technology.

Table 2-6. 2015 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								
Statewide	**223**	**$7,112,986**	**255**	**$27,894**	**$1,210,508**	**$5.88**	**27,156**	**$262**
PGE	175	$5,211,012	206	$25,296	$962,494	$5.41	23,444	$222
SCE	25	$270,590	24	$11,275	$63,276	$4.28	1,176	$230
SDGE	20	$1,606,782	22	$73,036	$172,692	$9.30	2,025	$793
SCG	3	$24,601	3	$8,200	$12,047	$2.04	512	$48
Custom								
Statewide	**308**	**$9,982,270**	**301**	**$33,164**	**$2,579,797**	**$3.87**	**52,027**	**$192**
PGE	153	$4,329,517	159	$27,230	$1,377,812	$3.14	21,079	$205
SCE	148	$5,410,038	134	$40,373	$1,157,705	$4.67	28,823	$188
SDGE	6	$202,893	7	$28,985	$34,530	$5.88	1,607	$126
SCG	1	$39,821	1	$39,821	$9,750	$4.08	517	$77
Lighting								
Statewide	**379**	**$13,710,840**	**420**	**$32,645**	**$2,852,307**	**$4.81**	**54,639**	**$251**
PGE	218	$7,141,010	278	$25,687	$1,738,238	$4.11	27,443	$260
SCE	142	$5,000,078	123	$40,651	$949,668	$5.27	25,385	$197
SDGE	19	$1,569,752	19	$82,619	$164,401	$9.55	1,810	$867
SCG	-	-	-	-	-	-	-	-
Non-Lighting								
Statewide	**120**	**$3,384,415**	**136**	**$24,885**	**$937,998**	**$3.61**	**24,544**	**$138**
PGE	75	$2,399,520	87	$27,581	$602,069	$3.99	17,079	$140
SCE	31	$680,550	35	$19,444	$271,312	$2.51	4,614	$148
SDGE	10	$239,923	10	$23,992	$42,821	$5.60	1,822	$132
SCG	4	$64,423	4	$16,106	$21,797	$2.96	1,029	$63

Source: 2015 OBF tracking data; 2015 Claims database.

2.3 Evaluation Objectives

The primary research objectives of the evaluation of the PY2015 programs were the same as for Phase II of the PY2013/14 OBF impact evaluation:

1. Develop an estimate of gross energy savings associated with projects that were completed and received an OBF loan during PY2015;
2. Develop an estimate of freeridership and net-to-gross ratios (NTGRs) for the PY2015/16 OBF programs;
3. Develop an estimate of incremental net savings of the PY2015 OBF programs, relative to net impacts 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.

In addition, one new research objective was added for this study:

1. Determine how many OBF participants (at the project and measure levels) are included in the gross impact verification efforts for the incentive programs, for PY2013-15.

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 the results of the OBF gap analysis.
- **Section 6** presents results of the gross impact analysis.
- **Section 7** presents results of the OBF net impact analysis.
- **Section 8** presents results of the OBF incremental net impact analysis.
- **Section 9** presents results of the analysis of the relative importance of the loan and the program incentive (i.e., the ratio analysis).
- **Section 10** summarizes survey responses about the sources of funding used or considered by OBF participants.
- **Section 11** provides conclusions and recommendations.
- **Appendix A** presents participant survey dispositions and response rates.
- **Appendix B** provides the final NTG survey instrument.

3. Data Sources

To develop the findings in this report, Opinion Dynamics relied on several secondary data sources and conducted a telephone survey with 2015/16 OBF program participants. Each data source is described below.

3.1 Secondary Data Sources

OBF Tracking Data

Through a series of data requests, we obtained program tracking data for the 2015 program cycle from the four PAs. 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. Notably, all four PA were able to provide Claim IDs associated with their 2015 and 2016 loans.

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 2013-2016 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).

3.2 OBF Participant Telephone Survey

We fielded a computer-assisted telephone interviewing (CATI) survey with OBF participants in October 2017. 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.

Appendix B provides the final NTG survey instrument.

Sampling Approach

We used a stratified random sampling approach, where the sampling unit was the project. Notably, the survey included 2015 and 2016 loans matched to 2015/16 claims. We expanded the survey sample frame (and associated analyses) to include PY2016 in order to increase the number of available sample points and thus strengthen the statistical rigor of the survey-based analyses.

We developed seven sampling domains, defined by PA and by technology (lighting and non-lighting).[5] 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 3-1 and Table 3-2 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 3-1. Sampling Strata for OBF Lighting Projects

Stratum	# Projects[A]	Stratum Boundaries (Ex Ante MMBtu)[B]		Average Ex Ante Savings (MMBtu)
		Lower	Upper	
PG&E				
PGE_L1	6	1,047	4,999	1,824
PGE_L2	11	557	919	741
PGE_L3	34	288	531	381
PGE_L4	98	131	271	189
PGE_L5	478	0	129	46
SCE				
SCE_L1	16	937	2,427	1,368
SCE_L2	34	551	912	720
SCE_L3	48	287	529	403
SCE_L4	61	137	285	199
SCE_L5	156	1	131	51
SDG&E				
SDGE_L1	1	1,821	1,821	1,821
SDGE_L2	1	618	618	618
SDGE_L3	2	299	390	345
SDGE_L4	7	138	259	200
SDGE_L5	51	6	125	41

[A] For the purpose of the survey, we expanded the sample frame to include loans from 2015 and 2016 as well as claims from 2015 and 2016. Project counts and energy savings are thus higher than in the gross impact analysis.
[B] For sampling purposes, MMBtu savings for lighting projects exclude negative therm savings due to interactive effects.
Source: 2015/16 OBF tracking data; 2015/16 Claims database.

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

Table 3-2. Sampling Strata for OBF Non-Lighting Projects

Stratum	# Projects[A]	Stratum Boundaries (Ex Ante MMBtu)		Average Ex Ante Savings
		Lower	Upper	(MMBtu)
PG&E				
PGE_NL1	3	1,852	2,738	2,265
PGE_NL2	10	1,488	1,845	1,638
PGE_NL3	19	614	1,297	827
PGE_NL4	39	289	601	442
PGE_NL5	179	0	282	81
SCE				
SCE_NL1	3	2,685	4,103	3,197
SCE_NL2	0	n/a	n/a	n/a
SCE_NL3	3	839	1,201	964
SCE_NL4	7	320	602	507
SCE_NL5	83	1	288	64
SDG&E				
SDGE_NL1	0	n/a	n/a	n/a
SDGE_NL2	0	n/a	n/a	n/a
SDGE_NL3	2	618	1,091	855
SDGE_NL4	3	332	389	356
SDGE_NL5	16	0	235	42
SCG				
SCG_NL1	1	1,879	1,879	1,879
SCG_NL2	0	n/a	n/a	n/a
SCG_NL3	1	877	877	877
SCG_NL4	2	356	472	414
SCG_NL5	7	83	255	176

[A] For the purpose of the survey, we expanded the sample frame to include projects that were associated loans from 2015 and 2016 as well as claims from 2015 and 2016. Project counts and energy savings are thus higher than in the gross impact analysis.
Source: 2015/16 OBF tracking data; 2015/16 Claims database.

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 (651) than the number of projects (1,382). 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, 2, and 3) 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 128 interviews that addressed 91 lighting projects and 37 non-lighting projects. The completed interviews represent 9% of all OBF projects in 2015 and 2016. By technology, the completed interviews represent 9% of lighting projects and 12% of lighting MMBtu savings, and 10% of non-lighting projects and 15% of non-lighting MMBtu savings. 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 about 20 minutes to complete. The overall response rate (2-level AAPOR RR3) for the survey was 26%. PA-specific response rates were 26% for PG&E, 25% for SCE, 24% for SDG&E, and 25% for SCG. By technology, response rates were 25% for customers called about lighting projects and 26% for customers called about non-lighting projects. Appendix A provides more detailed information on survey dispositions and response rate calculations for the participant survey.

Table 3-3. Completed Interviews for OBF Lighting Projects

Stratum	Population (N)		NTG Sample (n)			
	Projects[A]	MMBtu Savings[B]	Projects	% of Pop.	MMBtu Savings[B]	% of Pop.
Statewide	**1,004**	**164,908**	**91**	**9%**	**19,828**	**12%**
PG&E Total	627	72,572	67	11%	11,306	16%
PGE_L1	6	10,944	2	33%	2,242	20%
PGE_L2	11	8,153	2	18%	1,607	20%
PGE_L3	34	12,960	6	18%	2,385	18%
PGE_L4	98	18,527	13	13%	2,461	13%
PGE_L5	478	21,987	44	9%	2,611	12%
SCE Total	315	85,739	18	6%	8,273	10%
SCE_L1	16	21,887	2	13%	2,142	10%
SCE_L2	34	24,469	5	15%	3,791	15%
SCE_L3	48	19,324	4	8%	1,697	9%
SCE_L4	61	12,145	2	3%	384	3%
SCE_L5	156	7,914	5	3%	259	3%
SDG&E Total	62	6,598	6	10%	249	4%
SDGE_L1	1	1,821	-	0%	-	0%
SDGE_L2	1	618	-	0%	-	0%
SDGE_L3	2	689	-	0%	-	0%
SDGE_L4	7	1,402	-	0%	-	0%
SDGE_L5	51	2,067	6	12%	249	12%

[A] For the purpose of the survey, we expanded the sample frame to include loans from 2015 and 2016 as well as claims from 2015 and 2016. Project counts and energy savings are thus higher than in the gross impact analysis.

