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National Grid Rhode Island

2013 Commercial and Industrial Programs Free-ridership and Spillover Study

Final Report

September 30, 2014

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1. EXECUTIVE SUMMARY

This executive summary summarizes the findings of the Free-ridership and Spillover Study conducted for National Grid Rhode Island for their 2013 Commercial and Industrial (C&I) gas and electric programs. The purpose of this study was to assess program free-ridership and spillover for the programs. These programs include Custom and Prescriptive programs for both new construction and retrofit projects (gas) and projects completed through the Design 2000plus (electric), Energy Initiative (electric), and Small Business programs (electric and gas), and the upstream lighting program, Bright Opportunities, in 2013.

1.1 STUDY OBJECTIVE

The primary objective of the 2013 program year Free-ridership and Spillover Study was to assist National Grid in quantifying the net impacts of their commercial and industrial electric and natural gas energy efficiency programs in Rhode Island by estimating the extent of:

- Program free-ridership
- Early participant “like” and “unlike” spillover
- Nonparticipant “like” spillover.

Secondary objectives of the study were to (1) assess the awareness and the influence of 2012-2013 marketing campaign on customers’ decision to install the energy efficient equipment, and to (2) understand the use of on-bill financing and the impact of this financing on the decision to implement the energy efficiency project.

This executive summary first provides a summary of the study methodology. It also includes the free-ridership, participant like spillover, and nonparticipant like spillover estimates at the program, measure type, and statewide levels. The full report provides more detail on the results for each individual program at the measure type level as well as the results of the 2012-2013 marketing campaign and the on-bill financing on customer decision-making. Early observations of participant “unlike” spillover are also included the full report.

1.2 STUDY METHODOLOGY

The methodology used for this study follows the 2011 Commercial and Industrial Programs Free-ridership and Spillover Study conducted for National Grid Rhode Island[1]. For the upstream lighting program, the study follows the methodology implemented by KEMA in Massachusetts[2].

To accomplish the above objective, telephone surveys were conducted with a sample of 2013 program participants in each of the C&I electric and natural gas programs and with design professionals and equipment vendors involved in these 2013 installations. The program

[1] These studies followed the methodology presented in the “National Grid Rhode Island 2011 Commercial and industrial Programs Free-ridership and Spillover Study Final Report” September 6, 2012.

[2] ”Process Evaluation of the 2012 Bright Opportunities Program Final Report” prepared by KEMA, Inc., June 14, 2014.

participant sample consisted of unique *accounts*[3], not unique customer names. The same customer name, or business identity, can have multiple accounts in multiple locations, but program technical support and incentives are provided on behalf of an individual account. Thus, for the purposes of this study, a customer or participant is defined as a unique account.[4]

The majority of the telephone interviews were completed with program participants between May 20 and July 7, 2014. The duration of interviews with program participants averaged 14 minutes. Prior to the telephone survey, all participating customers were mailed a letter on National Grid letterhead. This letter explained the purpose of the call, informed customers that someone from Tetra Tech would be calling them in the next couple of weeks to ask them some questions about their experiences with the programs, and thanked them for their cooperation in advance. This letter and repeated call attempts (an average of over ten call attempts was made to reach sampled customers during the calling period) resulted in an overall cooperation rate of 53 percent. This rate is lower than the previous study due to the condensed calling period and the increase in the number of bad telephone numbers. Additionally, there was a larger portion of the sample that was identified as having the same contact name, phone number, or company, which resulted in fewer actual cases to attempt to complete.

The number of survey completions for some measure types is low, because the number of installations within these measure categories for program year 2013 was small (i.e., less than 50). Thus, some caution should be used when interpreting these results for specific measure types.

In addition to the customer surveys, additional surveys were conducted with:

- Design professionals and vendors identified by customers as being the most knowledgeable about the decision to install the energy efficient equipment through the programs. These surveys were used to estimate free-ridership for those installations where customers said the design professional/equipment vendor was more influential in the decision than the customer.
- Design professionals and equipment vendors who had recommended, sold, and/or installed equipment through the C&I programs. These surveys were used for estimating the extent of nonparticipant "like" spillover at a statewide level for all the programs.
- Distributors from the upstream lighting program who sold lighting products at a discounted price. These surveys were used to estimate the free-ridership rate; which is averaged with the participant (end-user) data.

1.2.1 Participant free-ridership methodology

A program's *free-ridership rate* is the percentage of program savings attributed to free-riders. A *free-rider* refers to a program participant who received an incentive or other assistance through

[3] Each account could include multiple applications for efficiency projects. For example, if one account has five hot water heating applications and one HVAC application, this account would show up twice in the sample frame; once for hot water heating (aggregating all the hot water heating applications) and once for HVAC.

[4] Unique accounts with two or more measure types were asked about the two largest saving measures during one interview.

an energy efficiency program who would have installed the same high efficiency measure type[5] on their own at that same time if the program had not been offered. For free-riders, the program is assumed to have had no influence or only a slight influence on their decision to install or implement the energy efficient measure type. Consequently, none or only some of the energy savings from the energy efficient measure installed or performed by this group of customers should be attributable to the energy efficiency program.

In addition to simply identifying free-riders, it is important to estimate the *extent* of free-ridership for each customer. Pure free-riders (100%) would have adopted exactly the same energy efficient measure type at that same time in the absence of the program. Partial free-riders (1–99%) are those customers who would have adopted some measure type on their own, but of a lesser efficiency or a lesser quantity, or at a later time. Thus, the program had some impact on their decision. Non-free-riders (0%) are those who would not have installed or implemented any energy efficient measure type (within a specified period of time) absent the program services.

For programs that offer monetary incentives for multiple measure categories, it is important to estimate free-ridership by specific measure type. Category-specific estimates produce feedback on the program at the level at which it actually operates and allows for cost-effectiveness testing by measure category. In addition, for commercial and industrial incentive programs, free-ridership has often been found to be highly variable among measure categories, making it essential to produce measure-specific estimates. The ability to provide reliable estimates by measure type is dependent on the number of installations within that measure type—the fewer installations, the less reliable the estimate.

Once calculated, each individual's free-ridership rate is then applied to the measure savings associated with that project. The total free-ridership estimates in this report include pure, partial, and non-free-riders.

Our approach to estimating free-ridership consisted of a sequential question technique to identify free-riders. This sequential approach asks program participants about the actions they would have taken if the program services had not been offered. This approach addresses the program's impact on project timing, measure quantity, and efficiency levels while explicitly recognizing that the cost of energy efficient equipment can be a barrier to installation in the absence of energy efficiency programs. This method walks survey respondents through their decision process with the objective of helping them recall the program's impact upon all aspects of project decision making.

Program total free-ridership (pure and partial) rates illustrated in the tables in the Results Summary section of this executive summary are weighted by measure therm or kWh savings. Weighting by (therm or kWh) savings ensures that overall measure savings are considered in the overall results. For programs where we were unable to complete any interviews for a given measure type, we were unable to weight by all measure types for that program. In these situations, results do not include those measure types. When reviewing the measure-type free-ridership rates it is important to consider the number of survey completions that the estimate is based upon.

[5] For purposes of this discussion, an "energy efficient measure type" includes high efficiency equipment, an efficiency measure type such as building envelope improvements, or an energy efficient practice such as boiler tune-ups.

The upstream lighting program follows the same methodology but includes distributor results. Distributors were asked about customer's decision-making process. These results were then averaged with the participant results to come up with an overall free-ridership rate.

1.2.2 Spillover methodology

Spillover refers to additional energy efficient measures adopted by a customer due to program influences, but without any financial or technical assistance from the program. *Participant "like" spillover* refers to the situation where a customer installed energy efficient measures through the program, and then installed additional measures of the same type due to program influences. *Participant "unlike" spillover* is where the customer installs other types of energy efficient measures than those offered through the program, but are influenced by the program to do so.

Survey free-ridership questions were followed by questions designed to estimate "like" and "unlike" spillover. These questions asked about recent purchases (since program participation in 2013) of any additional energy efficient equipment that were made without any additional technical or financial assistance from National Grid but were influenced by the program. Surveying customers not long after installation does not allow customers much time to install additional equipment based on their experiences with the program. Therefore, these are *early* indicators of spillover. As time passes, additional equipment may be installed because of their participation in a National Grid program. These early spillover estimates are included in the report tables.

A. Early "Like" Spillover

A "like" spillover estimate was computed based on how much more of the same energy efficient equipment the participant installed outside the program and did so because of their positive experience with the program.

One of the issues with attempting to quantify spillover savings is how to value the savings of measures installed or conducted outside the program since we are relying on customer self-reports of the quantity and efficiency of any measure type installed. Estimating early "like" spillover uses a conservative approach and reports only those measures installed outside the program that were of the same type and efficiency as the ones installed through the program. This, in turn, makes it possible for us to use the estimated program savings for that measure to calculate the customer's "like" spillover savings. Program-eligible measures that were installed by the participant but were not of the same type as what was installed through the program are excluded from "like" spillover estimates. These measures would be included in any "unlike" spillover analysis (see discussion below).

Note that the "like" spillover rates illustrated in the Results Summary section of this executive summary are weighted by measure category therm or kWh savings and the disproportionate probability of being surveyed. When reviewing the measure category "like" spillover, it is important to consider the number of survey completions that the estimate is based upon. The number of survey completions for some measure categories is low because very few customers in the sample installed the measure type.

B. Early "Unlike" Spillover

The evaluation team included questions to address "unlike" spillover—energy efficient equipment installed by a participant due to program influence that is not identical to the equipment they received through the program. However, given the difficulties in estimating savings for these installations, we present only observations of "unlike" spillover in the main report and not savings estimates.

C. Nonparticipant "Like" Spillover Estimates

Free-drivers, or nonparticipant spillover, refers to energy efficient measures adopted by program nonparticipants due to the program's influence. The program can have an influence on design professionals and vendors as well as an influence on product availability or practices, product or practice acceptance, customer expectations, and other market effects. All of these may induce nonparticipants to implement energy efficient measures. *Nonparticipant "like" spillover* refers to additional measures of the same type as offered through the program that are adopted due to the program's influence.

The methodology for the 2013 study estimated only a portion of nonparticipant like-measure type spillover based on responses from design professionals and vendors participating in National Grid's programs[6]. The data for the analysis could have been collected from nonparticipants directly or from the design professionals and vendors who recommended and/or installed qualifying high efficiency equipment. We surveyed the design professionals and vendors primarily because they could typically provide much more accurate information about the efficiency level of installed equipment than could the nonparticipants. Experience has shown that customers cannot provide enough data to a telephone interviewer about the new equipment they have installed to allow for accurate estimates of the energy savings achieved from the equipment. While they usually can report what type of equipment was installed, they typically cannot provide sufficient information about the quantity, size, efficiency, and/or operation of that equipment to allow us to determine whether the equipment is "program-eligible." On the other hand, design professionals and equipment vendors who have worked with the program are typically more knowledgeable about equipment and are familiar with what is and is not "program-eligible."

Another argument in favor of using design professionals and equipment vendors to estimate nonparticipant spillover was that we could use data in the program tracking system database to attach therm or kWh savings estimates to nonparticipant spillover. In the program tracking system database, measure type-specific program therm or kWh savings are associated with each design professional and vendor who participated in the program in 2013.

To determine nonparticipant spillover, design professionals and equipment vendors were asked (by measure type they installed through the program in 2013) what percentage of their sales were program eligible and what percentage of these sales did not receive an incentive through the programs. They were then asked about the program's impact on their decision to recommend/install this efficient equipment outside the program. Using the survey responses and

[6] Nonparticipant spillover for small business programs was not estimated because of the small number of vendors involved in delivering the program.

measure type savings data from the program tracking system, the participating vendor nonparticipant "like" spillover savings could be estimated for each design professional/vendor and the results extrapolated to the total savings for all programs.

This method of estimating nonparticipant spillover is a *conservative* estimate for two reasons. First, not all design professionals and equipment vendors who are familiar with the programs specified and/or installed equipment through the program in 2013. Thus, we miss any nonparticipant spillover that was associated with these other design professionals/vendors (although it is less likely these design professionals/vendors had nonparticipant spillover if they were not involved with the program in 2013).

Second, this method only allows us to extrapolate nonparticipant spillover for those same measure type categories that a particular design professional/vendor was associated with for the 2013 programs. Thus, if a vendor installed program-eligible equipment in other measure type categories in the year 2013 outside the program, but none through the program, we did not capture nonparticipant spillover savings with that particular type of equipment. In essence, we measured only "like" nonparticipant spillover; that is, spillover for measure types like those installed through the program in 2013.

It is important to note that nonparticipant spillover was analyzed at the statewide level by measure type. These estimates were then applied to each program that offered that measure type. Participant like spillover estimates are removed from the vendor reported spillover to avoid double counting spillover savings.

1.3 CATEGORIZATION OF MEASURE TYPES

The measure type categories were chosen by National Grid, and measure type was assigned based on the type of equipment installed. Table 1-1 details which types of equipment were assigned to which measure type classification, combining gas and electric measures.

Table 1-1. Breakdown of Equipment in Measure Type Categories

Measure Type	Equipment
Compressed Air	Compressors
Controls	Boiler controls
	EMS
	Hood controls
	Thermostats
Custom	Control system
	EMS
	Lighting project
	Motors
	Pumps
Food Service	Fryer
	Oven
	Steamer

Measure Type	Equipment
HVAC	Boiler
	EMS
	Furnace
	Vending machine
	Water heater/boiler combo
HVAC - Distribution	Steam traps
HVAC - Plant	Boilers (condensing, custom and steam)
	Furnace
HVAC Non-unitary	Chiller
HVAC Unitary	AC equipment
	Dual enthalpy economizer control
	ECM motors
	Economizer/ventilation controls
	Heat pump
Insulation	Air sealing
	Attic insulation
	Pipe insulation
	Windows
Lighting	CFLs
	Custom lighting
	Daylight dimming system
	Fluorescent lights (T8)
	LEDs
	Occupancy sensor
	Pulse start metal halide
Non-lighting	Controls
	Cooler
	Custom compressed air
	Custom hot water
	Fan controls
	HVAC
	Motors/drives
	Vending machine
Other	Other
	Replace thermo oxidizers
	Retro commissioning
	Steam traps
VSD	Fans
	Hot water pump

Measure Type	Equipment
	Motors
	VFDs
Water Heating	Aerator
	Salon nozzle
	Showerhead
	Spray valves
	Pipe insulation
	Tank insulation
	Water Heater

1.4 NET-TO-GROSS RESULTS SUMMARY

Results for the Bright Opportunities program (the upstream lighting program) have been rolled into the Design 2000plus program. The detailed results for each measure within each program can be found in Section 6 of this final report.

Table 1-2 summarizes the free-ridership and spillover estimates for electric measures offered through the programs. The statewide free-ridership rate for electric measures installed through these programs is 18.1 percent, the participant ”like” spillover rate is 4.7 percent, and the nonparticipant spillover rate is 0.9 percent, resulting in a statewide net-to-gross rate of 87.5 percent.

Table 1-2. 2013 C&I Electric Free-ridership and Spillover Results Summary by Program

Program	Surveyed	Population	Population kWh Savings	Free-ridership Rate	90% Margin Error (±)	Participant “Like” Spillover Rate	90% Margin Error (±)	Nonparticipant “Like” Spillover Rate	Net-to-Gross Rate
Design 2000plus Program	119	3,077	15,239,541	26.7%	4.8%	0.5%	0.0%	4.5%	78.3%
Energy Initiative Program	96	392	41,977,142	19.1%	5.1%	7.0%	3.9%	0.0%	88.0%
Small Business Program	147	1,291	22,019,804	10.2%	2.6%	3.0%	4.8%	0.0%	92.8%
Total	**362**	**4,760**	**79,236,487**	**18.1%**	**2.5%**	**4.7%**	**2.3%**	**0.9%**	**87.5%**

Table 1-3 summarizes the free-ridership and spillover estimates for natural gas measures offered through the programs. The statewide free-ridership rate for natural gas measures installed through these programs is 23.2 percent, the participant spillover “like” rate is 0.4 percent, and the nonparticipant spillover rate is 0.3 percent, resulting in a statewide net-to-gross

rate of 77.5 percent. It should be noted that the nonparticipant spillover is based on responses from only seven vendors, so caution should be exercised when using the results.

Table 1-3. 2013 C&I Natural Gas Free-ridership and Spillover Results Summary by Program

Program	Surveyed	Population	Population Therm Savings	Free-ridership Rate	90% Margin Error (±)	Participant "Like" Spillover Rate	90% Margin Error (±)	Nonparticipant Spillover Rate	Net-to-Gross Rate
Large Commercial New Construction	35	164	381,702	28.1%	9.9%	2.3%	4.8%	0.7%	74.9%
Large Commercial Retrofit	42	475	1,610,343	22.4%	7.4%	0.0%	0.0%	0.2%	77.8%
Small Business Program[7]	25	110	28,130	3.4%	5.8%	0.0%	0.0%	0.5%	97.0%
Total	**102**	**749**	**2,020,174**	**23.2%**	**2.8%**	**0.4%**	**1.6%**	**0.3%**	**77.5%**

1.5 ORGANIZATION OF THIS REPORT

In Section 2 we review the study's objectives and methodology. Section 3 summarizes the survey questions used to identify the key decision maker and the questions designed to serve as project review for the respondent. Section 3 also describes the questions and approach used to estimate the extent of participant free-ridership, participant "like" spillover, and participant ""unlike" spillover. Section 4 presents the questions and approach for vendors who customers identified as being influential in their decision to participate along with the questions and approach used to estimate nonparticipant "like" spillover. Section 5 presents the questions asked to distributors who sold equipment through the upstream lighting program and how the results were calculated. In Section 6, we present the free-ridership and spillover results at the state level, as well as at the individual program level. Sections 7 and 8 present the results of the secondary objectives of the study in regards to the marketing campaign and financing, respectively.

We also present the following appendices:

- Appendix A details the sampling plans for the participant surveys
- Appendix B documents the weighting methodology used to produce the participant free-ridership and "like" spillover estimates
- Appendix C contains the survey instruments

[7] There was one Small Business Water Heating record that accounted for 56 percent of the savings. This record was a full free-rider that was driving the net-to-gross results. Due to the large influence this one case has on the final results, the team has decided to remove this case from the analysis and report results excluding this record. If this case remained in the analysis, the Small Business program free-ridership rate would be 23.8 percent and net-to-gross would be 92.3 percent.

- Appendix D details response rate and program savings coverage
- Appendix E contains an example of the Design Professional and Vendor spillover calculation
- Appendix F charts how the free-ridership and spillover scoring was done.

2. INTRODUCTION

This report summarizes the findings of the free-ridership and spillover study conducted for National Grid, Rhode Island for their 2013 Commercial and Industrial (C&I) electric and natural gas programs. The purpose of this study was to assess program free-ridership and spillover for the programs offered by National Grid. These programs include both custom and prescriptive programs for both new construction and retrofit (gas) and projects completed through the Design 2000plus (electric), Energy Initiative (electric), Small Business (electric and gas), and upstream lighting, Bright Opportunities programs in 2013.

One important concept affecting the interpretation of the free-ridership and spillover estimates is the ability to generalize the results. The results of this study can only be generalized to the population of 2013 program year participants, and the design professionals and equipment vendors who were active in the 2013 program year. Essentially, the current study is a performance audit of the year 2013 programs using survey research methods to estimate the free-ridership and spillover rates.

2.1 STUDY OBJECTIVE

The primary objective of the 2013 program year free-ridership and spillover study was to assist National Grid in quantifying the net impacts of their commercial and industrial energy efficiency programs by estimating the extent of:

- Program free-ridership
- Early participant “like” and “unlike” spillover
- Nonparticipant “like” spillover.

At this point, it is helpful to define free-ridership and spillover. A program’s *free-ridership rate* is the percentage of program savings attributed to free-riders. A *free-rider* refers to a program participant who received an incentive or other assistance through an energy efficiency program who would have installed the same high efficiency equipment[8] on their own at that same time if the program had not been offered. For free-riders, the program is assumed to have had no influence or only a slight influence on their decision to install or implement the energy efficient equipment. Consequently, none or only some of the energy savings from the energy efficient equipment taken by this group of customers should be credited to the energy efficiency program.

In addition to simply identifying free-riders, it is important to estimate the *extent* of free-ridership for each customer. Pure free-riders (100%) would have adopted exactly the same energy efficient equipment at that same time in the absence of the program. Partial free-riders (1–99%) are those customers who would have adopted some equipment on their own, but of a lesser efficiency or a lesser quantity, or at a later time. Thus, the program had some impact on their decision. Non-free-riders (0%) are those who would not have installed or implemented any energy efficient equipment (within a specified period of time) absent the program services.

[8] For purposes of this discussion, equipment includes high efficiency equipment, an efficiency measure type such as building envelope improvements, or an energy efficient practice such as boiler tune-ups.

In contrast, spillover adds benefits to the program, increasing the program savings and benefit–cost ratio. *Spillover* refers to additional energy efficient equipment adopted by a customer due to program influences, but without any financial or technical assistance from the program. *Participant "like" spillover* refers to the situation where a customer installed energy efficient equipment through the program, and then installed additional measures of the same type due to program influences. *Participant "unlike" spillover* is where the customer installs energy efficient equipment different from those offered through the program, but are influenced by the program to do so.

Free-drivers, or nonparticipant spillover, refers to energy efficient equipment adopted by program nonparticipants due to the program's influence. The program can have an influence on design professionals and vendors as well as an influence on product availability or practices, product or practice acceptance, customer expectations, and other market effects. All of these may induce nonparticipants to take energy efficient equipment. *Nonparticipant "like" spillover* refers to additional equipment of the same type as offered through the program that are adopted due to the program's influence.

2.2 STUDY METHODOLOGY

The methodology used for this study follows the 2011 Commercial and Industrial Programs Free-ridership and Spillover Study conducted for National Grid Rhode Island[9]. For the upstream lighting program, the study follows the methodology implemented by KEMA in Massachusetts[10].

To accomplish the above objective, telephone surveys were conducted with a sample of 2013 program participants in each of the C&I electric and natural gas programs and with design professionals and equipment vendors involved in these 2013 installations. The following C&I programs were included in the 2013 study:

- New Construction (Custom and Prescriptive) (gas)
- Retrofit (Custom and Prescriptive) (gas)
- Small Business (electric and gas)
- Design 2000plus[11] (electric)
- Energy Initiative (electric).

2.2.1 Participant free-ridership, "like" and "unlike" spillover surveys

The program participant sample consisted of unique *accounts*[12], not unique customer names.

[9] These studies followed the methodology presented in the "National Grid Rhode Island 2011 Commercial and industrial Programs Free-ridership and Spillover Study Final Report" September 6, 2012.
[10] "Process Evaluation of the 2012 Bright Opportunities Program Final Report" prepared by KEMA, Inc., June 14, 2014.
[11] Includes the upstream lighting, Bright Opportunities, program.
[12] Each account could include multiple applications for efficiency projects. For example, if one account has five lighting applications and one VSD application, this account would show up twice in the sample frame; once for lighting (aggregating all the lighting applications) and once for VSD.

The same customer name, or business identity, can have multiple accounts in multiple locations, but program technical support and incentives are provided on behalf of an individual account. Thus, for the purposes of this study, a customer or participant is defined as a unique account[13]. Table 2-1 presents the number of participant accounts sampled for the 2013 study, as well as the number of telephone surveys completed for each program.

The majority of the telephone interviews were completed with program participants between May 20 and July 7, 2014. The duration of interviews with program participants averaged 14 minutes. Prior to the telephone survey, all participating customers were mailed a letter on National Grid letterhead. This letter explained the purpose of the call, informed customers that someone from Tetra Tech would be calling them in the next couple of weeks to ask them some questions about their experiences with the programs, and thanked them for their cooperation in advance. This letter and repeated call attempts (an average of over ten call attempts was made to reach sampled customers during the calling period) resulted in an overall cooperation rate of 53 percent. This rate is lower than the previous study due to the condensed calling period and the increase in the number of bad telephone numbers. Additionally, there was a larger portion of the sample that was identified as having the same contact name, phone number, or company, which resulted in fewer actual cases to attempt to complete. Ensuring complete contact details (names and phone numbers as well as email addresses) are captured on the application and entered into the system will help future evaluation efforts.

The number of survey completions for some measure types is low because the number of installations within these measure categories for program year 2013 was small (i.e., less than 50). Thus, some caution should be used when interpreting these results for specific measure types.

In addition to the customer surveys, additional surveys were conducted with:

- Design professionals and vendors identified by customers as being the most knowledgeable about the decision to install the energy efficient equipment through the programs. These surveys were used to estimate free-ridership for those installations where customers said the design professional/equipment vendor was more influential in the decision than the customer.
- Design professionals and equipment vendors who had recommended, sold and/or installed equipment through the C&I programs. These surveys were used for estimating the extent of nonparticipant “like” spillover at a statewide level for all the programs.
- Distributors from the upstream lighting program who sold lighting products at a discounted price. These surveys were used to estimate the free-ridership rate, which is averaged with the participant (end-user) data.

[13] Unique accounts with two or more measures were asked about the two largest saving measures during one interview.

Table 2-1. 2013 Participant Free-ridership and Spillover Survey Cooperation and Response Rate

	Total
Starting Sample	**985**
Bad phone number[14]	104
No knowledgeable respondent	5
Ineligible[15]	30
Language barrier	9
Adjusted Sample	**837**
Refusal	30
Unable to contact after multiple attempts	373
Completed Interviews	434
Cooperation Rate*	**52%**
Response Rate**	**44%**

*Completed Interviews/Adjusted Sample

** Completed Interviews/Starting Sample

2.2.2 Design professional/vendor surveys

In addition to the customer surveys, surveys were conducted with design professionals and equipment vendors who had installed equipment through the C&I programs in 2013. This survey was used for estimating the extent of nonparticipant like spillover for the programs.

The program tracking system databases contained the names of design professionals and vendors for some of the projects. After removing names that did not appear to be actual vendors (for example, some "vendors" were actually customers such as schools who were responsible for their own installation) and duplicate names, 180 design professionals and vendors remained. We attempted to complete a survey with a subset of this sample (51 records).

Table 2-2 presents the number of designers/vendors sampled and the number surveyed. Multiple attempts (on different days of the week, and different weeks) were made to complete interviews with these designers and vendors in June and July 2014.

[14] The evaluation team utilized a combination of Internet lookups and directory assistance to attempt to identify working telephone numbers.

[15] Includes customers who indicated they did not participate, they are not located at the address in the sample, and vendors.

Table 2-2. 2013 Cooperation and Response Rates to the Nonparticipant Spillover Survey

	Total
Starting Sample	**51**
Bad phone number	3
No knowledgeable respondent	1
Ineligible	2
Adjusted Sample	**45**
Refusal	1
Unable to contact after multiple attempts	18
Completed interviews	26
Cooperation Rate	**58%**
Response Rate	**51%**

In conjunction with the nonparticipant vendor spillover survey, interviews were completed with 21 of the 62 design professionals and equipment vendors mentioned by customers during the participant surveys as being influential in the decision to install the efficient measures.

3. PARTICIPANT SURVEY QUESTIONS

This chapter summarizes the survey questions used to identify the primary decision maker and put the decision making in context by reviewing the project, and the questions used to estimate the extent of free-ridership and participant spillover. Particularly for the free-ridership questions, the skip patterns (which are dependent upon the response to one or more questions) are complex. To simplify discussion of the questions, we have only shown the questions and not the potential response categories or skip patterns. The upstream lighting participants were asked the same series of questions with the exception of customers who were unaware of the discount. These "unaware" customers received questions with modified wording reminding them of the discount they received. Appendix C of this document contains the detailed free-ridership survey questions for participants in both the upstream and downstream programs. Appendix C also contains the participant "like" spillover survey questions, a parallel version of the free-ridership survey suitable for designers/vendors who are the decision makers, and the nonparticipant designer/vendor spillover survey.

Prior to discussing the specific questions used to identify the key decision maker and questions used to review the decision-making process, we discuss the format of the surveys.

3.1 FORMAT

The surveys for free-ridership (and spillover) contain a number of complex skip patterns and repeat questions for each measure category installed. The surveys also automatically incorporate information about each participant's project (i.e., measures installed, incentive amount, participation date) into the appropriate questions.

The survey averaged 14 minutes in length depending on the customer surveyed and number of measures installed. Many customers, especially the smaller ones, skipped directly to the consistency questions because they were initially 0 percent free-riders. Others skipped questions if they had not had a significant technical assessment study done or if they had not participated in the programs in previous years.

Given that the same survey instrument was used for the different programs, the survey instrument contains a number of areas where fills were used to customize the instrument. These fills are listed and explained in the table below:

Table 3-1. Survey Fills and Explanations

Fill	Explanation
Program	Program name
Address	Street address of project
City	City of project
Date	Date project was completed
Customer	Name of customer
Measure Category 1	First measure installed through program
Measure Category 2	Second measure installed through program

Fill	Explanation
All program assistance	All assistance provided by the program included rebates and technical assistance, as well as financing
Study	Indicator of whether the customer received a study funded by the program
Finance	Indicator of whether the customer received financing assistance from the program
Incentive	Amount of financial incentive
Project Cost	Total cost of project for customer

3.2 SUMMARY OF THE 2013 SURVEY QUESTIONS

In order to estimate free-ridership and spillover, the participant survey instrument contains eight key sections.

- Identification of key decision maker(s)
- Project and decision-making review
- Initial free-ridership questions
- Consistency check questions
- Influence of technical assessment (if applicable)
- Influence of past program participation
- Participant “like” spillover questions
- Participant “unlike” spillover questions.

3.2.1 Identification of key decision maker(s)

Identifying and surveying the key decision maker(s) is critical for collecting accurate information on free-ridership and spillover. Therefore, the first part of the survey is devoted to identifying the appropriate decision maker within the organization (i.e., the person involved in the decision making process when the equipment was being considered). If more than one decision-maker was involved, the survey collects the names and roles of those decision-makers and asks who was responsible for making the ultimate decision.