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

Source: 2015/16 OBF tracking data; 2015/16 Claims database; 2015/16 OBF participant survey.

Table 3-4. Completed Interviews for OBF Non-Lighting Projects

Stratum	Population (N)		NTG Sample (n)			
	Projects[A]	MMBtu Savings	Projects	% of Pop.	MMBtu Savings	% of Pop.
Statewide	**378**	**100,244**	**37**	**10%**	**14,713**	**15%**
PG&E Total	250	70,673	19	8%	7,668	11%
PGE_NL1	3	6,794	-	0%	-	0%
PGE_NL2	10	16,377	1	10%	1,488	9%
PGE_NL3	19	15,705	4	21%	4,087	26%
PGE_NL4	39	17,242	3	8%	1,237	7%
PGE_NL5	179	14,555	11	6%	856	6%
SCE Total	96	21,309	11	11%	4,979	23%
SCE_NL1	3	9,592	-	0%	-	0%
SCE_NL2	-	-	2	n/a	2,698	n/a
SCE_NL3	3	2,893	1	33%	781	27%
SCE_NL4	7	3,549	2	29%	1,139	32%
SCE_NL5	83	5,275	6	7%	361	7%
SDG&E Total	21	3,443	6	29%	187	5%
SDGE_NL1	-	-	-	n/a	-	n/a
SDGE_NL2	-	-	-	n/a	-	n/a
SDGE_NL3	2	1,709	-	0%	-	0%
SDGE_NL4	3	1,068	-	0%	-	0%
SDGE_NL5	16	666	6	38%	187	28%
SCG Total	11	4,819	1	9%	1,879	39%
SCG_NL1	1	1,879	1	100%	1,879	100%
SCG_NL2	-	-	-	n/a	-	n/a
SCG_NL3	1	877	-	0%	-	0%
SCG_NL4	2	827	-	0%	-	0%
SCG_NL5	7	1,235	-	0%	-	0%

[A] For the purpose of the survey, we expanded the sample frame to include loans from 2015 and 2016 as well as claims from 2015 and 2016. Project counts and energy savings are thus higher than in the gross impact analysis.
Source: 2015/16 OBF tracking data; 2015/16 Claims database; 2015/16 OBF participant survey.

4. Methodology

4.1 Gap Analysis

The objective of this analysis was to determine the extent to which OBF projects have been included in the gross impact verification efforts for the California non-residential rebate programs. Since the scope of this impact analysis does not include new gross impact verification work, but rather applies GRRs from the rebate program evaluations, this analysis was intended to determine whether OBF projects are sufficiently represented in those GRRs. 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 compared OBF tracking data to evaluation databases provided by Itron to identify rebate program projects selected for desk reviews and/or on-site verification for PY2013-15.

4.2 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 PAs 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.

We conducted the gross impact analysis in two steps. In the first step, we matched 2015 loans to the 2015 Claims database. It was necessary to exclude 2015 loans associated with claims from prior program years (i.e., 2014 and 2013) since savings from those claims are not associated with the program year under evaluation (i.e., 2015) and should therefore not be counted in that program year. However, it should be noted that this approach is vulnerable to the exclusion of larger projects, which often have a longer lag time between a claim being made and a loan being issued.

In the second step, we estimated ex post gross savings for OBF projects completed in 2015 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 2015 OBF loan that we could partially or fully match to the 2015 Claims database, we aggregated Claims-tracked measure-level ex post gross savings to the PA/technology level.
    - For loans associated with claims spanning multiple program years, we included 2015 claims in our analysis and assigned a proportional share of the loan value to those claims (based on incentive amounts). For example, if a claim accounted for 25% of total incentives received for a

project, we assigned 25% of the loan value to that claim, and included that partial loan value in our analysis.

- We developed PA/technology-level GRRs by dividing total ex post savings for each PA/technology group by its total ex ante savings.

4.3 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.

The 2013/14 OBF attribution research was prompted by CPUC decision language (A. 12-07-001) that directed the PAs to develop a methodology for estimating incremental savings from energy efficiency financing programs to count towards savings goals. With the delay in statewide financing pilots, the OBF program was identified as a good candidate to explore methods for estimating incremental savings beyond claims made by resource programs, and CPUC evaluation funds were assigned to explore this topic. Given the small sample sizes in the 2013/14 study, and the inherent uncertainty in some of the measurements, the CPUC funded the 2015 study to provide additional information on potential incremental impacts of OBF beyond the incentive programs.

NTG Analysis

The NTG analysis for the OBF programs only included consideration of freeridership; it did not include spillover or market effects.[6] 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 survey of 2015/16 participants, 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.[7] 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:

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

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

- **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 asking respondents to divide a total of 10 points between the OBF program and other factors.[8] 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).[9] 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.

[8] 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.

[9] 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.

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

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 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 27 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 each PA.

Net Savings Analysis

We developed OBF ex post net savings for PY2015 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, to the PA level, and to the state level.

It should be noted that this analysis calculates PY2015 ex post net savings by combining PY2015 ex post gross savings estimates with PY2015/16 evaluated NTGRs.[10] It is technically not correct to use NTGRs based on PY2015/16 to estimate PY2015 net savings, unless the year-specific NTGRs are not substantially different. However, due to small annual OBF participation numbers, there are insufficient participants and responses to estimate separate NTGRs for PY2015 and PY2016. As such, net impacts, and the incremental net impact results that incorporate net impacts, should be considered directional and should not be used for Energy Savings and Performance Incentive (ESPI) purposes.

We recommend conducting additional analysis to determine combined PY2015/16 OBF gross and net impacts, as well as incremental net impacts, once the PY2016 incentive program evaluations have been completed. Combined PY2015/16 results would allow for a better comparison with PY2013/14 results and help understand OBF performance in light of changes in program participation and program design between the two time periods.

4.4 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.

[10] While we were able to include 2016 participants in our participant survey and the associated analyses, we could not conduct the gross impact, net impact, incremental impact, and gap analyses for PY2016 because incentive program evaluation results, which are a key input to these analyses, were not available at the time this study was finalized.

Similar to the net savings analysis, the incremental net impact analysis is based on a comparison of NTGRs and net savings for two different time periods: the OBF-evaluated values are based on PY2015/16 participants while the incentive program values are based on PY2015 participants only. As such, the incremental net impact results should be considered directional and should not be used for ESPI purposes.

4.5 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.

4.6 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 8 respondents (6%) and dropped 1 respondent (0.8%) due to two or more missing scores.

5. OBF Gap Analysis Results

The gap analysis compared loans issued in 2013-2015 to the 2013-2015 statewide Claims database for non-residential incentive programs. The statewide Claims database included 4.6 million claims for that period. OBF-backed claims accounted for 0.6% of all claims (approximately 26,000 of 4.6 million) and 1.2% of gross energy savings (nearly 600,000 MMBtu out of 49 million MMBtu). Overall, we see that the number of claims and amount of energy savings associated with OBF projects comprise a very small fraction of the claims database.

To determine whether OBF claims are sufficiently represented in the incentive program gross impact verifications, we determined the number and gross impacts of OBF-funded claims that were included in gross impact assessments. We found that 72 OBF-associated claims received on-site reviews. These 72 claims represent 1.6% of all claims that received on-site reviews and 1.3% of evaluated gross savings. These figures indicate that while the absolute number of OBF claims included in incentive program gross impact evaluations is small, they are slightly over-represented relative to their share in the statewide claims database.

Given the small absolute representation of OBF-associated claims in incentive program impact evaluation studies, applying incentive program GRRs to OBF projects may not accurately reflect gross savings achieved by OBF projects *if there are systematic differences between GRRs of OBF and non-OBF projects*. However, as long as the utilities do not claim savings for OBF projects, other than through the incentive programs, we see no need to oversample OBF projects. But if OBF-specific savings are going to be claimed, we would recommend conducting an OBF-specific gross impact analysis to ascertain that there are no systematic differences in realization rates between OBF and non-OBF projects.

Table 5-1 summarizes the results of the gap analysis.

Table 5-1. OBF Claims Included in Gross Impact Verification Efforts

	Claims Database Deemed Flag	# Claims for On Site Review	Total Gross Savings Represented (MMBtu)
All Claims Included in Gross Impact Verifications	Custom	995	4,339,578
	Deemed	3,585	230,697
	Total	4,580	4,570,275
OBF Claims included in Gross Impact Verifications	Custom	44	53,744
	Deemed	28	6,245
	Total of OBF Included	72	59,989
Percent of OBF Claims included in Gross Impact Verifications	Percent of Custom	4.4%	1.2%
	Percent Deemed	0.8%	2.7%
	Percent of Verified Claims that were OBF	**1.6%**	**1.3%**

Source: 2013-2015 Claims database; 2013-2015 Itron impact evaluation database; 2013-2015 OBF tracking data.

6. Gross Impact Results

This section summarizes the results of our gross impact analysis. As described in Section 4.2, this analysis involved (1) aggregating measure-level ex post gross savings for matched OBF loans to the PA/technology level and (2) developing PA/technology-level GRRs by dividing total ex post savings for each PA/technology group by its total ex ante savings. This analysis included the 448 2015 loans (out of a total of 808) that could be matched to 2015 claims (see Table 2-3).

Table 6-1 summarizes gross impact results at the PA, technology, and end use levels, as well as for the statewide OBF program.