If the listed contact person was not the primary decision maker, information is collected on the person within or outside the company who was the primary decision maker and the survey is conducted with that individual. In cases where the customer tells the interviewer that a designer/vendor was the key decision maker, the interviewer collected contact information for the designer/vendor. In these cases, the survey was still completed with the customer, although attempts were made to complete the designer/vendor survey with the designer/vendor. In cases where the designer/vendor agreed they were the most influential, their responses were used to estimate free-ridership for that customer. If the designer/vendor did not agree that they were the most influential or if attempts to survey the designer/vendor failed, the customer’s responses were used to estimate free-ridership.

Once the appropriate respondent was identified, they were assured their responses would be kept confidential by Tetra Tech and National Grid.

The questions used to identify the key decision maker(s) are detailed below.

I1 Are you the person who was most involved in making the decision to get <ALL ASSISTANCE> through the <PROGRAM> in <DATE> at <ADDRESS> in <CITY>?

I1A Who was primarily responsible for making the decision to get <ALL ASSISTANCE> through the program?

I2 Are you employed by <CUSTOMER> or are you a contractor who provides design and/or installation services for <CUSTOMER>?

R1a Were you involved in the decision-making process when the [EFFICIENCY IS APPLICABLE: energy efficient] <MEASURE CATEGORY 1> or <MEASURE CATEGORY 2> was being considered for this facility?

R1b Aside from yourself, who else within your company or outside your company was involved in the decision of whether or not to purchase the [EFFICIENCY IS APPLICABLE: energy efficient] <MEASURE CATEGORY 1> or <MEASURE CATEGORY 2> through the <PROGRAM>?

3.2.2 Project and decision-making review

The interview then asks about corporate purchasing policies, important factors that the respondent considers when purchasing any new equipment, and important factors for the specific incentivized project. This section is intended to "prime" the participant by asking them to recall all the various factors that may have been important in the purchase decision. The question text is listed below.

R3 Does your organization have any formal requirements or informal guidelines for the purchase, replacement, or maintenance of energy-using equipment?

R4 Which of the following best describes these requirements or guidelines: purchase energy efficient measures regardless of cost, purchase energy efficient measures if it meets payback or return on investment criteria, purchase standard efficiency measures that meet code, or something else?

FR0 Please think back to the time when you were considering implementing the specific <MEASURE CATEGORY 1 and MEASURE CATEGORY 2> projects. What factors motivated your business to consider implementing new <MEASURE CATEGORY 1 and MEASURE CATEGORY 2> equipment? What other factors did you consider?

3.2.3 Initial free-ridership questions

The instrument then asks what influence, if any, the program had on the decision to install equipment through the program. As there are several dimensions to the decision to purchase

and install new equipment[16], the battery discusses the timing of the installation and the quantity and the efficiency level of the equipment installed. These questions reference both the overall effect of the program (including staff recommendations and any technical assistance) and the specific effect of the financial incentive. The questions are listed below. Please note that these questions are measure-specific and are repeated for up to two measure categories. For the upstream lighting program, prior to the free-ridership battery, customers were asked if they were aware they received their lighting equipment at a discount. If so, respondents were asked the standard free-ridership questions. Those who were unaware, we asked similar questions, but were reminded of the discount they received. Questions where the wording was revised in these instances are included below.

FR5 I'd like to go over all the assistance you received from National Grid. According to our records, the total cost for the project implemented at your facility in <DATE> through the <PROGRAM> was about <TOTAL PROJECT COST>. National Grid paid about <INCENTIVE> of the total cost of the [IF EFFECIENCY APPLIES: energy efficient] <MEASURE CATEGORY> project implemented through the program.

[IF <FINANCE> = Yes] National Grid also provided interest-free financing for up to 24 months for your portion of the project costs.

[IF <STUDY> = 1: In addition, as I previously mentioned, National Grid paid a portion of the cost for a <STUDY>.]

If National Grid had not paid a portion of the implementation cost OR provided any technical assistance or education [IF <FINANCE> = Yes: OR provided interest-free financing], would your business have implemented any type of <MEASURE CATEGORY> project at the same time?

[upstream lighting unaware question wording] If the < MEASURE CATEGORY > bulbs had cost <TOTAL INCENTIVE> more, would your business have installed **any** lighting at all?

FR6A Would you have implemented the <MEASURE CATEGORY> project earlier than you did, at a later date, or never?

[upstream lighting unaware question wording] Would you have installed the lighting earlier than you did, at a later date, or never?

FR6B How much [EARLIER/LATER] would you have implemented the <MEASURE CATEGORY> project?

[upstream lighting unaware question wording] How much [earlier/later] would you have installed the lighting?

FR7A Without the National Grid program incentive and technical assistance or financing, would your business have implemented the exact same quantity of <MEASURE CATEGORY> equipment [IF FR5=YES OR DK: at the same time; IF FR5=2: within (TIMEFRAME IN FR6B)]?

[16] The instrument is designed to handle both rebated equipment (e.g., HVAC equipment) and rebated services (e.g. boiler tune-ups). However, as this study only addresses equipment, the memo does not include any references to rebated services.

[upstream lighting unaware question wording] If the < MEASURE CATEGORY > bulbs would have cost <TOTAL INCENTIVE> more, would your business have installed less, more or the exact same quantity of < MEASURE CATEGORY >?

FR7B Compared to the amount of <MEASURE CATEGORY> that you implemented through the National Grid program, what percent of the project do you think your business would have purchased on its own during that timeframe?

[upstream lighting unaware question wording] Compared to the number of < MEASURE CATEGORY > bulbs that you installed, what percent more/less do you think your business would have installed if they had cost <TOTAL INCENTIVE> more?

FR8A You said your business would have installed [IF FR7A=YES: all; IF FR7A= NO: (FILL WITH FR7B %), IF FR8 = DK/R, FILL IN WITH "some"] of the equipment on its own if the National Grid program had not been available. Thinking about the <MEASURE CATEGORY> equipment you would have installed on your own, what percent of this equipment would have been of the same high efficiency as what was installed through the National Grid program?

FR8B (What percent would have been of) lower efficiency than what was purchased but higher than standard efficiency or code?

FR8C[17] And of standard efficiency or code?

FR8D [IF QUANTITY > 1] Thinking about the <MEASURE CATEGORY> project you would have implemented on your own if the National Grid program had not been available, would it have been of the same high efficiency as what was installed through the program, lower efficiency than what was purchased but higher than standard efficiency, or standard efficiency or code?

RVL1[18] Thinking about the insulation project you would have implemented on your own if the National Grid program had not been available, would it have been of the same R Value as what was installed through the program?

RVL2 Compared to what you installed through the National Grid program, what R Value would you have installed? (PROBE: "For example, would it have been 50% as much as what was installed through the program?")

3.2.4 Consistency check questions

The instrument also included questions that would identify and correct inconsistent responses. For example, if participants reported that they were likely to install the equipment without the program but also reported that they would not have installed the energy efficient equipment within four years, the interviewer asked them to confirm which statement was more accurate. These questions are listed below.

FR1 On a scale of 0 to 10, with 0 being not at all likely and 10 being very likely, how likely is it that your business would have implemented the same [IF QUANTITY VARIES: quantity] [IF EFFICIENCY APPLIES: efficiency of] <MEASURE CATEGORY> at that same time if the National Grid had not provided the <ALL ASSISTANCE>?

[17] For measures where quantity is not applicable but efficiency levels do vary, this question is combined into one item: FR8D.

[18] RVL1 and RVL2 were added for insulation projects.

[upstream lighting unaware question wording] According to our information, the distributor or retailer you bought the < MEASURE CATEGORY > bulbs from received a discount of < TOTAL INCENTIVE > from National Grid which was passed on to you. On a scale of 0 to 10, with 0 being not at all likely and 10 being very likely, how likely is it that your business would have implemented the same [IF QUANTITY IS GREATER THAN 1: quantity] [IF EFFICIENCY IS APPLICABLE: and efficiency of] < MEASURE CATEGORY > at that same time if they had cost < TOTAL INCENTIVE > more?

C3 On a scale of 0 to 10, with 0 being no influence and 10 being a great deal of influence, how much influence did the <INC> you received from National Grid have on your decision to implement the [IF EFFICIENCY APPLIES: high efficiency] <MEASURE CATEGORY> project?

[upstream lighting unaware question wording] On a scale of 0 to 10, with 0 being no influence and 10 being a great deal of influence, how much influence did the price have on your decision to install < MEASURE CATEGORY > bulbs?

C4A Now I want to focus on what it would have cost your business to install this equipment on its own without the National Grid program. On a scale of 0 to 10, with 0 being not at all likely and 10 being very likely, how likely is it that your business would have paid the additional <INC> on top of the amount you already paid, to implement the same quantity and efficiency of <MEASURE CATEGORY> equipment at that same time?

[upstream lighting unaware question wording] Now I want to focus on what it would have cost your business to install this equipment if it had been more expensive. On a scale of 0 to 10, with 0 being not at all likely and 10 being very likely, how likely is it that your business would have paid the additional <TOTAL INCENTIVE> on top of the amount you already paid, to purchase the same quantity and efficiency of < MEASURE CATEGORY > bulbs at that same time?

C8 [ASK IF FR1 > 3 AND FR6b >24/48 MONTHS OR NEVER] Earlier in the interview, you said there was a [FR1 SCORE] in 10 likelihood that you would have implemented the same quantity and efficiency of <MEASURE CATEGORY> equipment at that same time in the absence of the National Grid program assistance. But you also said you would not have implemented the <MEASURE CATEGORY> project within 2/4 years of when you did. Which of these is more accurate?

C9 I'd like to better understand your purchase decision. In your own words, please describe what impact, if any, all the assistance you received through the National Grid program had on your decision to install the amount of energy efficient <MEASURE CATEGORY> equipment at the time you did?

As inputs into the algorithm, Tetra Tech constructed a scoring system based on the influence and consistency check questions above. The scoring calculates two scores—a quantity score and an efficiency score. The quantity score represents the percentage of the incentivized equipment that would have been installed in absence of the program. The efficiency score is the percentage of savings *per unit installed* that would have occurred without the program. For equipment that is reported to be more efficient than standard but less efficient than what was installed through the program, we assume 50 percent of the savings for those measures. Multiplying these two scores together gives the percentage of the incentivized savings that would have occurred without the program. This percentage is the raw free-ridership estimate. Table 3-2 details these calculations.

Table 3-2. Quantity and Efficiency Scores

Score	Responses	Result
Quantity Score (FR_QTY)	If would have installed same quantity without program (FR7A = YES)	FR_QTY = 1
	If would have installed fewer quantity without program (FR7A = NO)	FR_QTY = FR7B
	If never would have installed (FR6A = never)	FR_QTY = 0
Efficiency Score (FR_EFF)	If would have installed at least some equipment on their own	FR_EFF = FR8A + (FR8B*.50)
	If never would have installed (FR6A = never)	FR_EFF = 0
	If insulation and would not have installed same R value	FR_EFF = RVL2
Initial Free-ridership Score	The percent of the rebated savings that would have occurred without the program.	FR_EFF * FR_QTY

The product of these two scores is then adjusted by a timing factor. The timing factor adjusts the raw free-ridership estimate downward for all or part of the savings that would have occurred without the program, but not until much later. By doing so, the program is given credit for accelerating the installation of energy efficient equipment. For example, if the participant states that he or she would have installed equipment at the same time regardless of the program, the quantity-efficiency factor is not adjusted. However, if the participant states that, without the program, they would have completed the project more than six months later than they actually did, any free-ridership identified in the quantity-efficiency factor is adjusted downward.[19] The degree of the adjustment depends on the program. As the equipment planning schedule for small businesses is likely shorter than the planning schedule for large businesses, small business programs receive a greater acceleration benefit. This reduced adjustment for small businesses reflects the increased effect the program has on the planning schedule[20]. This adjustment is detailed in Table 3-3 and visualized in Figure 3-1.

Table 3-3. Timing Factor Adjustment

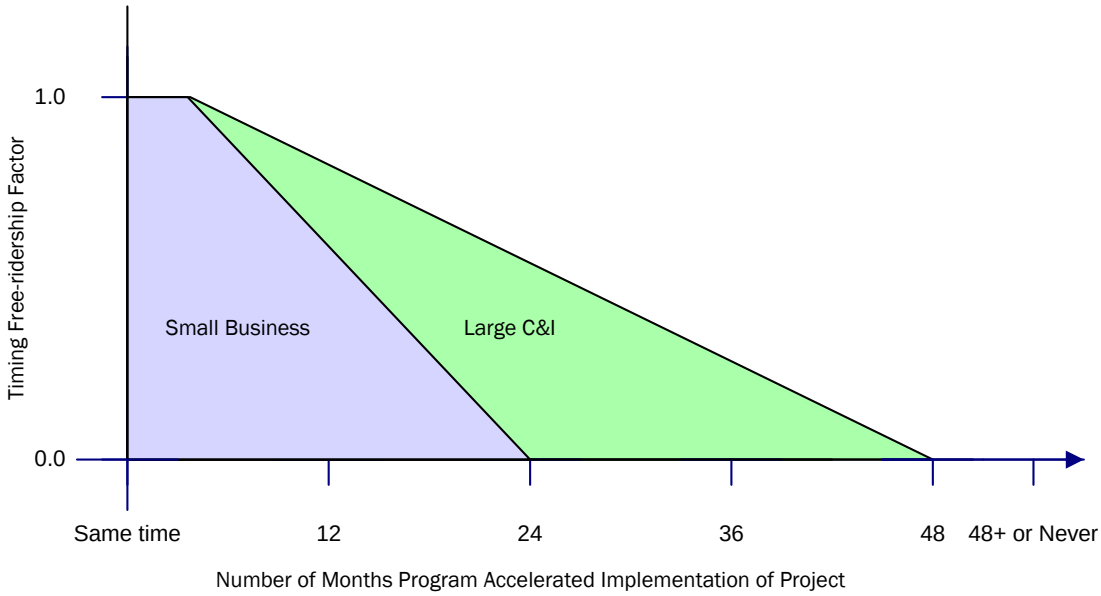
Score	Responses	*Result*
Timing Factor—Small Business Programs (FR_TIMING)	Would have installed at the same time without the program (FR5 = Yes)	*FR_TIMING = 1*
	Would have installed within six months of when participant actually did without the program (FR6b <= 6 months)	*FR_TIMING = 1*

[19] Projects that were accelerated by fewer than 6 months are not adjusted. As installation timelines are subject to shifting, we assume these projects are just as likely to have been installed at the same time.

[20] Business Programs: Acceleration Treatment and Life Cycles Net Savings. State of Wisconsin Public Service Commission of Wisconsin. March 10, 2010. https://focusonenergy.com/sites/default/files/bpaccelerationtreatmentandlcns_evaluationreport.pdf

Score	Responses	*Result*
	Would have installed sometime between 7 and 24 months of when participant actually did without the program (FR6b > 6 months & < 24 months)	*FR_TIMING = 1-((FR6B-6) * .056)*
	Would have installed sometime after 24 months of when participant actually did without the program (FR6b > 24 months)	*FR_TIMING = 0*
	Would have never installed without the program (FR6A = Never)	*FR_TIMING = 0*
Timing Factor—Large Business Programs (FR_TIMING)	Would have installed at the same time without the program (FR5 = Yes)	*FR_TIMING = 1*
	Would have installed within six months of when participant actually did without the program (FR6b ≤ 6 months)	*FR_TIMING = 1*
	Would have installed sometime between 7 and 48 months of when participant actually did without the program (FR6b > 6 months & < 48 months)	*FR_TIMING = 1-((FR6B-6 * .024)*
	Would have installed sometime after 48 months of when participant actually did without the program (FR6b > 48 months)	*FR_TIMING = 0*
	Would have never installed without the program (FR6A = Never)	*FR_TIMING = 0*
Adjusted Free-ridership Score	*The raw free-ridership estimate adjusted for all or part of the savings that would have occurred without the program, but not until much later*	*FR_TIMING * Initial Free-ridership Score*

Figure 3-1. Timing Free-ridership Factor by Number of Months the Program Accelerated Implementation



This adjusted score is reviewed for consistency and, if applicable, for vendor influence via a follow-up interview with vendors that are rated influential by participants. Questions FR4 and C1 (below) are used to assess vendor influence. Details regarding the Influential Vendor survey are discussed in Section 4 of this report.

FR4 Who was MOST responsible for actually recommending or specifying the [IF EFFICIENCY IS APPLICABLE: high efficiency] <MEASURE CATEGORY> project that was implemented through the National Grid's program?

C1 On a scale of 0 to 10, with 0 being no influence and 10 being a great deal of influence, how much influence did (FR4 response) have on your company's decision to implement the [IF EFFICIENCY IS APPLICABLE; high efficiency] <MEASURE CATEGORY> project so that it would qualify for the National Grid program?

3.2.5 Influence of technical assessment

The initial free-ridership score is further adjusted by the influence of any program-sponsored technical assistance or audit and by the influence of previous program participation. If a participant rates the influence of the technical assistance as high (7 or greater on a scale of 0–10), the free-ridership score is reduced by half. This reduction is necessary because the previous factors focus on the specific effect of the program incentive and the overall effect of the program. Without this adjustment, the influence of the technical assessment is under-represented.

C2 On a scale of 0 to 10, with 0 being no influence and 10 being a great deal of influence, how much influence did the information provided by the <STUDY> have on your decision to implement the [IF EFFICIENCY IS APPLICABLE: high efficiency] <MEASURE CATEGORY> project?

3.2.6 Influence of past program participation

Likewise, if a participant has previously participated in the program, they are asked about the influence of that past participation on their perceptions and behaviors. Participants are asked to state whether they agree or disagree with four statements about the effect past participation has had on their decision making. Based on the number of statements with which they agree, their free-ridership is reduced by 75 percent, 37.5 percent, or not reduced at all. This reduction is done to account for the influence positive program experiences have had on participants' purchasing decision—with the program administrators, implementers, or the equipment incented.

PP3 I'm going to read you several statements. For each statement, please tell me whether you agree or disagree that this statement applies to your business. There are no right or wrong answers; we just want your honest opinion.

Our previous experience implementing energy efficient projects through the National Grid program. . . .

a. Has made our firm more likely to consider energy efficient equipment
b. Has made our firm more likely to install energy efficient equipment
c. Has given us more confidence in the financial benefits of energy efficient equipment
d. Has given us more confidence in the nonfinancial benefits of energy efficient equipment

As mentioned previously, the previous program participation adjustment is made to account for the market effects associated with implementing energy efficiency programs over time. These market effects will result in net savings estimates that do not capture the full cumulative effect of the program. This methodology attempted to capture some of these market effects by making this adjustment for previous program participation. While it could be argued that the influence of previous participation should count as spillover rather than reduced free-ridership, the traditional definition of spillover does not count measures installed through a program as spillover. Table 3-4 details these adjustments.

Table 3-4. Adjustments for the Influence of Technical Assessments and Previous Participation

Adjustment	Responses	Result
Technical Assessment Adjustment	No technical assessment, audit, or study conducted	No adjustment
	Participant would have performed assessment, audit, or study without program assistance or it was not influential (C2 ≤ 6)	No adjustment
	Participant **would not** have performed assessment, audit, or study without program assistance and it was influential (C2 > 6)	Adjusted Free-ridership Score * .5
Previous Participation Adjustment	No previous participation in program	No adjustment
	Agrees with four statements regarding the positive influence of past participation (PP3)	Adjusted Free-ridership Score * .25
	Agrees with three statements regarding the positive influence of past participation (PP3)	Adjusted Free-ridership Score * .625

Adjustment	Responses	Result
	Agrees with two or fewer statements regarding the positive influence of past participation (PP3)	No adjustment

Flowchart diagrams detailing these calculations have been included in Appendix F of this report.

3.2.7 Participant "like" spillover

The "like" spillover estimates are computed based on how much more of the same energy efficient equipment the participant installed outside the program that were, in fact, influenced by the program. This is a conservative approach because it assumes the exact same equipment, including efficiency level and size. The following questions, in conjunction with the savings assigned to that same equipment by the program, are used to estimate possible spillover savings:

S1A Now I'd like you to think of the time since you participated in the program in <DATE>. Has your company implemented any <MEASURE CATEGORY> projects for this or other facilities in <STATE> **on your own,** that is without a rebate from National Grid?

S1B Was this equipment of **the same efficiency level or a higher level of efficiency** as the equipment you installed through the program?

S1C Was this equipment more energy efficient than standard efficiency or code equipment?

S2A Thinking of the <MEASURE CATEGORY> equipment that you installed on your own, how does the quantity compare to what you installed through the program at <SERVICE ADDRESS>? Did you install more, less or the same amount of <MEASURE CATEGORY> as what you installed through the program?

For respondents that answer "Yes" to S1A and S1B, spillover savings are calculated as the measure-specific savings identified by the program multiplied by the quantity identified in S2A. For respondents that answer "Yes" to S1A and S1C, spillover savings are calculated as 50 percent the measure-specific savings identified by the program multiplied by the quantity identified in S2A. If the respondent answers "No" to S1A or S1C, there are no identifiable "like" spillover savings.

For those measures, a program-attributable spillover rate is then calculated based on the following questions:

S3A Did a recommendation by the contractor, engineer, or designer who you worked with under the <PROGRAM> influence your decision to implement some or all of this [IF EFF = 1: efficient] <MEASURE CATEGORY> equipment on your own?

S3B Did your experience with the energy efficient projects implemented through the <PROGRAM> influence your decision to implement some or all of this [IF EFF = 1: efficient] <MEASURE CATEGORY> equipment on your own?

S3C Did your participation in any past program offered by National Grid influence your decision to implement some or all of this [IF EFF = 1: efficient] <MEASURE CATEGORY> equipment on your own?

S3D On a scale of 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence", how much influence did your participation in the National Grid program have on your decision to install this equipment without an incentive?

S4a Why didn't you implement this <MEASURE CATEGORY> project through a National Grid program?

S4b [IF THE EQUIPMENT WOULD NOT QUALITY] Why wouldn't the equipment qualify?

If the respondent reports that the contractor influenced their decision to install the like equipment on their own, we attribute the program with 50 percent of those savings based on the influence the program has on the trade allies. If the respondent reports that either their experience with the program-sponsored project or past programs influenced their decision to implement the like equipment, we attribute the program with 100 percent of the spillover savings.

To summarize:

If (S3A=yes AND (S3B = no AND S3C = no)), spillover rate = 50%.

If (S3B=yes OR S3C = yes), spillover rate = 100%.

That rate, applied to the estimated spillover savings, results in the program-attributable spillover savings for that participants.

3.2.8 Participant "unlike" spillover

In addition to "like" spillover, the 2013 study also asked about "unlike" spillover (i.e., measures outside of those installed through the program). To establish spillover savings, program eligibility was used as a proxy for energy efficiency. The following questions were used to identify "unlike" spillover.

S5 Since participating in the <PROGRAM>, had your company purchased, installed, or implemented any other type of energy efficient equipment **on your own**, that is without a rebate from National Grid?

S6a What type of equipment did you install? [Record type:]

S6b [IF S5=1] What quantity of equipment did you install? [Record quantity:]

S6c [IF S5=1] What was the size or capacity of the equipment you installed? [Record size or quantity:]

S7A Would this project have qualified for an incentive through the <PROGRAM> from National Grid?

Once identified, program influence needs to be established. Using the same methodology as with "like" spillover, we ask a series of questions to determine if the spillover is program-attributable spillover:

S7B Did a recommendation by the contractor, engineer, or designer who you worked with under the <PROGRAM> influence your decision to implement some or this equipment on your own?

S7C Did your experience with the energy efficient projects implemented through the <PROGRAM> influence your decision to implement some or this equipment on your own?

S7D Did your participation in any past program offered by National Grid influence your decision to implement some or all of this equipment on your own?

As with “like” spillover, if the respondent reports that the contractor influenced their decision to install the like equipment on their own, we attribute the program with 50 percent of those savings based on the influence the program has on the trade allies. If the respondent reports that either their experience with the program-sponsored project or past programs influenced their decision to implement the “unlike “equipment, we attribute the program with 100 percent of the spillover savings.

However, given the difficulties in estimating savings for these installations using regular telephone interviewers, we present only observations of “unlike” spillover and not savings estimates.

4. VENDOR/DESIGN PROFESSIONAL SURVEY QUESTIONS

4.1 OVERVIEW OF INFLUENTIAL VENDOR SURVEY QUESTIONS

As mentioned earlier, we attempted to contact vendors and design professionals identified by program participants as being most influential in their decision to install the natural gas saving measures through the program (Questions FR4 and C1 discussed above). A separate survey tailored to these designers/vendors was administered for the purposes of estimating free-ridership (see Appendix C).

Design professionals'/vendors' responses to the free-ridership questions replaced participants' responses if the designer/vendor agreed they were most influential (VA3 = 4 or 5). If the designer/vendor did not agree they were the most influential (VA3 is less than 4), or if attempts to survey the designer/vendor failed, the customer's responses were used to estimate free-ridership.

4.1.1 Design professional/vendor's identification of decision maker

Participant-identified design professionals/vendors were first asked a series of introductory questions designed to verify that they were influential in the decision to install the equipment (V1a > 6). The questions are shown below:

Table 4-1. Design Professional/Vendor's Identification of Decision Maker

Item	Text
V1A	First I'd like to ask you about your decisions to recommend <MEASURE CATEGORY> through the program. Were you involved in the decision-making process at the design stage when the <MEASURE CATEGORY> project was specified and agreed upon for this facility?
V1B	*(IF NO)* At what point in the process did you become involved?
V1C	What was your role?
VA1	On a scale of 0 to 10, with 0 being no influence and 10 being a great deal of influence, how much influence did your firm have on specifying the efficiency levels or features of <MEASURE CATEGORY> so that it would qualify for the program?

4.1.2 Design professional/vendor free-ridership questions

The design/vendor free-ridership survey questions are a parallel version of the customer survey questions and are not discussed here. Questions from the customer version of the survey that are inappropriate for designers/vendors were not asked.

4.2 OVERVIEW OF NONPARTICIPANT SPILLOVER SURVEY QUESTIONS

Nonparticipant ***spillover*** refers to energy efficient equipment installed by program nonparticipants due to the program's influence. The program can have an influence on design professionals and vendors as well as an influence on product availability, product acceptance, customer expectations, and other market effects, all of which may induce nonparticipants to buy high efficiency products.

An important issue related to the quantification of nonparticipant spillover savings is how to value the savings of equipment installed outside the program. Experience has shown that customers cannot provide adequate equipment-specific data on new equipment installed either through or outside a program to a telephone interviewer. Although they are usually able to report what type of equipment was installed, they typically cannot provide sufficient information about the quantity, size, efficiency, and/or operation of that equipment to make a determination about its program eligibility.

Thus, it was decided to survey design professionals and equipment vendors who were more knowledgeable about equipment and who were familiar with what is/is not program-eligible. Since there were electric and natural gas savings associated with design professionals or vendors (by measure category) in the program tracking system database included in the study, we knew for each design professional/vendor the savings attributable to them for eligible equipment installed through the program.

To determine nonparticipant spillover, design professionals and equipment vendors were asked (by measure category) what percent of their sales to the customers of National Grid participating in the nonparticipant component of the study met or exceeded the program standards for each program measure category installed through the program(s) and what percent of these sales did not receive an incentive. They were then asked several questions about the program's impact on their decision to recommend/install this efficient equipment outside the program. Using the survey responses and measure savings data from the program tracking system, the potential nonparticipant spillover savings could be estimated for each design professional/vendor and the results extrapolated to the total program savings.

This method of estimating nonparticipant spillover is a *conservative* estimate for two reasons. First, not all design professionals and equipment vendors who are familiar with the programs will have specified and/or installed equipment through the program during the study period. Thus, we miss any nonparticipant spillover that is associated with these other design professionals/vendors (although it is less likely these design professionals/vendors had nonparticipant spillover if they are not involved with the programs).

Second, this method only allows extrapolation of nonparticipant spillover ***for those same measure categories that a particular design professional/vendor is associated with in the program database***. Thus, if a vendor installed program-eligible equipment in other equipment categories outside the program, but none through the program, this method does not capture nonparticipant spillover savings for that particular type of equipment. In essence, this method measures only "like" nonparticipant spillover; that is, spillover for measures like those installed through the program during the study period.

Four steps were used to determine nonparticipant "like" spillover:

- For each design professional/vendor, the survey determined the percentage of all program-eligible equipment sold/installed outside the program in National Grid's territory.
- For each design professional/vendor, the survey determined whether the sale or installation of program-eligible equipment outside the program was due to the program (nonparticipant spillover).

- For each design professional/vendor, savings associated with this "nonparticipant spillover" equipment were determined by examining the participant database and quantities installed.
- Nonparticipant spillover savings were then extrapolated from the survey to the total program savings in the year.

Each of these steps is discussed in more detail below.

4.2.1 Step 1: Determine the percentage of all program-eligible equipment installed outside the program

Using the program database, we identified which equipment design professionals/vendors installed, and how that equipment fit into measure categories. For measure categories they installed through the program, design professionals/vendors were asked what percent of the equipment would have been eligible for the programs and what percent of that eligible equipment did not receive an incentive through the programs. Those who said some of the eligible equipment did not receive an incentive through the programs are included in Step 2 of the nonparticipant spillover analysis.

VNP1a Our records show that your firm specified, sold, and/or installed <MEASURE CATEGORY> to commercial and industrial customers in 2013 through the <PROGRAM>. This includes equipment such as <DETAILED DESCRIPTION>. Is that correct?