Table 6-1. 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	556	107,335	2,101	79,183	1,747	74%	83%
Lighting	420	70,663	1,235	54,639	1,047	77%	85%
Non-Lighting	136	36,672	867	24,544	700	67%	81%
PGE Total	365	55,760	1,274	44,523	1,096	80%	86%
Lighting	278	31,752	631	27,443	540	86%	86%
Non-Lighting	87	24,008	644	17,079	556	71%	86%
Refrigeration	47	13,200	435	11,142	413	84%	95%
Process	18	6,495	137	3,508	88	54%	64%
HVAC	11	3,547	69	1,958	54	55%	77%
Pool	2	641	2	346	1	54%	64%
Vending	8	119	-	119	-	100%	--
Appliances	1	6	<1	6	<1	100%	100%
SCE Total	158	45,068	688	29,999	515	67%	75%
Lighting	123	37,239	502	25,385	403	68%	80%
Non-Lighting	35	7,829	186	4,614	111	59%	60%
Refrigeration	21	3,133	50	1,947	42	62%	84%
Process	4	2,381	93	1,310	46	55%	50%
HVAC	6	2,092	43	1,231	23	59%	53%
Pool	1	211	-	116	-	55%	--
Vending	2	10	-	10	-	100%	--
Envelope	1	1	<1	<1	<1	42%	100%
SDGE Total	29	5,020	139	3,632	136	72%	98%
Lighting	19	1,672	102	1,810	103	108%	101%
Non-Lighting	10	3,348	37	1,822	33	54%	88%
HVAC	4	2,033	14	1,122	14	55%	100%
Process	2	1,225	18	625	14	51%	77%
Refrigeration	3	61	4	61	4	100%	100%
Pool	1	28	1	14	1	51%	77%

	# OBF Projects	Claims Ex Ante Savings		Claims Calculated Ex Post Savings		Claims Ex Post Realization Rate	
		MMBtu	kW	MMBtu	kW	MMBtu	kW
SCG Total	4	1,487	--	1,029	--	69%	--
Lighting	0	--	--	--	--	--	--
Non-Lighting	4	1,487	--	1,029	--	69%	--
Pool	4	1,487	--	1,029	--	69%	--

Source: 2015 OBF tracking data; 2015 Claims database.

7. 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.

7.1 Number of NTG Points

The OBF freeridership results are based on NTGRs for 154 projects for which survey respondents provided valid information.[12] Table 7-1 presents the number of valid NTG points included in the analysis, by PA, including the share of 2015/2016 OBF projects and OBF ex post MMBtu savings represented.

PG&E accounts for the largest number of OBF projects and the largest number of NTG points, followed by SCE and SDG&E. SCG had eleven OBF projects associated with 2015/2016 Claims. Despite enhanced outreach efforts, we were only able to complete one interview with SCG participants. However, the project covered by the interview accounted for 39% of the savings associated with SCG's eleven projects.

Overall, the NTG points included in the analysis represent 11% of all 2015/16 OBF projects and 15% of ex post MMBtu claims.

Table 7-1. 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
Statewide	**1,382**	**154**	**11%**	**15%**
PG&E	877	94	11%	14%
SCE	411	44	11%	16%
SDG&E	83	15	18%	5%
SCG	11	1	9%	39%

Source: 2015/16 OBF tracking data; 2015/16 OBF participant survey.

7.2 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

[12] A total of 119 unique OBF participants answered the freeridership questions for 128 OBF projects completed in 2015 and 2016 (9 participants completed the survey for two projects). We dropped one project from the NTG analysis due to incomplete information. In addition, we applied freeridership estimates to another 27 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. Of the 154 valid NTG responses, 127 NTGRs are based on all three PAIs and 27 NTGRs are based on two PAIs.

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 by each PA.[13] 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 2015/16 OBF projects is 0.64, based on 154 valid NTG points and with a relative precision of 5%. The NTGR for lighting projects (0.69) is significantly higher than that for non-lighting projects (0.56). The sampled projects represent 14% and 16% of MMBtu savings of all lighting and non-lighting projects, respectively. Table 7-2 summarizes these results.

Table 7-2. Weighted Statewide Net-to-Gross Ratios

	Overall	Lighting	Non-Lighting
Mean NTGR	**0.64**	**0.69**	**0.56**
90 Percent CI	0.61 to 0.67	0.65 to 0.73	0.51 to 0.6
Relative Precision	0.05	0.06	0.08
Valid NTG Points (n)	154	113	41
OBF Projects (N)	1,382	1,004	378
Percent of MMBtu Sampled	15%	14%	16%

Source: 2015/16 OBF participant survey.

Notably, these results are similar to the results of the 2013/14 OBF impact evaluation,[14] which estimated on overall NTGR of 0.67, a lighting NTGR of 0.70, and a non-lighting NTGR of 0.63. Differences between the 2013/14 and the 2015/16 net-to-gross ratios are not statistically significant.

PG&E NTG Results

The estimated program-level NTGR for PG&E is 0.65, based on 94 valid NTG points and with a relative precision of 5%. The NTGR for lighting (0.80) is significantly higher than that for non-lighting (0.49). The sampled projects represent 16% and 11% of MMBtu savings of all PG&E lighting and non-lighting projects, respectively. Table 7-3 summarizes these results.

[13] 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 some strata had low numbers of responses and correlation between NTG results and savings was weak.

[14] Opinion Dynamics. 2017. "PY 2013/14 On-Bill Finance Programs: Impact Evaluation." June 1, 2016. http://www.calmac.org/publications/PY2013-14_On-Bill_Finance_Impact_Evaluation.pdf.

Table 7-3. Weighted PG&E Net-to-Gross Ratios

	Overall	Lighting	Non-Lighting
Mean NTGR	**0.65**	**0.80**	**0.49**
90 Percent CI	0.61 to 0.68	0.76 to 0.83	0.44 to 0.55
Relative Precision	0.05	0.05	0.11
Valid NTG Points (n)	94	73	21
OBF Projects (N)	877	627	250
Percent of MMBtu Sampled	14%	16%	11%

Source: 2015/16 OBF participant survey.

The overall 2015/16 PG&E NTGR is lower compared to the 2013/14 estimate of 0.69, but the difference is not statistically significant at 90% confidence. The 2015/16 lighting and non-lighting estimates saw different trends compared to the 2013/14 study: While the lighting NTGR increased from 0.74 to 0.80 (not statistically significant), the non-lighting NTGR decreased from 0.65 to 0.49 (statically significant at 90% confidence).

SCE Results

The estimated program-level NTGR for SCE is 0.64, based on 44 valid NTG points and with a relative precision of 9%. The NTGR for lighting (0.61) is lower than that for non-lighting (0.77; statistically significant at 90% confidence). The sampled projects represent 13% and 27% of MMBtu savings of all SCE lighting and non-lighting projects, respectively. Table 7-4 summarizes these results.

Table 7-4. Weighted SCE Net-to-Gross Ratios

	Overall	Lighting	Non-Lighting
Mean NTGR	**0.64**	**0.61**	**0.77**
90 Percent CI	0.59 to 0.7	0.55 to 0.68	0.69 to 0.84
Relative Precision	0.09	0.11	0.10
Valid NTG Points (n)	44	31	13
OBF Projects (N)	411	315	96
Percent of MMBtu Sampled	16%	13%	27%

Source: 2015/16 OBF participant survey.

The overall 2015/16 SCE NTGR is slightly lower compared to the 2013/14 estimate of 0.67, although the difference is not statistically significant at 90% confidence. In contrast to PG&E, the lighting NTGR decreased from 0.65 to 0.61 while the non-lighting NTGR increased from 0.71 to 0.77 (differences not statistically significant at 90% confidence).

SDG&E Results

The estimated program-level NTGR for SDG&E is 0.68, based on 15 valid NTG points and with a relative precision of 7%. Because of the small sample sizes (nine completed interviews for lighting and six for non-lighting), we do not present technology-level NTGRs. Table 7-5 summarizes the program-level results.

Table 7-5. Weighted SDG&E Net-to-Gross Ratios

	Overall
Mean NTGR	**0.68**
90 Percent CI	0.63 to 0.73
Relative Precision	0.07
Valid NTG Points (n)	15
OBF Projects (N)	83
Percent of MMBtu Sampled	5%

Source: 2015/16 OBF participant survey.

The 2013/14 program-level NTGR was estimated to be 0.57, the lowest of the three PAs for whom we were able to develop NTG results. As noted in the 2013/14 report, that result was driven by a small number of non-lighting sampling points, which led us to recommend that SDG&E not use those results for program design decisions.

SCG Results

SCG had only eleven OBF projects associated with 2015/2016 Claims. Despite enhanced outreach efforts, we were only able to complete one interview with SCG participants. However, the project covered by the interview accounted for 39% of the savings associated with SCG's projects.

The estimated NTGR for this project fell into the medium-low NTGR range (i.e., between 0.25 and 0.5). The relatively low NTGR is supported by the participant's comment that they would have purchased the equipment anyway, but the OBF program made it more compelling to buy it sooner.

While this single response should not be considered representative of all SCG 2015/16 OBF projects, its size relative to the other ten projects does indicate that SCG's program-level NTGR is likely lower than that of the other three PAs.

7.3 Key Factors Influencing NTG Results

As described in Section 4.3, 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 7-6 ("Distribution of NTGRs") shows the unweighted distribution of NTGRs statewide and by PA. The table shows that few OBF participants (6%) have a low NTGR (defined as 0.25 or less) and about one-third of participants have a high NTGR (between 0.75 and 1.00). The largest share of participants, 41%, has a medium-high NTGR of between 0.50 and 0.75. PG&E and SCE closely follow this statewide trend, although SCE has twice the statewide average of low NTGR scores. A higher percentage of SDG&E participants have a medium-low NTGR, compared to PG&E and SCE (the difference is statistically significant at 90% confidence).

The second part of Table 7-6 ("Key NTGR Drivers") 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 to those with a medium-high or high NTGR. 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 influence are marked in green; results that are opposite of the expected direction of influence are marked in orange.

Table 7-6. 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=154)		**6%**	**19%**	**41%**	**34%**
PGE (n=94)		4%	17%	44%	35%
SCE (n=44)		11%	16%	36%	36%
SDGE (n=15)		0%	40%	40%	20%
SCG (n=1)		0%	100%	0%	0%
Key NTGR Drivers					
Decision Timing					
Decision to install was made after learning about the OBF program	+	37%		94%	
Program Provided Assistance/Information Was Important (Rating of 8-10)					
Information from PA audit *(asked of those with audit in last 3 years)*	+	68%		71%	
PA training	+	8%		21%	
PA marketing	+	41%		37%	
Assistance from program contractor *(asked of those with program contractor)*	+	70%		70%	
Other Non-Program Factors Were Important (Rating of 8-10)					
Corporate policy or guidelines	-	38%		30%	
Company's remodeling/equipment replacement practices	-	62%		37%	
Industry standard practice	-	67%		47%	
Recommendation from a non-program contractor *(asked of those with non-program contractor)*	-	64%		51%	
Improved product quality	-	82%		70%	

	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)
Age or condition of the old equipment	-	77%		46%	
Other Program Influences					
Program influenced project size	+	38%		37%	
Program influenced project timing	+	10%		71%	

Source: 2015/16 OBF participant survey.

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 (94% versus 37%). 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.
- Unexpectedly, there is little difference between participants in the two NTGR groups in terms of strong influence by information and assistance provided by the program. Only program training shows a statistically significant difference in the expected direction; other forms non-financial program assistance—including program marketing, a program-provided audit, or assistance from a program contractor—show little or no difference between the two groups.
- As expected, lower NTGR ratios are correlated with high importance attributed to many factors generally thought of as "non-program" factors, with statistically significant differences for the company's remodeling/equipment replacement practices, industry standard practice, and age/condition of the equipment.
- Finally, there are two additional aspects of customer decision making that are not directly captured in the NTGR algorithm but that might be correlated with 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 project timing (71% versus 10%). However, there was no difference in the influence of the program on project size.

7.4 NTG Sensitivity Analysis

The results reported Sections 7.2 and 7.3 are based on equal weighting of the three PAIs.[15] 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.

[15] 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 7-7 summarizes these weighting schemes and the resulting NTGRs. To put the NTGR results into context, the table also presents the weighted 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=127).

Table 7-7. Results of NTG Sensitivity Analysis

	Weighted Average PAI Score		
	PAI-1	PAI-2	PAI-3
	0.51	0.61	0.68

Weighting Scheme	PAI Weight			NTGR[A]
	PAI-1	PAI-2	PAI-3	
1[B]	33%	33%	33%	0.64
2	50%	25%	25%	0.58
3	25%	50%	25%	0.60
4	25%	25%	50%	0.62
5	--	50%	50%	0.65
6[C]	--	--	100%	0.62

[A] Based on NTG points with a valid estimate for all three PAIs (n=127).

[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: 2015/16 OBF participant survey.

The results of this sensitivity analysis indicate that NTGRs are relatively stable across the different weighting schemes, ranging from 0.58 to 0.65. The variation is driven by the differences between the average PAI scores, which range from 0.51 for PAI-1 to 0.68 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. The NTGR for 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 two percentage points lower than that of Scheme 1, as a small share of responses (6%) included in this analysis have that likelihood rating of 10.

7.5 OBF Net Impacts

We developed OBF ex post net savings for PY2015 by applying the PA/technology-specific PY2015/16 NTGRs (presented in Section 7.2) to OBF ex post gross savings (presented in Section 6) at the Claims level.[16] We then aggregated Claims-level savings to the PA/technology level. Finally, we aggregated PA/technology-level savings to the PA level and the state level.

Based on this analysis, we estimate OBF ex post net impacts of 51,780 MMBtu and 1,127 kW. Table 7-8 presents the results of this analysis.

Table 7-8. OBF Net Impacts

	# OBF Projects	Calculated Ex Post Gross Savings – 2015		OBF-Evaluated NTGR	OBF Evaluated Ex Post Net Savings – 2015[AB]	
		MMBtu	kW		MMBtu	kW
Statewide	552	78,154	1,747		51,780	1,127
Lighting	420	54,639	1,047		38,622	747
Non-Lighting	132	23,515	700		13,158	380
PGE	365	44,523	1,096		30,227	703
Lighting	278	27,443	540	0.80	21,850	430
Non-Lighting	87	17,079	556	0.49	8,378	273
SCE	158	29,999	515		19,099	333
Lighting	123	25,385	403	0.61	15,550	247
Non-Lighting	35	4,614	111	0.77	3,549	86
SDGE	29	3,632	136		2,453	92
Lighting	19	1,810	103	0.68	1,223	70
Non-Lighting	10	1,822	33		1,231	22

[A] Ex post net savings are not equal to the product of ex post gross savings and the NTGR due to rounding of the NTGR.
[B] The number of OBF projects and the ex post gross savings in this table are different from those presented in Table 6-1 because this table excludes SCG's projects that account for 1,029 MMBtu in ex post gross savings.
Source: 2015 Claims database; 2015 OBF tracking data; 2015/16 OBF participant survey.

It should be noted that this analysis calculates PY2015 ex post net savings by combining PY2015 ex post gross savings estimates with PY2015/16 evaluated NTGRs. It is technically not correct to use NTGRs based on PY2015/16 to estimate PY2015 net savings, unless the year-specific NTGRs are not substantially different. However, due to small annual OBF participation numbers, there are insufficient participants and responses to estimate separate NTGRs for PY2015 and PY2016. As such, net impacts, and the incremental net impact results that incorporate net impacts, should be considered directional and should not be used for ESPI purposes.

[16] Even though the NTG analysis included 2015 and 2016 OBF projects, the gross impact analysis only included 2015 OBF projects. As a result, the net impacts presented in this section only include 2015 OBF projects.

We recommend conducting additional analysis to determine combined PY2015/16 OBF gross and net impacts, as well as incremental net impacts, once the PY2016 incentive program evaluations have been completed. Combined PY2015/16 results would allow for a better comparison with PY2013/14 results and help understand OBF performance in light of changes in program participation and program design between the two time periods.

8. 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 estimates of OBF ex post gross energy savings (expressed in MMBtu) and demand savings (expressed in kW). These estimates represent 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 energy (i.e., MMBtu) NTGR for OBF projects is 0.53 (0.52 for lighting projects and 0.57 for non-lighting projects); the demand (i.e., kW) NTGR is 0.56 (0.54 for lighting projects and 0.59 for non-lighting projects). By PA, the energy NTGR ranges from 0.52 for PG&E to 0.55 for SCE and SDG&E; the demand NTGR ranges from 0.55 for PG&E to 0.62 for SDG&E. Table 8-1 presents the results of this analysis. Total incentive program ex post net savings for OBF projects are 41,811 MMBtu and 980 kW.

Table 8-1. Incentive Program Net Impacts and NTGRs (for OBF Projects)

	Incentive Program Ex Post Gross Savings		Calculated Incentive Program Ex Post Net Savings		Incentive Program NTGR	
	MMBtu	kW	MMBtu	kW	MMBtu	kW
	(1a)	*(1b)*	*(2a)*	*(2b)*	*(2a / 1a)*	*(2b / 1b)*
Statewide	78,154	1,747	41,811	980	0.53	0.56
Lighting	54,639	1,047	28,313	569	0.52	0.54
Non-Lighting	23,515	700	13,499	411	0.57	0.59
PG&E	44,523	1,096	23,257	605	0.52	0.55
Lighting	27,443	540	13,355	277	0.49	0.51
Non-Lighting	17,079	556	9,901	328	0.58	0.59
SCE	29,999	515	16,565	291	0.55	0.57
Lighting	25,385	403	13,907	227	0.55	0.56
Non-Lighting	4,614	111	2,658	65	0.58	0.58
SDG&E	3,632	136	1,990	84	0.55	0.62
Lighting	1,810	103	1,051	65	0.58	0.64
Non-Lighting	1,822	33	939	18	0.52	0.56

[A] The ex post gross savings in this table are different from those presented in Table 6-1 because this table excludes SCG's projects, which account for 1,029 MMBtu in ex post gross savings.

Source: 2015 Claims database.

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 9,968 MMBtu and 148 kW. The statewide incremental NTGR is 0.11 for energy savings and 0.08 for demand savings. By PA, the incremental MMBtu NTGR ranges from 0.09 for SCE to 0.13 for SDG&E; the incremental kW NTGR ranges from 0.06 for SDG&E to 0.09 for PG&E.