VNP2 Please think about all the program-eligible <MEASURE CATEGORY> you specified, sold and/or installed for National Grid customers in 2013. Did you specify, sell, and/or install any of this program-eligible <MEASURE CATEGORY> to customers of National Grid without the customer participating in a National Grid program?

VNP3 (IF VNP2 = Yes) What percent of all of this program-eligible <MEASURE CATEGORY> you specified, sold and/or installed for National Grid customers in 2013 did not receive an incentive through a National Grid program?

4.2.2 Step 2: Determine whether the program-eligible equipment specified/installed outside the program was due to the program

A number of additional questions were asked of design professionals/vendors who had program therm savings associated with the types of program-eligible equipment specified/installed outside the program. These questions measured the causal effect of the program on design professionals/vendors actions. These questions and the preliminary nonparticipant "like" spillover rate are shown below.

VNP5 I'm going to read you 3 statements. For each statement, please tell me whether you agree or disagree that this statement applies to your company. There are no right or wrong answers; we just want your honest opinion.

Our past experience specifying or installing <MEASURE CATEGORY> through energy-efficiency programs has convinced us that this equipment is cost effective or beneficial even without a program incentive.

VNP6 We are better able to identify opportunities to improve energy efficiency by using high efficiency <MEASURE CATEGORY>because of our previous experience with the performance of energy

efficient equipment installed through energy efficiency programs, and what we learned through working with National Grid.

VNP7 We are more likely to discuss energy efficient options with all of our customers when developing project plans for <MEASURE CATEGORY> because of our previous experience with the performance of energy efficient equipment installed through energy efficiency programs, and what we learned through working with National Grid.

Based on these responses, we calculated a preliminary nonparticipant "like" spillover rate, as shown in the table below.

Table 4-2. Preliminary Nonparticipant "Like" Spillover Rate

# of Agreements to VNP5–VNP7	Preliminary Nonparticipant "Like" Spillover Rate
3	**100%**
2	**50%**
1 or 0	**0%**

A. Nonparticipant spillover consistency checks

To improve the reliability of the nonparticipant spillover estimates, two consistency check questions were also asked:

VNP4 In 2013, you mentioned that about [VNP3] of the <MEASURE CATEGORY> you specified, and/or installed would have been eligible for an incentive through a National Grid program, but did not receive an incentive.

What are the main reasons why your firm did not request a customer incentive for this energy saving equipment you specified/installed?

VNP8 Please describe what impact, if any, the <PROGRAM> had on your decision to specify or install energy efficient <MEASURE CATEGORY> outside of the program.

Note that in the preliminary "like" spillover questions, we asked the respondent to refer to program-eligible equipment. Therefore, we ideally would have no cases that provide the response "did not qualify" to VNP4. However, in the event this response was provided, the preliminary nonparticipant estimate is reduced by 50 percent. We did not completely exclude "did not qualify" measures as nonparticipant spillover since this response only suggested some uncertainty about the eligibility requirements.

The final consistency question was asked to ensure that the responses given to the first set of nonparticipant spillover questions were consistent. The response to this last question was visually examined by two analysts. If the response to the last question contradicted the other responses, the adjusted nonparticipant spillover rate was reduced by one-half or doubled. For example, if a vendor agreed with all 3 statements about the impact of their past experience with the program on the installation of program-eligible equipment outside the program, they received a preliminary nonparticipant spillover estimate of 100 percent. If the main reason why they did not have the customer apply for the incentive was something other than "didn't qualify" (e.g., wasn't worth the paperwork hassle), the adjusted nonparticipant spillover rate remained at 100 percent. If, however, in the open-ended question the vendor said, "I would say that, let's see, it really didn't impact the business because our business is driven by more than rebates" or "I don't

think it's had much" or "almost no" impact, the final nonparticipant spillover rate was reduced to 50 percent. These responses may indicate that the program influenced a number of installations/sales but the customer/vendor did not want to prepare the paperwork to get the incentive.

4.2.3 Step 3: Determine the savings associated with this nonparticipant spillover equipment

At the end of Step 2, respondents with nonparticipant spillover were assigned a nonparticipant spillover percent for one or more measure categories. As illustrated in the footnote at the bottom of this page, the third step associated savings with each nonparticipant spillover measure for each respondent.[21]

For example, assume a vendor had 2,000 therm savings in the program tracking system database attributable to HVAC measures. If that vendor said that 25 percent of all their program-eligible HVAC equipment were sold outside the program, the potential nonparticipant spillover savings would be (2,000 therm * 0.25/(1–0.25) = 667 therms). If this vendor was assigned (in Step 2) a nonparticipant spillover rate of 100 percent for HVAC equipment, the nonparticipant spillover therm savings for that vendor remains at 667 therms. But if that same vendor was assigned (in Step 2) a nonparticipant spillover rate of only 50 percent for program-eligible HVAC equipment, the nonparticipant spillover therm savings for that vendor was 667 * 0.5 = 334 therms. This type of calculation was made by measure category for each design professional and vendor who had a nonparticipant spillover rate of more than 0 percent.

As discussed earlier under the measurement of participant spillover, the participating customer survey and analysis included calculations of "like" spillover. "Like" spillover was defined as measures exactly like the participant's measures installed through the program that the participant installed at a later time *and* for which they did not receive an incentive even though they said the program influenced their decision. To avoid double-counting the spillover for the same measures reported by both participants and their design professionals/vendors, we eliminated any savings that had been identified as "like" spillover by participants and that were

[21] The formula for calculating therm savings for each measure was derived as follows:

Definitions:

a = Gross therm in program tracking system database (measures that received an incentive)
b = Percent of program-eligible equipment that received no incentive (survey question)
x = therm nonparticipant spillover (spillover reported by design professional/vendor—"like" spillover by participants associated with design professional/vendor)

Solve for x:

Total therm for all program-eligible equipment= therm savings for efficient equipment sold through program +therm savings for efficient equipment sold outside the program = a+x
b = nonparticipant spillover/total therm = x/(a+x)

Therefore:

b = x/(a+x)
solving for x yields
x = b*a/(1-b)

Nonparticipant spillover = fraction of equipment receiving no incentive * therm in database/(1 - fraction of equipment receiving no incentive).

also associated with a design professional or vendor who had demonstrated nonparticipant spillover for the same measure category. This conservative approach was based on the assumption that the same design professional or vendor was involved in the participant's "like" spillover project.

4.2.4 Step 4: Extrapolate the survey nonparticipant spillover savings to the total vendor population savings during the study period

The last step in the nonparticipant spillover estimation involved extrapolating the results to all vendors in the program tracking system database for each measure category. This was done by first calculating the ratio of nonparticipant spillover as determined from the vendor survey. This ratio (the estimated spillover percent) was then applied to the savings (both electric and gas) represented by vendors in the program tracking system database.

For example, if the survey covered a total of 857,814 therms in measure category savings and the surveyed nonparticipant spillover totals 62,221 therms for that measure category, surveyed nonparticipant spillover divided by the surveyed total therms savings is 7.3 percent. This identified nonparticipant spillover savings was extrapolated to all vendors related to the programs by proportionally applying the identified savings to each program at the measure-level.

5. DISTRIBUTOR SURVEY QUESTIONS AND RESULTS

As mentioned earlier, we attempted to contact distributors who offered lighting products at a discounted price through the Bright Opportunities program. A separate survey tailored to these distributors was administered for the purposes of estimating free-ridership (see Appendix C).

Distributor responses were used to calculate a free-ridership score. This score was then averaged with the participant free-ridership score to come up with an overall free-ridership score for the upstream lighting program.

5.1 DISTRIBUTOR'S IDENTIFICATION OF DECISION MAKER

The survey first asked distributors an introductory question designed to verify that they were knowledgeable about their company's participation in the program. Contacts who were knowledgeable about their company's participation were then asked about specific customers who participated. The questions are shown below:

Table 5-1. Distributor's Identification of Decision Maker

Item	Text
I1	According to our records, your company has been selling lighting products as part of Bright Opportunities initiative. [If needed, name some recent projects that used the program discounts]. We would like to ask you some questions about your participation in this program. Who would be most familiar with your participation? [If respondent is not familiar with the program, ask for someone who may be familiar and repeat I1]
PI0	According to our records you sold some lighting products that were discounted by the Bright Opportunities initiative to [CUSTOMER] in 2013. Do you recall this sale?

5.2 DISTRIBUTOR FREE-RIDERSHIP QUESTIONS

The distributor free-ridership survey questions are a similar to the questions asked of the participating customers. These questions were asked for each lighting type that the customer purchased.

Table 5-2. Distributor's Free-ridership Questions

Item	Text
PI3	According to our records you sold the [TYPE] bulbs/lamps at a [PROMOTIONAL PRICE] which was [BUYDOWN AMOUNT] less than your normal retail price for a discount of [DISCOUNT] percent. If this discount had not been available, do you think you would have sold any of these types of bulbs/lamps to this customer?
PI4	[IF RESPONSE TO PI3 <> "NO"] If this discount of [DISCOUNT] percent had not been available, would your sales of these [TYPE] bulbs/lamps to [CUSTOMER] been the same, lower, or higher?
PI4a	[IF SAME OR HIGHER] Why do you say this?
PI4b	[IF LOWER] By what percentage do you estimate your sales of these [TYPE] bulbs/lamps to [CUSTOMER] to be lower in the absence of the discount?

The free-ridership score was then calculated for each lighting type as follows:

Table 5-3. Distributor Free-ridership Calculations

Responses	Result
If customer would not have purchased any equipment without program (PI3 = No)	FR = 0%
If would have purchased fewer quantity without program (PI3 = Yes or Don't know)	FR = PI4b / 100
If would have purchased same amount regardless of the program (PI3 = Yes and PI4 = same)	FR = 100%

Free-ridership results from the distributors were then averaged with the results from the participant surveys. This method follows the approach used by KEMA in the evaluation of the Massachusetts Bright Opportunities program[22].

Table 5-4. Upstream Lighting Free-ridership Rates

End-user Free-ridership rate	Distributor Free-ridership rate	Recommended Free-ridership rate
15.5%	2.1%	8.8%

[22] Process Evaluation of the 2012 Bright Opportunities Program Final Report. KEMA, Inc. June 14, 2013

6. FREE-RIDERSHIP AND SPILLOVER STUDY RESULTS

This section presents the results of the 2013 electric and natural gas free-ridership and spillover study. First, we present summary tables that include statewide figures. Following the summary tables, we present detailed results for each program. The detailed results include free-ridership and spillover rates by program type, measure type and by program, along with corresponding error margins. We then present observations of participant "unlike" spillover.

Nonparticipant spillover was assessed at the statewide level, resulting in statewide estimates by measure type. These estimates were then applied to each program that offered that measure type**.** Once the identified participant spillover savings were removed from the nonparticipant estimate (to avoid double-counting spillover projects), we were only able to attribute nonparticipant spillover savings for the lighting measure type to the electric programs.

6.1 STATEWIDE RESULTS

Table 6-1 summarizes the free-ridership and spillover estimates for electric measures offered through the programs. The statewide free-ridership rate for electric measures installed through these programs is 18.1 percent, the participant spillover "like" rate is 4.7 percent, and the nonparticipant spillover rate is 0.9 percent, resulting in a statewide net-to-gross rate of 87.5 percent.

Table 6-1. 2013 C&I Electric Free-ridership and Spillover Results Summary by Program

Program	Surveyed	Population	Population kWh Savings	Free-ridership Rate	90% Margin Error (±)	Participant "Like" Spillover Rate	90% Margin Error (±)	Nonparticipant "Like" Spillover Rate	Net-to-Gross Rate
Design 2000plus Program	119	3,077	15,239,541	26.7%	4.8%	0.5%	0.0%	4.5%	78.3%
Energy Initiative Program	96	392	41,977,142	19.1%	5.1%	7.0%	3.9%	0.0%	88.0%
Small Business Program	147	1,291	22,019,804	10.2%	2.6%	3.0%	4.8%	0.0%	92.8%
Total	**362**	**4,760**	**79,236,487**	**18.1%**	**2.5%**	**4.7%**	**2.3%**	**0.9%**	**87.5%**

Table 6-2 summarizes the free-ridership and spillover estimates for natural gas measures offered through the programs. The statewide free-ridership rate for natural gas measures installed through these programs is 23.2 percent, the participant spillover "like" rate is 0.04 percent, and the nonparticipant spillover rate is 0.3 percent, resulting in a statewide net-to-gross rate of 77.5 percent.

Table 6-2. 2013 C&I Natural Gas Free-ridership and Spillover Results Summary by Program

Program	Surveyed	Population	Population Therm Savings	Free-ridership Rate	90% Margin Error (±)	Participant "Like" Spillover Rate	90% Margin Error (±)	Nonparticipant "Like" Spillover Rate	Net-to-Gross Rate
Large Commercial New Construction	35	164	381,702	28.1%	9.9%	2.3%	4.8%	0.7%	74.9%
Large Commercial Retrofit	42	475	1,610,343	22.4%	7.4%	0.0%	0.0%	0.2%	77.8%
Small Business Program[23]	25	110	28,130	3.4%	5.8%	0.0%	0.0%	0.5%	97.0%
Total	**102**	**749**	**2,020,174**	**23.2%**	**2.8%**	**0.4%**	**1.6%**	**0.3%**	**77.5%**

6.2 DETAILED RESULTS

In this section, results are presented for each measure type. The measure type categories were chosen by National Grid, and measure type was assigned based on the equipment installed. Table 6-3 details which equipment were assigned to which measure type classification, combining gas and electric measures.

Table 6-3. Breakdown of Equipment in Measure Type Categories

Measure Type	Equipment
Compressed Air	Compressors
Controls	Boiler controls
	EMS
	Hood controls
	Thermostats
Custom	Control system
	EMS
	Lighting project
	Motors
	Pumps
Food Service	Fryer

[23] There was one Small Business Water Heating record that accounted for 56 percent of the savings. This record was a full free-rider that was driving the net-to-gross results. Due to the large influence this one case has on the final results, the team has decided to remove this case from the analysis and report results excluding this record. If this case remained in the analysis, the Small Business program free-ridership rate would be 23.8 percent and net-to-gross would be 92.3 percent.

Measure Type	Equipment
	Oven
	Steamer
HVAC	Boiler
	EMS
	Furnace
	Vending machine
	Water heater/boiler combo
HVAC - Distribution	Steam traps
HVAC - Plant	Boilers (condensing, custom and steam)
	Furnace
HVAC Non-unitary	Chiller
HVAC Unitary	AC equipment
	Dual enthalpy economizer control
	ECM motors
	Economizer/ventilation controls
	Heat pump
Insulation	Air sealing
	Attic insulation
	Pipe insulation
	Windows
Lighting	CFLs
	Custom lighting
	Daylight dimming system
	Fluorescent lights (T8)
	LEDs
	Occupancy sensor
	Pulse start metal halide
Non-lighting	Controls
	Cooler
	Custom compressed air
	Custom hot water
	Fan controls
	HVAC
	Motors/drives
	Vending machine
Other	Other
	Replace thermo oxidizers
	Retro commissioning
	Steam traps

Measure Type	Equipment
VSD	Fans
	Hot water pump
	Motors
	VFDs
Water Heating	Aerator
	Salon nozzle
	Showerhead
	Spray valves
	Pipe insulation
	Tank insulation
	Water Heater

6.2.1 Detailed program results

Table 6-4 presents National Grid's free-ridership and spillover rates for each electric measure type by program. The net-to-gross rate is 87.5 percent. Within the Energy Initiative program, the HVAC measure type had the lowest free-ridership rate (0.3 percent) followed by the lighting measure type for the Small Business program (7.6 percent). The highest participant like spillover rate was with Non-lighting equipment for the Small Business followed by Lighting for the Energy Initiative program (18.9 percent and 10.1 percent, respectively). The highest free-ridership rate appears with Lighting measure type for Design 2000plus followed by VSD for Energy Initiative.