There are notable differences in incremental impacts by technology that are driven by the differences in the OBF-evaluated NTGRs for PG&E's and SCE's lighting and non-lighting projects (see also Section 7.2): The OBF-evaluated NTGR for PG&E non-lighting projects was significantly lower (0.49) than the NTGRs for other PA/technologies, resulting in a negative incremental impact in PY2015. Because PG&E accounts for 70% of all non-lighting ex post gross savings, this result also drives negative incremental savings for non-lighting projects at the statewide level. Conversely, OBF-evaluated NTGR for PG&E lighting projects (0.80) is significantly higher than that for SCE, resulting in a statewide incremental NTGR of 0.17 for lighting projects.

Table 8-2 summarizes the OBF incremental net impact results.

Table 8-2. OBF Incremental Net Impacts (PY2015)

	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	51,780	1,127	0.64	41,811	980	0.53	0.56	9,968	148	0.11	0.08
Lighting	38,622	747	0.69	28,313	569	0.52	0.54	10,309	178	0.17	0.15
Non-Lighting	13,158	380	0.56	13,499	411	0.57	0.59	(341)	(30)	(0.02)	(0.03)
PGE	30,227	703	0.65	23,257	605	0.52	0.55	6,971	98	0.12	0.09
Lighting	21,850	430	0.80	13,355	277	0.49	0.51	8,494	153	0.31	0.28
Non-Lighting	8,378	273	0.49	9,901	328	0.58	0.59	(1,523)	(55)	(0.09)	(0.10)
SCE	19,099	333	0.64	16,565	291	0.55	0.57	2,534	42	0.09	0.08
Lighting	15,550	247	0.61	13,907	227	0.55	0.56	1,643	21	0.06	0.05
Non-Lighting	3,549	86	0.77	2,658	65	0.58	0.58	891	21	0.19	0.19
SDGE	2,453	92	0.68	1,990	84	0.55	0.62	463	8	0.13	0.06

Note: SDG&E incremental savings are not presented at the technology level because the OBF-evaluated NTGR was calculated at the PA level only.

Source: 2015 Claims database; 2015 OBF tracking data; 2015/16 OBF participant survey.

Similar to the net savings analysis, the incremental net impact analysis is based on a comparison of NTGRs and net savings for two different time periods: the OBF-evaluated values are based on PY2015/16 participants while the incentive program values are based on PY2015 participants only. As such, the incremental net impact results should be considered directional and should not be used for ESPI purposes.

9. 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 indicated a higher relative importance of the OBF loan, whereas those falling below this line indicated 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 for which sufficient data are available also show 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).[17]

9.1 Statewide LIR Results

Overall, participants provided higher importance ratings for the OBF loan than for the incentive, resulting in statewide average scores of 6.2 for the loan and 5.6 for the incentive (difference is statistically significant at 90% confidence), and a statewide LIR of 1.09. The top left quadrant of Figure 9-1 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. These results are almost identical to results from the 2013/14 OBF study, which estimated a statewide average loan score of 6.2, a statewide average incentive score of 5.6, and a statewide LIR of 1.10.

The other three quadrants in Figure 9-1 show scatter plots of 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 8.9 for the incentive with an LIR of 1.00, indicating equal importance of the loan and the incentive for this measurement.

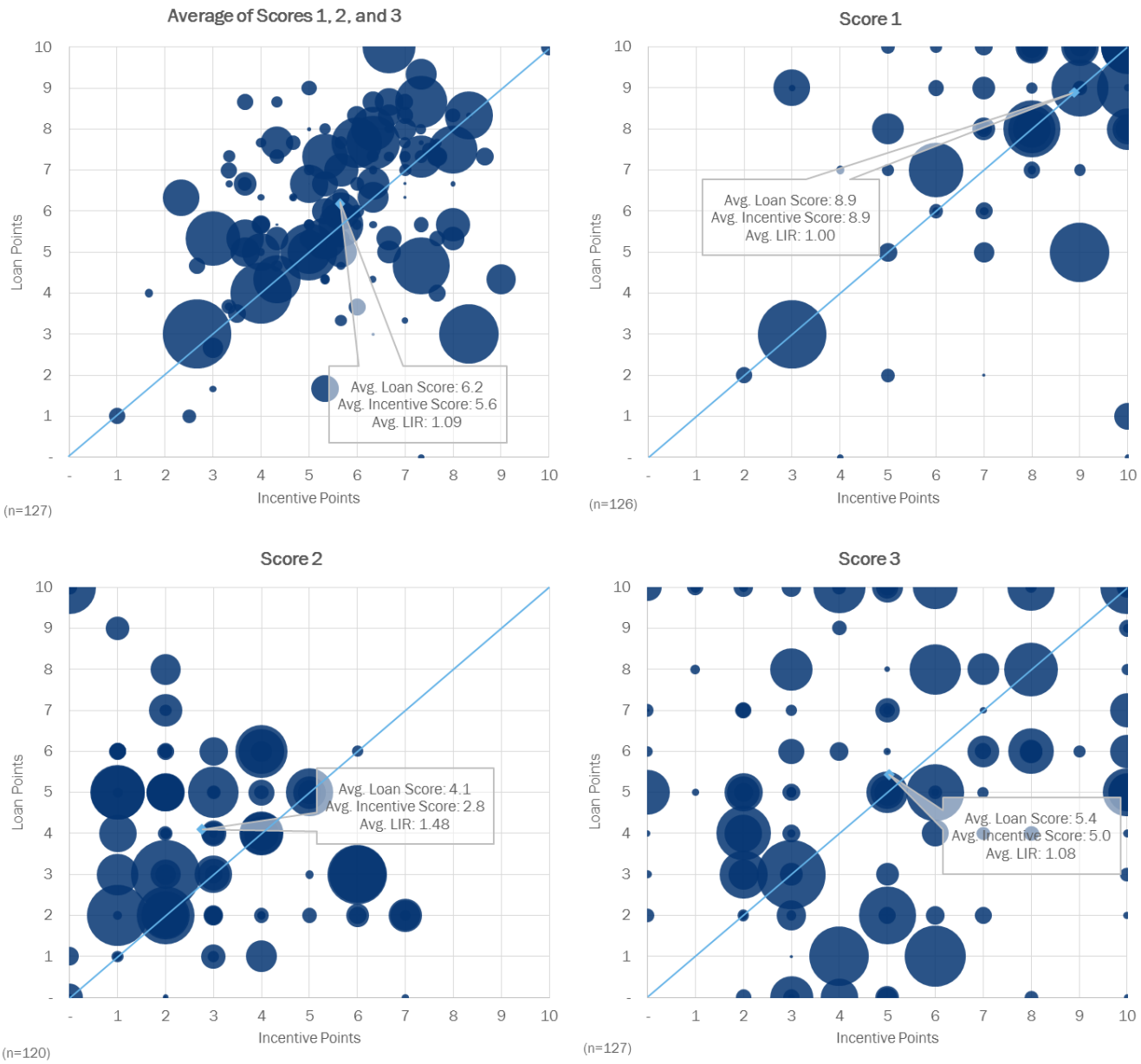
[17] All averages presented in this section are weighted. The weights reflect both the savings of the respondent's project as well as the relative contribution of the respondent's sampling domain to overall OBF savings.

- 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 (4.1) and incentive (2.8) are 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 1.48, 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.[18] Responses for Score 3 are more dispersed compared to Scores 1 and 2, with an average loan score of 5.4, an average incentive score of 5.0, and an LIR of 1.08.

Figure 9-1 summarizes the results of the statewide LIR analysis, by score and combined.

[18] 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 9-1. Statewide Loan-to-Incentive Ratio, Average and by Score



Source: 2015/16 OBF participant survey.

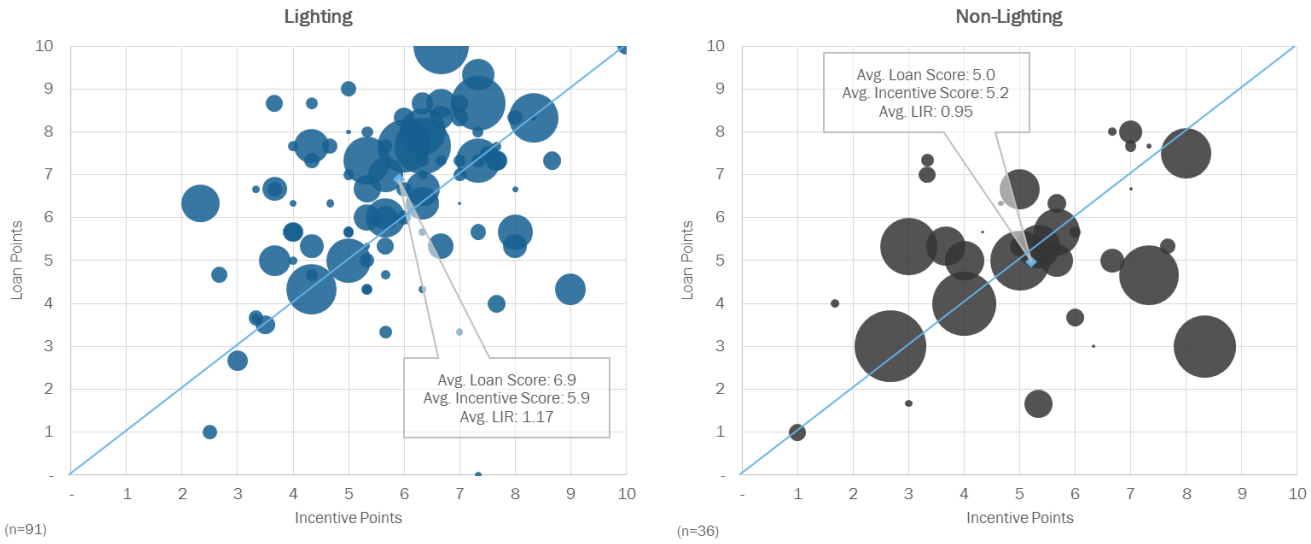
9.2 LIR Results by Technology

The relative importance of the OBF loan and the incentive differ by technology type. Respondents who undertook lighting projects attributed a significantly higher importance to the loan (average loan score of 6.9, average incentive score of 5.9, and average LIR of 1.17) compared to respondents who undertook non-lighting

projects (average loan score of 5.0, average incentive score of 5.2, average LIR of 0.95). By comparison, the 2013/14 LIR analysis found almost equal LIRs for lighting projects (1.09) and non-lighting projects (1.11).