Table 6-4. C&I Electric Free-ridership and Spillover Results by Program and Measure Type

Program	Measure Type	Surveyed	Population	Population Savings	Free-ridership Rate	90% Margin Error (±)	Participant "Like" Spillover Rate	90% Margin Error (±)	Nonparticipant "Like" Spillover Rate	Net-to-Gross Rate
Design 2000plus Program	Compressed Air	27	49	1,312,235	30.6%	11.5%	0.0%	0.0%	50.0%	119.4%
	Custom	9	34	4,615,894	33.4%	19.2%	0.0%	0.0%	0.0%	66.6%
	HVAC Unitary	14	54	422,126	24.7%	12.9%	0.0%	0.0%	5.3%	80.7%
	Lighting	10	44	1,891,943	64.9%	21.0%	0.0%	0.0%	0.0%	35.1%
	Upstream Lighting[24]	58	2,888	5,876,269	8.8%	5.7%	1.3%	2.8%	NA	92.5%
	VSD	1	8	1,121,073	25.0%	0.0%	0.0%	0.0%	0.0%	75.0%
	Total	**119**	**3,077**	**15,239,541**	**26.7%**	**4.8%**	**0.5%**	**0.0%**	**4.5%**	**78.3%**

[24] The free-ridership rate is an average of the participant (end user) and distributor results (see Section 5). Number surveyed and participant like spillover are based on participant data.

Program	Measure Type	Surveyed	Population	Population Savings	Free-ridership Rate	90% Margin Error (±)	Participant "Like" Spillover Rate	90% Margin Error (±)	Nonparticipant "Like" Spillover Rate	Net-to-Gross Rate
Energy Initiative Program	Custom	24	98	19,334,514	8.6%	8.3%	7.3%	12.5%	0.0%	98.8%
	HVAC	3	19	3,110,799	0.3%	24.3%	0.0%	0.0%	0.0%	99.7%
	Lighting	53	239	12,764,201	24.2%	7.6%	10.1%	4.4%	0.0%	85.9%
	VSD	16	36	6,767,628	48.0%	13.0%	3.6%	5.5%	0.0%	55.6%
	Total	**96**	**392**	**41,977,142**	**19.1%**	**5.1%**	**7.0%**	**3.9%**	**0.0%**	**88.0%**
Small Business program	Lighting	107	1,106	19,647,362	7.6%	2.8%	1.1%	2.8%	0.0%	93.5%
	Non-lighting	40	185	2,372,442	31.3%	6.3%	18.9%	16.2%	0.0%	87.6%
	Total	**147**	**1,291**	**22,019,804**	**10.2%**	**2.6%**	**3.0%**	**4.8%**	**0.0%**	**92.8%**
Total		**362**	**4,760**	**79,236,487**	**18.1%**	**2.5%**	**4.7%**	**2.3%**	**0.9%**	**87.5%**

Table 6-5 presents detailed free-ridership and participant like spillover rates for each natural gas measure type and program. The Small Business program has the highest net-to-gross rate due to low free-ridership (97.0 percent with the one water heating case removed). The Commercial New Construction - Prescriptive program has the lowest net-to-gross rate (63.2 percent) driven by the high free-ridership rate (47.9 percent).

Table 6-5. C&I Natural Gas Free-ridership and Spillover Results by Program and Measure Type

Program	Measure Type	Surveyed	Population	Population Savings	Free-ridership Rate	90% Margin Error (±)	Participant "Like" Spillover Rate	90% Margin Error (±)	Nonparticipant "Like" Spillover Rate	Net-to-Gross Rate
Commercial New Construction - Custom	HVAC - Plant	8	24	180,727	22.2%	20.9%	0.0%	0.0%	1.4%	79.3%
	Other	2	5	90,893	17.2%	39.5%	0.0%	0.0%	0.0%	82.8%
	Water Heating	1	12	29,688	43.8%	0.0%	0.0%	0.0%	0.0%	56.3%
	Total	**11**	**41**	**301,308**	**22.8%**	**14.8%**	**0.0%**	**0.0%**	**0.9%**	**78.1%**
Commercial New Construction - Prescriptive	Food Service	1	13	10,212	31.3%	0.0%	0.0%	0.0%	NA	68.8%
	HVAC	16	75	60,322	47.7%	15.9%	14.8%	11.0%	NA	67.1%
	Water Heating	7	35	9,859	66.5%	20.8%	0.0%	0.0%	0.0%	33.5%
	Total	**24**	**123**	**80,394**	**47.9%**	**11.7%**	**11.1%**	**7.1%**	**0.0%**	**63.2%**

Program	Measure Type	Surveyed	Population	Population Savings	Free-ridership Rate	90% Margin Error (±)	Participant "Like" Spillover Rate	90% Margin Error (±)	Nonparticipant "Like" Spillover Rate	Net-to-Gross Rate
Large Commercial Retrofit - Custom	Controls	3	26	165,214	77.2%	76.5%	0.0%	0.0%	1.3%	24.1%
	HVAC - Distribution	14	42	820,480	26.2%	13.5%	0.0%	0.0%	0.0%	73.8%
	Insulation	4	18	131,062	2.9%	16.5%	0.0%	0.0%	0.2%	97.3%
	Other	1	16	217,942	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	Total	**22**	**102**	**1,334,698**	**25.9%**	**12.6%**	**0.0%**	**0.0%**	**0.2%**	**74.2%**
Large Commercial Retrofit - Prescriptive	Controls	2	18	3,951	17.3%	98.7%	0.0%	0.0%	1.3%	84.0%
	Insulation	3	10	57,195	6.4%	27.3%	0.0%	0.0%	0.2%	93.8%
	Other	1	6	136,981	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	Water Heating	14	339	77,518	12.3%	10.2%	0.0%	0.0%	0.0%	87.7%
	Total	**20**	**373**	**275,645**	**5.0%**	**7.6%**	**0.0%**	**0.0%**	**0.1%**	**95.0%**
Small Business program[25]	Controls	12	41	9,950	8.1%	15.0%	0.0%	0.0%	1.3%	93.2%
	Water Heating	13	69	18,180	0.9%	1.7%	0.0%	0.0%	0.0%	99.1%
	Total	**25**	**110**	**28,130**	**3.4%**	**5.8%**	**0.0%**	**0.0%**	**0.5%**	**97.0%**
Total		**102**	**749**	**2,020,174**	**23.2%**	**2.8%**	**0.4%**	**1.6%**	**0.3%**	**77.5%**

Table 6-6 presents statewide free-ridership and spillover rates for each measure type combined across all electric programs. The HVAC measure type has the lowest level of free-ridership (0.3 percent) while the variable speed drive measure type has the highest free-ridership rate (44.7 percent). Participant like spillover is highest for the non-lighting measure type (18.9 percent).

[25] There was one Small Business Water Heating record that accounted for 56 percent of the savings. This record was a full free-rider that was driving the net-to-gross results. Due to the large influence this one case has on the final results, the team has decided to remove this case from the analysis and report results excluding this record. If this case remained in the analysis, the Small Business Water Heating measure type free-ridership rate would be 56.0 percent and net-to-gross rate would be 44.0 percent making the overall Small Business program free-ridership rate 23.8 percent and net-to-gross 92.3 percent.

Table 6-6. 2013 Statewide C&I Electric Free-ridership and Spillover Results by Measure Type

Measure Type	Surveyed	Population	Population Savings	Free-ridership Rate	90% Margin Error (±)	Participant "Like" Spillover Rate	90% Margin Error (±)	Nonparticipant "Like" Spillover Rate	Net-to-Gross Rate
(Upstream) Lighting[26]	58	2,888	5,876,269	8.8%	5.7%	1.3%	0.3%	NA	92.5%
Compressed Air	27	49	1,312,235	30.6%	11.5%	0.0%	0.0%	50.0%	119.4%
Custom	33	132	23,950,408	13.3%	7.9%	5.9%	1.7%	0.0%	92.6%
HVAC	3	19	3,110,799	0.3%	24.3%	0.0%	0.0%	0.0%	99.7%
HVAC Unitary	14	54	422,126	24.7%	12.9%	0.0%	0.0%	5.3%	80.7%
Lighting	170	1,389	34,303,506	16.9%	3.5%	4.4%	0.6%	0.0%	87.4%
Non-lighting	40	185	2,372,442	31.3%	6.3%	18.9%	5.0%	0.0%	87.6%
VSD	17	44	7,888,701	44.7%	12.1%	3.1%	1.3%	0.0%	58.4%
Total	**362**	**4,760**	**79,236,487**	**18.1%**	**2.5%**	**4.7%**	**2.3%**	**0.9%**	**87.5%**

Table 6-7 presents statewide free-ridership and spillover rates for each measure type combined across all natural gas programs. The Insulation and Other measure types had the lowest level of free-ridership (4.0 percent and 3.5 percent, respectively) while the HVAC measure type has the highest free-ridership rate (47.7 percent). Only the HVAC measure type had participant 'like' spillover (14.8 percent).

[26] The free-ridership rate is an average of the participant (end user) and distributor results (see Section 5). Number surveyed and participant like spillover are based on participant data.

Table 6-7. 2013 Statewide C&I Natural Gas Free-ridership and Spillover Results by Measure Type

Measure Type	Surveyed	Population	Population Savings	Free-ridership Rate	90% Margin Error (±)	Participant "Like" Spillover Rate	90% Margin Error (±)	Nonparticipant "Like" Spillover Rate	Net-to-Gross Rate
Controls	17	85	179,115	72.1%	16.4%	0.0%	0.0%	1.3%	29.2%
Food Service	1	13	10,212	31.3%	0.0%	0.0%	0.0%	NA	68.8%
HVAC	16	75	60,322	47.7%	15.9%	14.8%	6.5%	NA	67.1%
HVAC - Distribution	14	42	820,480	26.2%	13.5%	0.0%	0.0%	0.0%	73.8%
HVAC - Plant	8	24	180,727	22.2%	20.9%	0.0%	0.0%	1.4%	79.3%
Insulation	7	28	188,257	4.0%	10.0%	0.0%	0.0%	0.2%	96.3%
Other	4	27	445,816	3.5%	14.1%	0.0%	0.0%	0.0%	96.5%
Water Heating[27]	35	455	135,489	21.6%	7.1%	0.0%	0.0%	0.0%	78.4%
Total	**102**	**749**	**2,020,174**	**23.2%**	**2.8%**	**0.4%**	**1.6%**	**0.3%**	**77.5%**

Table 6-8 presents statewide free-ridership and spillover rates by program type combined across all electric programs. The highest net-to-gross rate is for the Energy Initiative Custom programs while the lowest net-to-gross rate was for the Design 2000plus Custom program (98.8 percent and 66.6 percent, respectively). Free-ridership was highest among the Design 2000plus Prescriptive program had the highest free-ridership rate (42.4 percent) and the highest nonparticipant spillover.

Table 6-8. 2013 Statewide C&I Electric Free-ridership and Spillover Results by Program Type

Program Type	Surveyed	Population	Population Savings	Free-ridership Rate	90% Margin Error (±)	Participant "Like" Spillover Rate	90% Margin Error (±)	Nonparticipant "Like" Spillover Rate	Net-to-Gross Rate

[27] There was one Small Business Water Heating record that accounted for 56 percent of the savings. This record was a full free-rider that was driving the net-to-gross results. Due to the large influence this one case has on the final results, the team has decided to remove this case from the analysis and report results excluding this record. If this case remained in the analysis, the Water Heating measure type free-ridership rate would be 30.1 percent and net-to-gross rate would be 69.9 percent.

Program Type	Surveyed	Population	Population Savings	Free-ridership Rate	90% Margin Error (±)	Participant "Like" Spillover Rate	90% Margin Error (±)	Nonparticipant "Like" Spillover Rate	Net-to-Gross Rate
Design 2000plus program - Custom	9	34	4,615,894	33.4%	19.2%	0.0%	0.0%	0.0%	66.6%
Design 2000plus program - Prescriptive	52	155	4,747,378	42.4%	7.8%	0.0%	0.0%	14.3%	71.9%
Design 2000plus program - Upstream[28]	58	2,888	5,876,269	8.8%	5.7%	1.3%	0.3%	0.0%	92.5%
Energy Initiative program - Custom	24	98	19,334,514	8.6%	8.3%	7.3%	2.6%	0.0%	98.8%
Energy Initiative program - Prescriptive	72	294	22,642,628	28.0%	6.3%	6.8%	1.3%	0.0%	78.8%
Small Business program	147	1,291	22,019,804	10.2%	2.6%	3.0%	0.4%	0.0%	92.8%

6.2.2 "Unlike" spillover observations

The evaluation team included questions to address "unlike" spillover—energy efficient equipment installed by a participant due to program influence that is not identical to the equipment they received through the program. However, given the difficulties in estimating savings for these installations using regular telephone interviewers, we present only observations of "unlike" spillover and not savings estimates.

Four National Grid respondents reported that they have installed other types of energy efficient equipment outside of a National Grid program and that National Grid's programs were influential in the installation. Below we list out the different types of equipment identified and any additional information provided about the equipment.

[28] The free-ridership rate is an average of the participant (end user) and distributor results (see Section 5). Number surveyed and participant like spillover are based on participant data.

- Two respondents indicated they installed new lighting. One of these respondents indicated they installed approximately 300 LED lights, common area lights and motion sensors. These lights were 13 inch lights. Another respondent was only able to indicate they installed a couple of dozen light bulbs.
- One respondent installed five gas heaters that were 1200 BTUs.
- One respondent installed three or four EMS systems and high-efficiency refrigeration cases of unknown size of quantity.

7. MARKETING RESULTS

7.1 AWARENESS OF NATIONAL GRID RHODE ISLAND STATEWIDE MARKETING CAMPAIGN

National Grid Rhode Island launched a statewide marketing campaign in 2012-2013 that targeted both residential and nonresidential customers. The campaign was separate from program-specific outreach, and focused generally on the opportunity to save energy with National Grid. Nonetheless, the effort may have led customers to participate in, or further review, energy-efficiency programs with the utility that they otherwise would not. Tetra Tech included questions in the survey to assess awareness of the campaign and, if aware, did it influence their decisions.

Overall, less than one-half of surveyed customers were aware of the statewide campaign. The general awareness question asked respondents if they "recall any print or radio advertisements that talk about the number of ways that a business can save energy with National Grid." The wording reflected the main distribution channels for the campaign and the most consistent message ("number of ways"). Forty-two percent of respondents answered affirmatively to this question. Coverage was generally limited to one or two sources, with radio (69 percent) and television (28 percent) cited most often.

Table 7-1. Awareness of Statewide Marketing Campaign

	N	Percent
Total survey responses (accounts)	319	
Aware of statewide marketing campaign	133	41.7%
Of those aware of the campaign[a]		
Number & source of information		
1 source	70	53.0%
2 sources	42	31.8%
More than 2 sources of information	20	15.2%
Radio	92	69.7%
Television	37	28.0%
Direct mail	23	17.4%
Number of ways to save energy with National Grid		
Do not know	41	31.1%
12 ways	2	1.5%
18 ways	0	0.0%
24 ways	2	1.5%
Number other than 12, 18, or 24	87	65.9%

[a] Base N=132 due to skip error for follow-up questions

There are few measurable signs, however, that customers paid close attention to the campaign or that the information is highly differentiated from other National Grid communications or program-specific promotions. The number of ways that customers can save energy with National Grid is the

most consistent tag-line in the campaign. Some materials present this information in a quiz-like format with a multiple choice question that runs parallel to a question about the number of islands in Rhode Island. To further assess awareness of the campaign, we asked customers the same question—i.e., how many ways can a business save energy with National Grid. If a high proportion of customers answer the question "correctly" by providing a number or 12, 18, or 24[29], we have more confidence that the statewide campaign helped to shape energy efficient purchases. Over 30 percent of customers answered "don't know" to this question and only a handful of customers answered 12 (N=2) or 24 (N=2). No one said there were 18 ways to save energy. Certainly, customers may have seen and recalled other information in the statewide campaign material; but, we cannot measure this reliably or differentiate it from their awareness or knowledge of other National Grid advertisements or program-specific initiatives.

Awareness does not differ significantly by program type or account management. A slightly higher percentage of customers who have a dedicated account representative were aware of the campaign than those who do not (45 percent versus 41 percent), but this difference is not statistically significant (t-statistic 0.75, $p > 0.46$). Customers enrolled in the Small Business program were slightly less likely to be aware of the campaign than those enrolled in other downstream programs (40 percent versus 43 percent); again, this difference is not significant.[30]

Table 7-2. Awareness of Marketing Campaign by Account Representation and Program Type

	Percent aware
Awareness by account representation[a]	
Dedicated account representative	44.9%
No dedicated account representative	40.6%
Awareness by program type[b]	
Small Business Program participant	40.0%
Other program participant	42.9%

[a] Responses of "do not know" treated as "no representative" for analysis

[b] Excludes Bright Opportunities Program

Differences are not statistically significant, $p > 0.40$

7.2 AWARENESS OF THE MARKETING CAMPAIGN AND PURCHASE DECISIONS

More than one-half (55 percent) of those aware of the campaign had seen the information *before* they purchased energy-efficient equipment. Most of these customers indicated the campaign was influential in their purchase decision. On a scale from 0 ("no influence at all") to 10 ("a great deal of influence"), 52 percent assigned the marketing campaign a score greater than 5. Twenty-nine percent assigned a score of 8 or higher. However, the distribution was multi-modal and a sizeable minority indicated the campaign did not weigh heavily on their purchase decision: More than one-third assigned influence scores of less than 5 and 16 percent indicated the campaign had "no influence at all" (score of 0).

[29] The number differed across campaign literature, possibly because it was targeting different customer segments. All of the examples we reviewed, however, were directed towards business customers.

[30] Customers enrolled in the upstream Bright Opportunities program were excluded from this analysis.

Table 7-3. Influence of the Campaign on Purchase Decision

	N	Percent
Awareness relative to purchase decision		
Aware before decision	73	55.3%
Aware after decision	44	33.3%
Don't know/not sure	14	10.6%
Influence of campaign on purchase		
No influence at all (0)	12	16.4%
Influence score 1 to 4	13	17.8%
Midpoint (5)	10	13.7%
Influence score 6 to 9	35	47.9%
Great deal of influence (10)	3	4.1%

Distribution is multi-modal (n=12 responses of 0, n=10 of 5 and n=13 of 8)

[a] Asked of those who were aware before their purchase decision

We examined how awareness of the marketing campaign varied by rates of free ridership and spillover. On average, the free-ridership rate does not differ between those who are aware of the campaign (21.9 percent free-ridership) or not (20.8 percent free ridership). Therefore, awareness seems not to have influenced free-ridership. However, we cannot say what the free-ridership rate of aware customers would have been absent the campaign. Since one-half of survey respondents are not free riders (free-ridership rate of 0), we also examined free-ridership as a binary measure. A somewhat higher proportion of respondents who have zero free ridership were aware of the marketing campaign versus those with any free ridership (42.6 percent versus 39.7 percent), but this difference is not statistically significant (t-statistic 0.59, $p > 0.5$).

Table 7-4. Awareness by Free-Ridership

	Aware	Not Aware
Free-ridership rate (mean)	21.9%	20.8%
Free-rider score > 0	39.7%	
Free-rider score = 0	42.6%	

Differences are not statistically significant, $p > 0.50$

The survey results show very little like spillover. While the spillover rate reaches a high of 3.5, only 14 cases have values greater than zero. Of these 14 cases, six recalled the statewide marketing campaign and one respondent indicated the campaign had “a great deal of influence” on their decision. The others assigned scores of 0 or 2.

8. FINANCING RESULTS

8.1 PARTICIPATION IN NATIONAL GRID RHODE ISLAND'S INTEREST-FREE FINANCING OPTION

A subgroup of C&I customers received zero interest financing from National Grid which customers then repay on their energy bills. To understand the use of this offering, Tetra Tech added questions to the survey asking all customers about their use of available on-bill financing and how their project might have been different if the financing had not been available. For customers who used National Grid's financing, respondents were asked about their satisfaction or dissatisfaction with aspects of the offering and how the project may have changed if rebate levels were different.

8.2 SATISFACTION AND IMPORTANCE OF THE INTEREST-FREE FINANCING PROGRAM

About one-quarter of customers received interest-free financing from National Grid that allowed them to pay for their portion of the project cost over time. Most of the customers who received financing were participants in the Small Business Program (69 percent) and another 12 customers (14 percent) participated in the Energy Initiative Program. Most customers who received financing installed lighting measures—42 percent of all customers who received financing and, among Small Business Program participants, 50 percent installed lighting measures.

Customers' reports about the financing suggest the program is an important mechanism for facilitating energy-efficient solutions. Less than one-third of customers who received financing said they would have installed the same equipment at the same time if the financing was not available: stated differently, this suggests the interest-free financing was an important factor in the equipment purchase for almost 70 percent of customers. Further, availability of financing allowed almost one-half of the customers to change the scope of their plans. Being able to install more equipment than originally planned was cited most often (10 of 25 responses), but customers also mentioned being able to install equipment with higher efficiency (3 of 25) and shortening the decision-making process (3 of 25).

Table 8-1. Participation in Financing

	N	Percent
Total survey responses (accounts)	321	
Received interest-free financing	83	25.9%
Installed the equipment without financing[a]		
First measure	32	31.1%
Second measure	6	5.8%
Financing change the scope of the project[b]	25	47.2%
How change project scope[c]		
Installed more equipment	10	40.0%
Installed higher efficiency	3	12.0%
Made it affordable	7	28.0%
Quickened decision making	3	12.0%

[a] Analysis includes multiples. Percentages based on 103 customer-measures asked this question

[b] Percentages based on 53 customers asked this question.

[c] Analysis includes multiples but only 1 asked this question due to skip error. Percentages based on 25 customers asked this question.

Customers who received financing were very satisfied with the program. Of the 53 customers who were asked about various elements of the program, almost 80 percent were consistently “very satisfied” with every aspect of the program. The “convenience of having financing available” received the most positive reaction with 83 percent of customers being “very satisfied.” However, almost 80 percent gave similarly high satisfaction ratings for “terms of the financing,” “the application process,” and the “information provided” about the financing. Of the 16 customers who received financing and had a dedicated account representative, 13 were very satisfied with the role that was played by the representative.

Table 8-2. Satisfaction with the Interest-free Financing from National Grid

	N	Percent[a]
"Very satisfied" with		
Information provided about the financing	42	79.2%
Application process for financing	42	79.2%
Terms of the financing	41	77.4%
Convenience of having financing available	44	83.0%

[a] Percentages calculated on 53 customers asked these questions

Role of account rep in helping you obtain financing -- N=16 asked, 13 said "very satisfied"

8.3 REASONS FOR NOT PARTICIPATING IN INTEREST-FREE FINANCING

The reasons customers did not use the interest-free financing cluster into just a few categories. The lack of a need for financing is mentioned most often, although this reason takes various forms. Many customers simply state that they “had the money,” as if financing was not even something

they considered, or that they had the money because the project had been built into budget and planning. Some customers explicitly state the equipment expense was so small that it "was not worth financing." About a dozen customers indicated that it was against company policy to finance the project, although this was sometimes expressed as a preference to pay bills in full rather than manage monthly installments.

While not needing financing was cited most often, more than two dozen customers said they were not aware that interest-free financing was available. Customers who said they were not aware of the financing option were most often participating in the Design 2000plus Program (n=10) or the Energy Initiative Program (n=7). Only three Small Business program participants said they were not aware that financing was available. Small Business program participants who did not use the interest-free financing from National Grid more often said they had the cash available to pay for the equipment, there was an incentive to pay in full and receive a discount, or they did not incur out-of-pocket expenses for the measures.

8.4 WHAT INCENTIVE STRUCTURE IS MORE APPEALING?

The survey assessed customers' reactions to the tradeoffs between rebate amounts and the availability of financing. If it is possible to offer lower rebates and allow customers more financing options, this may be a cost-effective way for National Grid to incent energy-efficient equipment purchases. Customers are evenly split on the relative merits of financing versus rebates. Just over one-third (36 percent) of customers who received financing have "very" or "generally positive" views of reducing the rebate and being able to finance a larger portion of the project cost. However, very similar shares of customers have "very" or "generally negative" views of this tradeoff (28 percent) and about one in three customers cannot state a clear opinion ("about equal").

Table 8-3. Rebate/financing Tradeoff

	N	Percent
Reaction to a lower rebate but finance larger share of cost[a]		
Very or generally positive	19	35.8%
About equal	17	32.1%
Very or generally negative	15	28.3%
How much more of project cost like to finance[b]		
Less than 10 percent	5	26.3%
10 to 25 percent	1	5.3%
26 to 50 percent	1	5.3%
51 to 75 percent	0	0.0%
More than 75 percent	5	26.3%
Don't know/refused	7	36.8%
Most important in decision to install equipment[c]		
Rebate	33	41.3%
Financing	17	21.3%
Technical assistance	25	31.3%
Don't know/refused	5	6.3%

[a] Percentages calculated on 53 customers who received financing and were asked the follow-up questions

[b] Percentages calculated on 19 customers responding "very" or "generally positive"

[c] Analysis includes multiples. Percentages calculated on 80 customer-measures who received financing

A slightly higher proportion of customers who favored financing over rebates were participants in the Small Business Program (10 of the 19 or 53 percent). However, there are few cases available for analysis and Small Business Program participants also comprise most of those who held negative views (7 of 15 or 47 percent). These results suggest that a greater role for financing may depend on other factors, such as the size and scope of the project, the terms of the financing, or whether the equipment is part of a larger or longer-term planning process.

Of the 19 customers who held positive views of financing over rebates, opinion is divided as to how much more of the project cost they would like to finance: one-quarter (5 of 19) would finance less than 10 percent more while a similar number would finance more than 75 percent. Notably, most respondents (7 of 19 or 37 percent) could not answer this question, further suggesting that the value of financing relative to rebates may be highly dependent on a range of factors.

When asked which of three factors—rebate, financing, or technical assistance—was most important in their decision to install the current measure, a larger percentage of customers find rebates or technical assistance as most important. Over 40 percent of customers cite the rebate as most important and just under one-third name technical assistance. For about one in five, financing was most important. However, all of the customers for whom financing was most important were participants in the Small Business Program. The types of measures these Small Business customers installed were equally divided between lighting and non-lighting.

APPENDIX A: PARTICIPANT SAMPLING PLAN

This appendix presents our sample plan submitted to National Grid for the 2013 electric and natural gas free-ridership and spillover study in Rhode Island.

MEMORANDUM

TO: Jeremy Newberger, National Grid

FROM: Carrie Koenig and Pam Rathbun

SUBJECT: 2013 National Grid Rhode Island Free-ridership and Spillover Study Proposed Sample Plan

DATE: May 5, 2014

This memorandum presents our proposed sample plan for National Grid's Rhode Island 2013 electric and gas free-ridership and spillover study.

The data files transferred to us by National Grid provide information for Rhode Island participants in the Energy Initiative, Design 2000plus, New Construction-Custom, New Construction-Prescriptive, Retrofit-Custom, Retrofit-Prescriptive, and Small Business programs[31]. Only records where equipment was installed in 2013 (INSTALL_COMPLETED_DATE, FinalPaymentDate, FinalPaymentApplInstalldate) were included in the sampling. In addition, 16 records where therm or kWh saving was zero or no therm or kWh savings[32] were included were removed from the sample.

Each record in the data represents a measure installed through a program for a particular location. One account may have multiple measures categories. Therefore, it is necessary to take steps to collapse – or aggregate – the data through the sampling process, yet retain all the measure-specific information for each account[33].

In this document we discuss the steps to be used in:

- Preparation of the data file and aggregation of the participant data
- Selection of the sample
- Preparation of sample for data collection
- Review of the sample to identify companies with multiple sampled locations

[31] C&I direct install, C&I multi-family, Commercial New Construction, Design 2000, Energy Initiative, Large Commercial Retrofit, Small Business.

[32] For electric records, the variable "TotalGrosskWh" was used to identify kwh savings. For gas records, the variable "GrossAnnualGasThermsSaving" was used to identify therms savings.

[33] An account is defined as a unique Account Number (prim_bill_acct_no, bill_acct_no, BillingAccountNo) and program is defined by "program_name".

This is followed by a characterization of the proposed sample plan.

The current sample plan estimates 697 completed participant surveys at the measure level and 610 completed surveys at the account level (some accounts represent multiple measures).

A.1 PREPARATION OF THE DATA FILE AND AGGREGATION OF THE PARTICIPANT DATA

1) **Identify program and measure category participation**. The study estimates free-ridership at the measure category level. The first step in sample preparation is to assign measures to a measure category. Using the information provided in the data files[34], we identify the measure categories within the following programs:

    a. The Design 2000plus program consists of the measure categories: compressed air, custom, food service, HVAC non-unitary, HVAC unitary, lighting, and VSD.

    b. The Energy Initiative program consists of the measure categories: custom, HVAC, lighting, and VSD.

    c. The Small Business program consists of the measure categories: controls, insulation, lighting, non-lighting, and water heating.

    d. The Commercial New Construction custom program consists of the measure categories: controls, HVAC-distribution, HVAC-plant, insulation, other, and water heating.

    e. The Commercial New Construction prescriptive program consists of the measure categories: food service, HVAC, other and water heating.

    f. The Large Commercial Retrofit custom program consists of the measure categories: controls, HVAC-distribution, HVAC-plant, insulation, other and water heating.

    g. The Large Commercial Retrofit prescriptive program consists of the measure categories: controls, insulation, other, and water heating.