Figure 9-2 summarizes the results by technology.

Figure 9-2. Loan-to-Incentive Ratio, by Technology



Source: 2015/16 OBF participant survey.

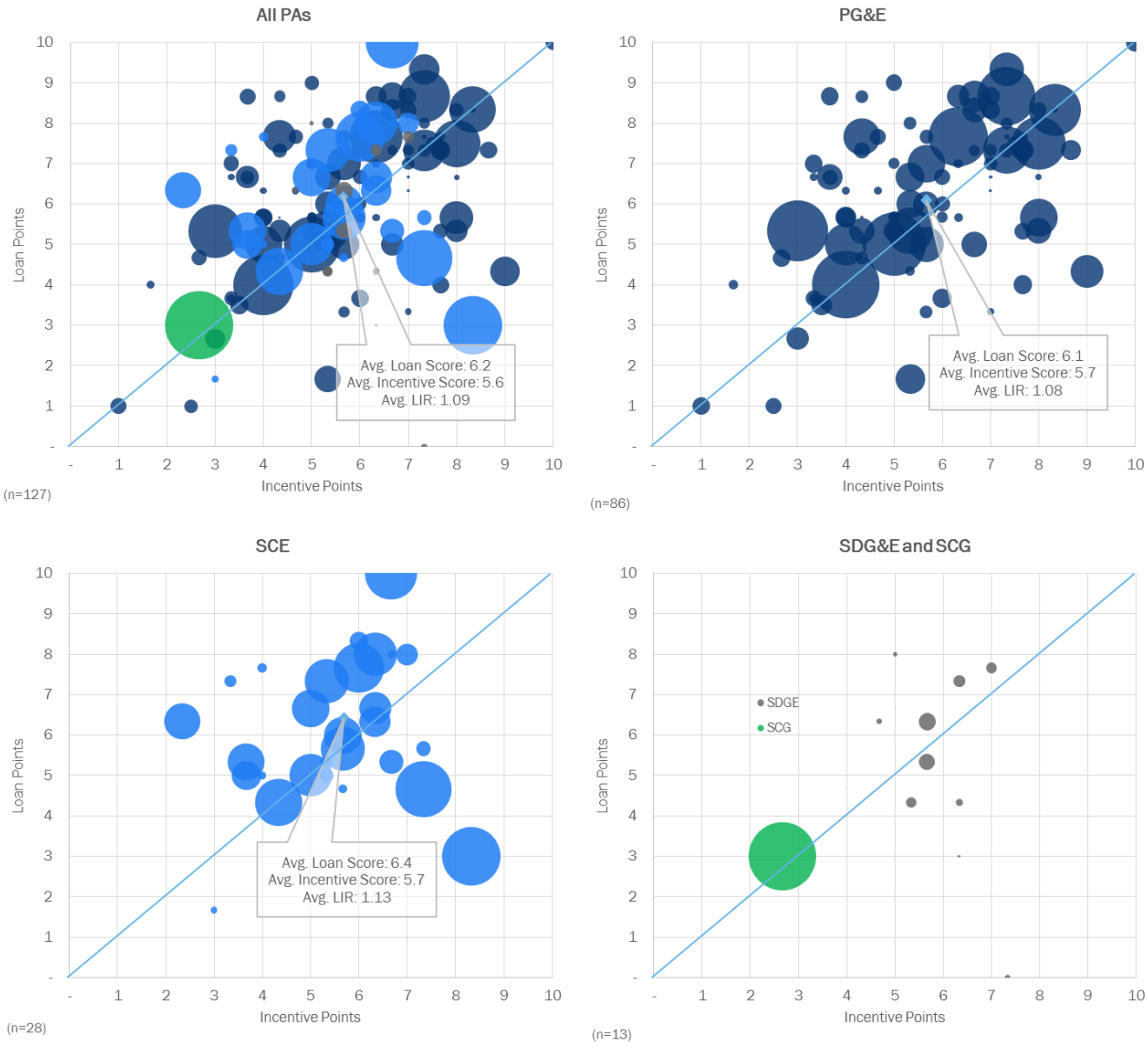
9.3 LIR Results by Program Administrator

We also calculated the average loan and incentive scores and resulting LIRs for each PA. Results for PG&E and SCE participants closely mirror statewide results. While we included SDG&E and SCG respondents in all statewide calculations, we do not report PA-specific average scores for these PAs due to small sample sizes (n=12 and n=1, respectively).

PG&E's 2015/16 LIR of 1.08 was significantly lower compared to the 2013/14 LIR of 1.22. In contrast, SCE's LIR was slightly higher in 2015/16 (1.13 compared to 1.03 in 2013/14), although the difference is not statistically significant at 90% confidence.

Figure 9-3 summarizes results by PA.

Figure 9-3. Loan-to-Incentive Ratio, by PA



Source: 2015/16 OBF participant survey.

9.4 Loan-Incentive Comparison

In addition, we asked participants to self-categorize themselves into one of five mutually exclusive groups related to the importance of the OBF loan versus the incentive. Specifically, we asked participants which type of financial support, if any, was required in order for their business to move forward with their project in the month it was completed. We asked respondents to select from the following options:

1) both the loan and rebate

2) only the loan but not the rebate

3) only the rebate but not the loan

4) either the loan or the rebate, but not both

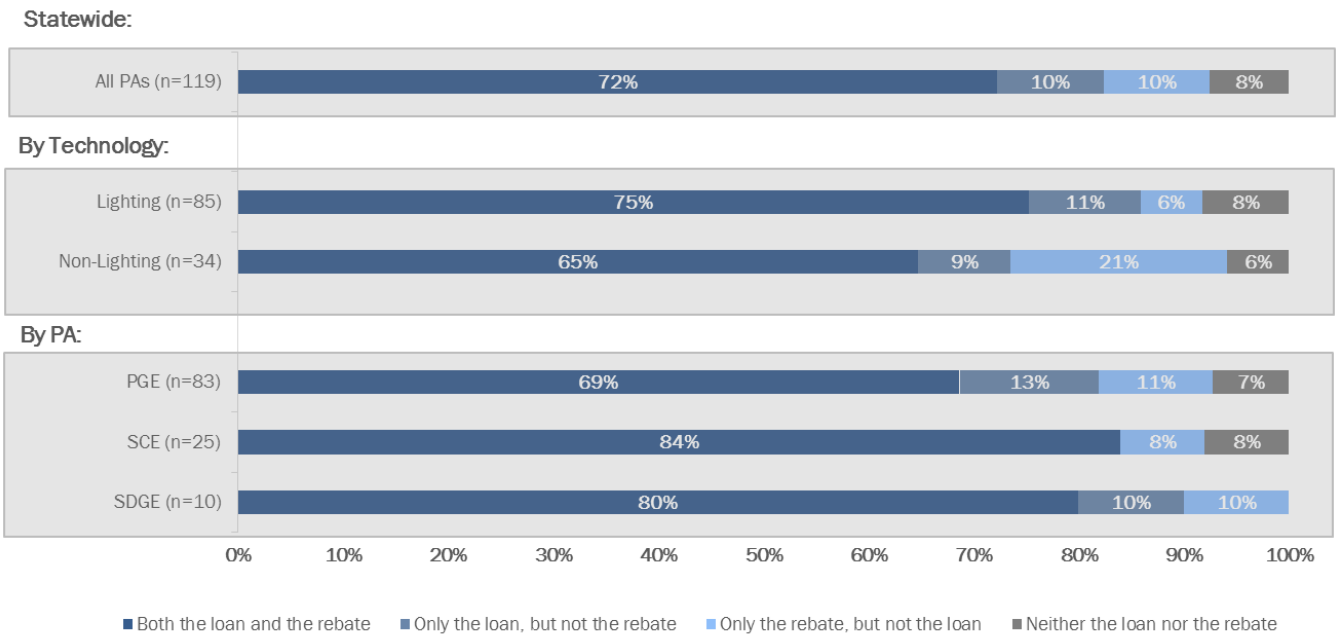
5) neither the loan nor the rebate.

Most respondents (73%) indicated that they needed "both the loan and the rebate" to move forward with their project. Only 8% said that they needed "neither the loan nor the rebate." In addition, an equal share of respondents noted that they needed "only the loan but not the rebate" or "only the rebate but not the loan" (10% each). Notably, no respondent selected the fourth option—"either the loan or the rebate, but not both"—suggesting that the type of financial support matters to participants.

By technology, participants with non-lighting projects were significantly more likely to report that they needed the rebate but not the loan (21%) compared to participants with lighting projects (6%). This is consistent with the lower non-lighting LIR (0.95) compared to the lighting LIR (1.17) and the higher incremental impacts for lighting projects (see Section 8). The distribution of responses differs slightly by PA, but the differences are not statistically significant at 90% confidence.

Figure 9-4 below provides the distribution of responses (unweighted), statewide, by technology, and by PA.

Figure 9-4. Loan-Rebate Comparison



Source: 2015/16 OBF participant survey.

10. Funding Source Results

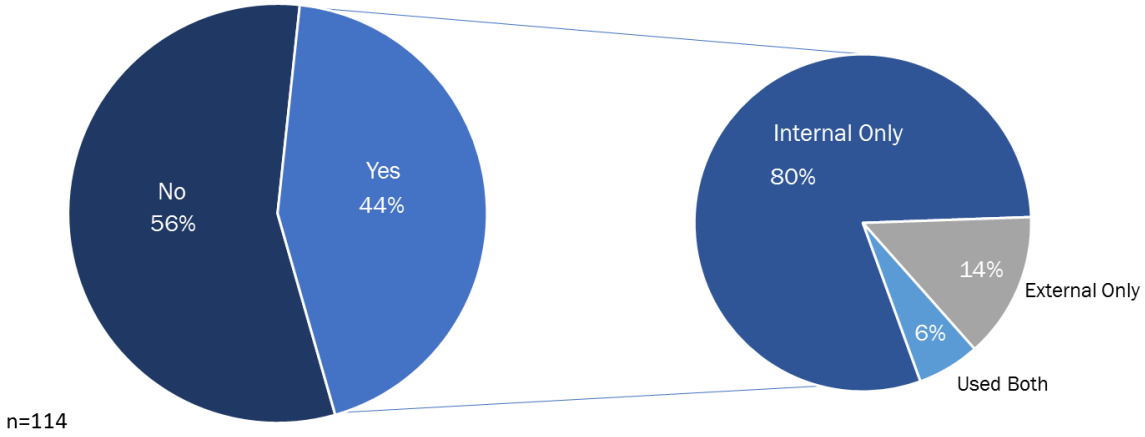
This section summarizes additional information about sources of funding, other than the OBF loan and the program incentive, used or initially considered by program participants in the implementation of their OBF projects. This analysis is based on responses to the participant survey.

For most OBF participants (56%), the program incentive and the OBF loan covered the full cost of the new equipment. Of those who used other sources of funding in addition to the loan and incentive, the majority (80%) relied on internal funding sources. Only 14% used other external sources of funding to pay for their project, and 6% used a combination of internal and external sources (see Figure 10-1). The few OBF participants who used other sources of external funding (n=10), relied on a line of credit, contractor financing, equipment financing or leasing, a company credit card, 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. Notably, for 16% of those who used an additional funding source, the additional funding served to bridge the time lag between when the participant had to pay for the project and when the loan was issued, i.e., the incentive and loan eventually covered 100% of the project

Few participants (9%) who did not use any additional external funding initially considered other sources (n=64).

Figure 10-1. Other Sources of Funding Used



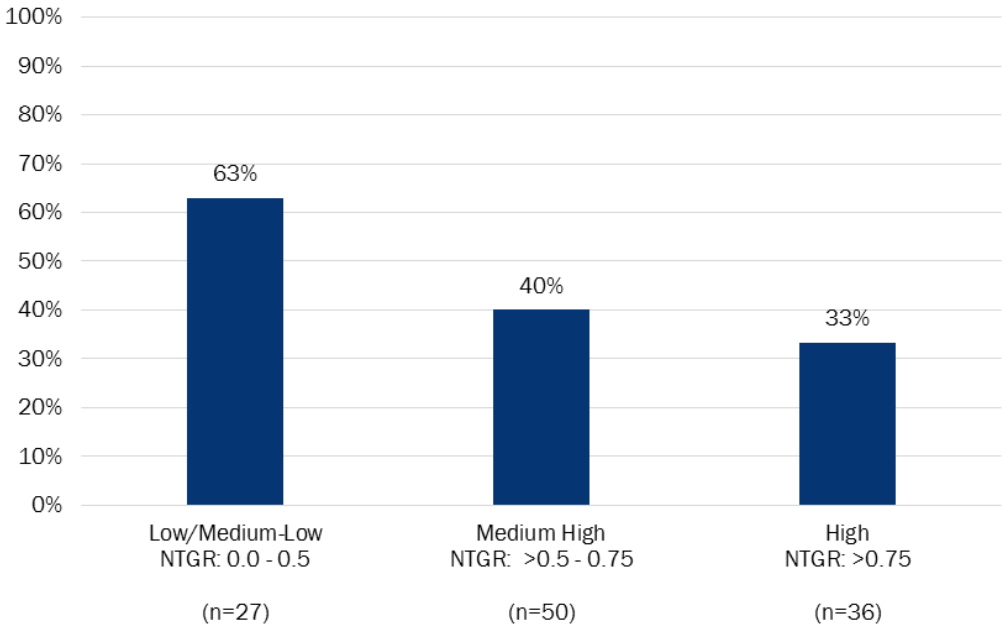
Did you use any internal or other external funding to pay for the upfront cost of this project?

Source: 2015/16 OBF participant survey.

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

Figure 10-2 shows the share of participants who used another source of funding, by level of NTGR.

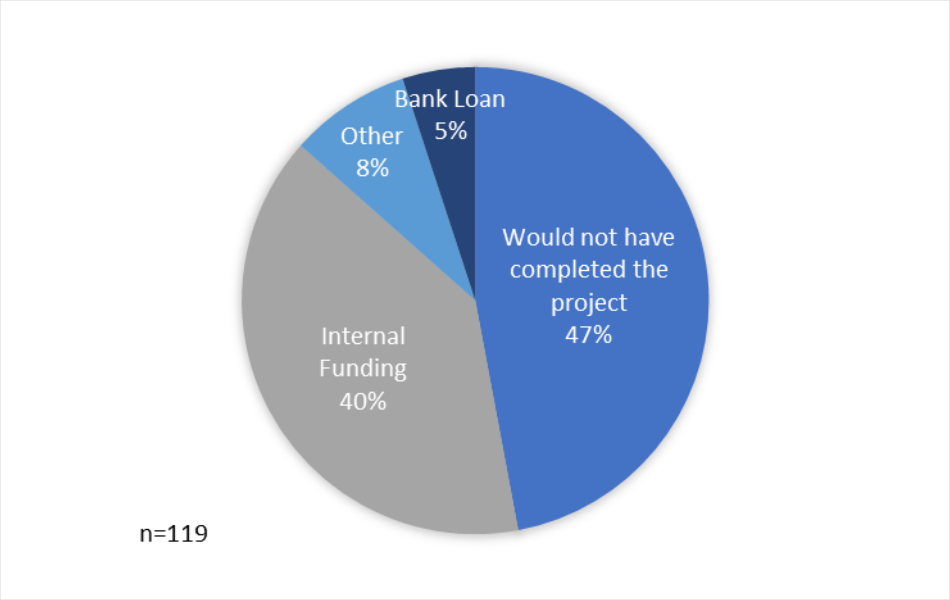
Figure 10-2. Share of Participants Who Used Other Funding by NTGR



Source: 2015/16 OBF participant survey.

When asked how they would have paid for the project if the OBF loan had not been available, about half of participants (47%) reported that they would not have completed the project at all. Another 40% would have used internal funding – either cash on hand or other internal funding. A small percentage (5%) would have sought a bank loan (Figure 10-3).

Figure 10-3. Funding Source in the Absence of the On-Bill Financing Loan



Source: 2015/16 OBF participant survey.

Overall, the results from the funding source analysis show consistency with the self-reported NTG survey questions, both of which point to the fact that OBF loans were important for participants who did not or could not use other sources of funding to cover the cost of their projects.

11. 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.

OBF Project Inclusion in Impact Verifications (Gap Analysis)

- Our findings indicate that OBF claims are represented in proportion (or in slightly greater proportion) to their representation in statewide claims. OBF-backed claims represented 1.3% of energy savings considered in the 2013-15 incentive program verification studies, which matches the proportion of OBF-backed energy savings across all non-residential rebate programs (1.2%). However, their absolute representation in impact verification studies is low. If there are systematic differences between GRRs of OBF and non-OBF projects, then applying incentive program GRRs to OBF projects may not accurately reflect gross savings achieved by OBF projects. As long as the utilities do not claim savings for OBF projects, other than through the incentive programs, we see no need to oversample OBF projects in the incentive program gross impact evaluations. However, if OBF-specific savings are going to be claimed, we would recommend conducting an OBF-specific gross impact analysis to ascertain that there are no systematic differences in realization rates between OBF and non-OBF projects.

Gross Impacts

- Similar to the PY2013/14 OBF impact evaluation, we found that Claims-tracked incentive projects and OBF loan disbursements often do not occur in the same program year because loans are sometimes issued after project savings are claimed by the incentive programs. This lag time is due to program features such as post-installation reviews. In some cases, loans are issued many months after claims are made through incentive programs—this is especially true for large projects that can take months to complete and review. As a result, a mismatch between OBF tracking databases and the claims database is sometimes unavoidable. We continue to recommend that the PAs should account for this lag time when determining how savings from OBF projects might be claimed in the future and ensure that OBF loans are issued in a manner as timely as possible given program requirements. In addition, we recommend that in future impact evaluations, the evaluator, PAs, and the CPUC establish clear guidelines for analyzing multi-year OBF projects, which will be critical for ensuring that large projects are included in evaluations.
- 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 continue to 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

- 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.
- Based on our analysis, there are incremental net savings associated with OBF loans that exceed those currently being claimed by the PA incentive programs. The only exception to this finding was for PG&E non-lighting projects, which showed negative incremental impacts in PY2015. Because PG&E accounts for 70% of all non-lighting ex post gross savings, this result also drives negative incremental savings for non-lighting projects at the statewide level.
- It should be noted that the incremental net impact analysis is based on a comparison of NTGRs and net savings for two different time periods: the OBF-evaluated values are based on PY2015/16 participants while the incentive program values are based on PY2015 participants only. While this is technically not correct, this approach was necessary due to data limitations. As such, the incremental net impact results should be considered directional and should not be used for Energy Savings and Performance Incentive (ESPI) purposes.

Relative Importance of the Incentive and the OBF Loan

- Our research with 2015/16 OBF participants shows that the OBF loan and the incentive are both important in customers' decisions to implement high-efficiency projects: 72% of participants reported that they needed both the loan and the incentive to move forward with the projects. Based on statewide survey responses, customers consider the loan to be slightly more important than the incentive. In addition, and nearly half of participants reported that they would not have been able to fund the project without the OBF loan.
- While our research was not designed to provide recommendations to the PAs with respect to future program designs, we continue to encourage the PAs to move forward with efforts to pilot (and evaluate) alternative loan-incentive structures, as already directed by the Commission. [19]

It should be noted that the conclusions and recommendations from this study may not be applicable to gas-only OBF projects. Overall, only 18 of over 10,000 claims associated with 2015-16 OBF loans were gas-only claims. As a result, developing results for gas-only OBF projects was not possible

[19] We note that in July 2016, PG&E received approval to implement an OBF program that does not provide incentives.

Table 11-1. Standardized Recommendation Matrix

Study ID	Study Type	Study Title	Study Manager
ED_0_FIN10	Impact Evaluation	PY 2015 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	OBF claims are represented in proportion (or in slightly greater proportion) to their representation in statewide claims. However, their absolute representation in impact verification studies is low.		We recommend conducting an OBF-specific gross impact analysis—to ascertain that there are no systematic differences in GRRs between OBF and non-OBF projects—only if the PAs are going to claim OBF-specific savings.	PG&E SCE SDG&E SCG	None
2	OBF	Claims-tracked incentive projects and OBF loans do not always occur in the same program year, due to OBF program features. This evaluation, as well as the PY2013/14 OBF evaluation, only included loans that occurred in the same evaluation period as the associated claims.		The PAs should account for the difference in program years when determining how savings from OBF projects might be claimed in the future.	PG&E SCE SDG&E SCG	None
				In future impact evaluations, the evaluator, PAs, and the CPUC should establish clear guidelines for analyzing multi-year OBF projects.	CPUC PG&E SCE SDG&E SCG	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	Our research shows that the OBF loan and the incentive are both important in customers' decisions to implement high-efficiency projects. However, our research was not designed to provide recommendations to the PAs with respect to future program designs.		The PAs should move forward with efforts to pilot (and evaluate) alternative loan-incentive structures, as already directed by the Commission.	PG&E SCE SDG&E SCG	None

Study ID	Study Type	Study Title	Study Manager
ED_0_FIN10	Impact Evaluation	PY 2015 On-Bill Finance Programs: Impact Evaluation	CPUC

#	Program	Summary of Findings	Additional Supporting Information	Best Practice / Recommendations	Recommendation Recipient	Affected Workpaper or DEER
5	OBF	The net impact and incremental net impact analyses combine PY2015/16 OBF-evaluated results with PY2015 incentive program results. This is technically incorrect but was necessary since (1) the incentive program evaluations for PY2016 have not been completed and (2) sample sizes for the OBF NTGR analysis are not sufficient to report separate results for PY2015 and PY2016.		Conduct additional analysis to determine combined PY2015/16 OBF gross and net impacts, as well as incremental net impacts, once the PY2016 incentive program evaluations have been completed.	CPUC	None

Appendix A. 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 - phone	119	83	25	10	1	85	34
N	Callback to complete	5	4	1	0	0	3	2
N	Mid-interview terminate	3	2	1	0	0	3	0
U1	Callback to complete – pre-screeners	53	36	13	4	0	34	19
U1	Mid-interview terminate – pre-screeners	4	3	0	1	0	4	0
U1	Answering machine	67	54	9	3	1	48	19
U1	Not available	145	96	32	16	1	105	40
U1	Respondent scheduled appointment	14	9	5	0	0	6	8
U1	Non-specific callback/secretary/NTG	18	14	3	1	0	13	5
U1	Cell Phone callback	3	2	1	0	0	3	0
U1	Initial refusal	63	42	16	5	0	47	16
U1	Hard refusal	4	3	1	0	0	3	1
U1	Cell Phone refusal	1	1	0	0	0	0	1
U1	Gatekeeper Refusal	17	10	4	3	0	13	4
U1	Gatekeeper Callback	4	3	1	0	0	3	1
U1	Added to DNC list	1	1	0	0	0	1	0
U1	Language problems terminate	0	0	0	0	0	1	1
U2	No answer	1	1	0	0	0	0	1
U2	Busy	2	0	2	0	0	2	0
X1	Quota filled	1	0	0	1	0	0	0
X1	Not involved in decision	16	10	5	1	0	9	7
X1	Not an employee	5	5	0	0	0	3	2
X2	Disconnected phone	61	45	13	3	0	46	15
X2	Business/Residential phone	2	1	1	0	0	2	0
X2	Computer tone	14	11	2	0	1	9	5
X2	Customer indicated called already	4	1	3	0	0	4	0
X2	Customer said wrong number	62	49	12	0	1	42	20
	Total contacts in sample	**690**	**486**	**150**	**48**	**6**	**489**	**201**
	Response rate (RR3)	**26%**	**26%**	**25%**	**24%**	**25%**	**25%**	**26%**

Appendix B. Final Survey Instrument

California Public Utility Commission
On-Bill Finance Participant Survey
October, 2017– FINAL

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. If you qualify for and complete our survey, you will receive a $75 Amazon gift card for speaking with me today – or we can make a $75 donation on your behalf to the American Red Cross California Wildfire Relief Fund.

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 or property manager 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 or property manager (THIS CATEGORY INCLUDES THE OWNER/PRESIDENT/PARTNER ETC. OF THE COMPANY.)
2 Third party (contractor, service provider, etc.)
00 (Other, specify) (DO NOT put owner/president/partner here, instead choose option 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]

Thank you, you qualify for this study and will receive a $75 gift card or donation for completing this call with me. 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:]

[READ IF LOOP2=0: We understand that your project at <ADDRESS/C_ADD> may have included a range of upgrades. For the next set of questions, please think about the following <ENDUSEa> measures only:]

<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)

1. *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)

2. *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]**

3. *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)

4. 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]**

5. 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_CHK2. 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) [calculates N41_Fin]

N41L_CHK2. 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) [calculates N41L_Fin]

N41O_CHK2. 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) [calculates N41O_Fin]

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

N3b_CHK2. 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>) [calculates N3b_Fin]

N3t_CHK2. 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>) [calculates N3t_Fin]

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

N5_CHK2. 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>) [calculates N5_Fin]

N5L1_CHK2. 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>) [N5L1_Fin]

GRP1. I have one final question about the project we have been discussing. Please complete the following statement, selecting one of the five options provided:

In order to move ahead with the <ENDUSEa> project in <MONTH-YEAR>, would you say <BUSINESS> needed… (INTERVIEWER NOTE: READ ALL OPTIONS BEFORE RECORDING A RESPONSE)

6. Both the loan and the rebate
7. Only the loan, but not the rebate
8. Only the rebate, but not the loan
9. Either the loan or the rebate, but not both
10. Neither the loan nor the rebate?
8. (Don't know)
9. (Refused)

FREERIDERSHIP – SIMILAR PROJECTS OF SAME ENDUSE

[ASK IF NSAME>0 AND QVER1<>4]
SAME Our records list you as the contact for <NSAME> other <V_ENDUSE> projects for which <BUSINESS> received a rebate and a loan between 2015 and 2016. 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]**

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: 1700-2017; 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]

SURVEY INCENTIVES

Incent1. Thank you for completing this survey today. Would you like to receive a $75 electronic Amazon gift card, or would you like us to make a $75 donation to the Red Cross to support those affected by the wildfires in California?
1 Gift card
2 Donation
6 Neither

[ASK IF email_flag=1 AND Incent1=1]
Incent2a. We have [EMAIL] on file as your email address. Is this the address you would like us to use to send your electronic gift card?
1 Yes
2 No

[ASK IF email_flag=0 OR Incent2a=2]
Incent2b. Could I record your email in order to send you your electronic gift card? [OPEN END; 9999=Refused]

[ASK IF Incent2b=9999]
Incent3a. Would you rather we mail the gift card to an address?
1 Yes
2 No [Code INCENT1=6]

[ASK IF Incen3a=1]
Incent3b. What is your mailing address? [OPEN END]

[READ IF INCENT1=1] *Thank you again. Please allow 3-4 weeks for the processing of your gift card.*
[READ IF INCENT1=2] *Thank you again. A donation will be made on your behalf.*
[READ IF INCENT1=6] *Thank you again for taking the time to complete this survey.*

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