2) **Aggregate the records by Program, Account Number, and Measure Category**. This aggregation sets the file up so that we have one record for each account for each measure category within a program. As we do the aggregation, we sum the kWh savings, therm savings, quantity of measures installed, the measure cost and

[34] The field used to identify measure categories was “InstalledMeasureDescription” and “MeasureDescr” and in some cases the field “MeasureCode” was also used in combination with the “MeasureDescr” field. For electric records, the field “measure description” was used in combination with “sub program.” For the Small Business program, “InstalledMsrRptGrp.IdLCICat.CodeSBS” was also utilized.

authorized incentive[35] so that the values are represented at an account level. The detailed measure descriptions are retained. These descriptions are used when describing to customers what equipment is included in a measure category.

A.2 SELECTION OF THE SAMPLE

In general, we always want to pull a census of measure categories with less than or equal to 50 accounts associated with them within a program. For the National Grid Rhode Island sample, we will pull a census of all accounts for each program with the exception of the Energy Initiative lighting, Small Business lighting and non-lighting measures, and Large Commercial Retrofit – Prescriptive water heating measures. For the following programs and measure types, we selected the top 10 percent then randomly selected the remaining cases: Small Business program non-lighting measures, Energy Initiative lighting measures and Large Commercial Retrofit – Prescriptive water heating records. For the Small Business program lighting measures we selected the top 8 percent then randomly selected the remaining cases.

In the interviews, we discuss no more than two measure categories for each account and program the account participated in. There were a number of accounts that had measures installed in more than two measure types. In these instances, we apply a set of rules to select which measure types we want to include in the study.

1) First select measure types in the top 10 percentile of savings for that specific program and measure type ("priority" category).

2) Select rare measure types, defined as the measure type with the least number of records. There were a few exceptions where we selected the non-rare measure type because it represented a large share of the program's savings.

These prioritization steps resulted in the removal of 21 measures that were included in the sample as part of the measure category census.

A.3 PREPARATION OF SAMPLE FOR DATA COLLECTION

The next step is to restructure the sample file so that one record represents one participant account within a program (an account may show up more than once in the dataset but never more than one time in a program). Each measure type sampled for a given account is represented in a separate column in this new data file (i.e., MeasureCategory1, MeasureCategory2, etc.). Correspondingly, measure category kWh/therm savings and detailed descriptions are represented in associated columns (e.g., kWh1, kWh2, therms1, therms2).

[35] For the gas programs, we used "quantity", "IncentiveAmt", and "GrossAnnualGasThermsSaving" to identify quantity installed, the total rebate amount, and the total therm savings associated with that measure respectively. For the electric records, we used "InstalledQuantity", "IncentiveAmtLCIonly" and "CopayAmtSBSonly", "CostofInstalledECMs" and "kwhReduction". Those who received technical assistance were flagged using the variable "Vendor Service" or "ESR Activity".

Using this file structure, participants will be taken through the net-to-gross questions for each measure category sampled for that account. This approach allows for us to assess free-ridership and like-spillover for each measure type.

A.4 REVIEW OF SAMPLE TO IDENTIFY COMPANIES WITH MULTIPLE SAMPLED ACCOUNTS

Prior to survey implementation, we attempt to identify records that appear in the sample more than one time ("multiples"). Records that appear to potentially be the same facility, the same company, or have the same contact point are grouped and flagged so they are attempted at the same time. We manually sort and review the sample on the following criteria:

- Customer name
- Contact name
- Telephone number
- Address

All sample records are loaded into the Computer Assisted Telephone Interview (CATI) system. Any cases identified and flagged as "multiples" using the criteria above are put on hold. Senior interviewers are specially trained on how to deal with these multiples. Once we are a few days into the calling, our senior interviewers are responsible for calling multiples.

During our initial contact with the respondent, our first step is to verify whether the respondent is the appropriate person to provide information for each of the accounts. If not, we determine which accounts should be assigned to that respondent, and which should be discussed with someone else.

For contact persons associated with multiple accounts, we will ask these contacts about up to 2 measures per account for each program they participate in. Therefore, the interview may be slightly longer for these contacts.

A.5 CHARACTERIZATION OF THE PROPOSED SAMPLE PLAN AND SAMPLE

Table A-1 outlines the sampling plan for National Grid's Rhode Island 2013 electric and gas study.

Table A-1. National Grid Rhode Island Proposed Sample Plan

Program	Measure Type	Population of Measures	Sample of Measures	Population kWh Savings	Sampled kWh Savings	Population Therm Savings	Sampled Therm Savings	Percent of kWh Savings Sampled *	Percent of Therm Savings Sampled*	Expected Completed Measures from Survey **	+/- 90% Confidence Interval at Measure Level ***
Design 2000plus	Compressed Air	49	49	1,312,235	1,312,235			100%		27	NA
	Custom	34	34	4,615,894	4,615,894			100%		19	NA
	Food Service	1	1	5,110	5,110			100%		1	NA
	HVAC Non-unitary	5	3	280,423	210,165			75%		2	NA
	HVAC Unitary	54	51	422,126	392,495			93%		28	NA
	Lighting	44	40	1,891,943	1,714,702			91%		22	NA
	VSD	8	6	1,121,073	991,048			88%		3	NA
	Total	**195**	**184**	**9,648,804**	**9,241,650**	**-**	**-**	**96%**	**-**	**101**	**NA**
Energy Initiative	Custom	98	94	19,334,514	18,958,632			98%		52	NA
	HVAC	20	20	4,110,798	4,110,798			100%		11	NA
	Lighting	239	127	12,764,201	9,323,446			73%		70	8.3%
	VSD	36	34	6,767,628	6,690,344			99%		19	NA
	Total	**393**	**275**	**42,977,141**	**39,083,220**	**-**	**-**	**91%**	**-**	**151**	**NA**
Commercial New Construction - Custom	Controls	6	6			31,063	31,063		100%	3	NA
	HVAC - Distribution	3	3			30,104	30,104		100%	2	NA
	HVAC - Plant	24	24			180,727	180,727		100%	13	NA
	Insulation	3	3			35,632	35,632		100%	2	NA
	Other	5	5			90,893	90,893		100%	3	NA
	Water Heating	12	12			29,688	29,688		100%	7	NA
	Total	**53**	**53**	**-**	**-**	**398,107**	**398,107**	**-**	**100%**	**29**	**NA**
Commercial New Construction - Prescriptive	Food Service	13	13			10,212	10,212		100%	7	NA
	HVAC	75	75			60,322	60,322		100%	41	NA
	Other	1	1			15,154	15,154		100%	1	NA
	Water Heating	35	35			9,859	9,859		100%	19	NA
	Total	**124**	**124**	**-**	**-**	**95,548**	**95,548**	**-**	**100%**	**68**	**NA**

Program	Measure Type	Population of Measures	Sample of Measures	Population kWh Savings	Sampled kWh Savings	Population Therm Savings	Sampled Therm Savings	Percent of kWh Savings Sampled *	Percent of Therm Savings Sampled*	Expected Completed Measures from Survey **	+/- 90% Confidence Interval at Measure Level ***
Large Commercial Retrofit - Custom	Controls	26	26			165,214	165,214		100%	14	NA
	HVAC - Distribution	42	42			820,480	820,480		100%	23	NA
	HVAC - Plant	6	6			26,170	26,170		100%	3	NA
	Insulation	18	17			131,062	128,119		98%	9	NA
	Other	16	16			217,942	217,942		100%	9	NA
	Water Heating	1	1			244	244		100%	1	NA
	Total	**109**	**108**	**-**	**-**	**1,361,112**	**1,358,169**	**-**	**100%**	**59**	**NA**
Large Commercial Retrofit - Prescriptive	Controls	15	15			3,951	3,951		100%	8	NA
	Insulation	1	1			57,195	57,195		100%	1	NA
	Other	6	6			136,981	136,981		100%	3	NA
	Water Heating	339	130			77,518	42,588		55%	72	8.6%
	Total	**361**	**152**	**-**	**-**	**275,645**	**240,715**	**-**	**87%**	**84**	**NA**
Small Business	Controls	41	41			9,950	9,950		100%	23	NA
	Insulation	1	1			260	260		100%	1	NA
	Lighting	1,106	130	19,647,362	8,240,611			42%		72	9.4%
	Non-lighting	185	130	2,372,442	1,938,694			82%		72	7.6%
	Water Heating	70	70			23,900	23,900		100%	39	NA
	Total	**1,403**	**372**	**22,019,804**	**10,179,305**	**34,110**	**34,110**	**46%**	**-**	**205**	**NA**
Total		**2,638**	**1,268**	**74,645,749**	**58,504,175**	**2,164,521**	**2,126,649**	**78%**	**98%**	**697**	**NA**

APPENDIX B: WEIGHTING METHODOLOGY

This appendix outlines the steps necessary to prepare the free-ridership data for analysis.

1. Calculating the sample weight (Phase 1 Weight)

Completed surveys must be weighted to represent population savings unless a census of all measures and customers is sampled ***and*** all customers respond to the survey.

The data were first weighted to correct for disproportional sampling and non-response to the survey. These weights—hereafter referred to as measure weights—were applied when analyzing the participant free-ridership and spillover results.

Because our population of interest was technically the savings, we used *measure category savings* to determine the weight that should be applied to each case. The measure category savings were stratified by priority and non-priority cases[36]. Priority cases were sampled at 100%. Including this stratification in the weighting scheme ensured the premises sampled at 100% were not overrepresented, and the sampled premises (sampled at less than 100%) were represented appropriately.

The following table is an example of weights applied to a sample stratified by measure category for a given program. The measure-related savings in the program tracking system database are listed in the population column. The corresponding savings accounted for by completed surveys and weights are listed under the "Surveyed Savings" and "Measure Weight" columns respectively. To calculate the "Measure Weight" for a given measure type, we divided the population of savings by the surveyed savings.

Table B-1. Examples of Weighting Calculations Using Three Measure Categories

	Strata (priority / non-priority)	Population of savings	Surveyed savings	Measure weight
HVAC	Census	4,110,798	1,165,510	3.52
Lighting	Non-priority	5,326,009	1,265,701	5.00
	Priority	6,438,192	1,243,262	5.18
VSD	Census	6,767,628	4,027,164	1.68

To make sure measure weights are assigned correctly, we apply the weight to the energy savings of each surveyed case and check to make sure the total weighted energy savings for each measure category and overall match the total population savings.

2. Extrapolating the data to the expected savings (Phase 2 Weight)

The next step in preparing for the analysis is extrapolating the weight to the expected savings. To do this, the measure weight is multiplied by the kwh savings (or therms) per

[36] As discussed in the sampling plan, priority cases are cases that are considered multi-measure accounts, and accounts that represent the top 10 percentile of measure category savings.

account surveyed. The data are then analyzed taking into account the kwh (or therm) savings.

Conducting this next step determines the net free-ridership rate and spillover rates, and ensures the overall free-ridership rates are computed taking into consideration the therm (or MMBtu) savings for each individual account. The free-ridership and spillover rates would be skewed if the savings were not taken into account when determining free-ridership. This also means that large energy savers can have significant impacts on the overall free-ridership and spillover rates, particularly when the sample sizes are small.

Below we illustrate the preparation procedures, and effect of the procedures, using two cases.

Case A:	**Case B:**
Situation	
Received Lighting measures	Received Lighting measures
Flagged as a priority case	Flagged as non-priority
Has a free-ridership rate of 75 percent	Has a free-ridership rate of 25 percent
Recorded a savings of 10,000 kwh	Recorded a savings of 1,000 kwh
Step 1: Compute measure weight (discussed in prior section)	
Measure weight = 5.18	Measure weight =5.00
Step 2: Compute measure category-weighted kwh	
Adjusted kwh =10,000*5.18 = 51,800	Adjusted kwh = 1,000*5.00 = 5,000
Step 3: Calculate kwh associated with the free-ridership based on the measure category weighted kwh, calculated in Step 1	
FR savings = 51,800*.75 = 38,850	FR savings = 5,000*.25 = 1,250

Step 4: Sum the free-ridership attributed savings and population savings.

Total FR attributed savings: 38,850 + 1,250 = 40,100 kwh
Population savings: 51,800 + 5,000 = 56,800 kwh

Step 5: Divide the Total FR attributed savings by population savings to determine free-ridership rate.

Net free-ridership rate = 40,100 / 56,800 = 70.6 percent

As illustrated above, the net free-ridership rate takes into account the savings of each account. As such, the estimates are *weighted for the disproportionate probability of being surveyed and measure category savings.*

3. Creating a one-stage weighting scheme

Creating two weighting variables introduces the risk of error in reporting the data. To eliminate the risk, the analysis syntax only includes one weighting variable. This variable multiplies the weight calculated in Phase 1 with the therms associated with that measure and account.

Measure weight = sample weight * individual kwh savings

The measure weight was applied when running any analysis to determine net free-ridership and spillover rates.

APPENDIX C: SURVEY INSTRUMENTS

C.1 FREE-RIDERSHIP AND SPILLOVER SURVEY USING CUSTOMER SELF REPORT APPROACH

Variable List

<CASEID> Unique case identifier
<ACCOUNT> Account number
<ADDR> = Service address where measure was installed
<DATE> = Date of participation
<CUST> = Customer/Facility Name
<INTERVIEWER> = Interviewer Name
<CONTACT> = Customer Contact Name
<NGrid CONTACT INFORMATION> = National Grid Contact Name and Phone Number.
<PRGCODE> Numeric representation of programs
71 = Design 2000plus program
72 = Energy Initiative program
73 = Large Commercial New Construction program – Custom
74 = Large Commercial New Construction program – Prescriptive
75 = Large Commercial Retrofit program – Custom
76 = Large Commercial Retrofit Program – Prescriptive
77 = Small Business Program
<PROGRAM> Program respondent participated in
Design 2000plus program
Energy Initiative program
Large Commercial New Construction program – Custom
Large Commercial New Construction program – Prescriptive
Large Commercial Retrofit program – Custom
Large Commercial Retrofit Program – Prescriptive
Small Business Program
<TOTMEAS> Indicator of number of measures (at project level)
1 = One measure
2 = Two measures
<MULTID> Unique identifier for multiples
<MULTFLAG> Multiple identifier
0 = Non-multiple
1 = Multiple
<ULFLAG> Indicator of whether respondent received an upstream incentive
0 = Did not receive upstream incentive
1 = Received upstream incentive
< ASSIST> = Description of all technical assistance, financing, and rebates for measures installed through program
<STUDY> Indicator of receipt of technical study
0 = Did not receive a study
1 = Received a study
2 = Unknown
<CST> Cost of project

<MEASCST1, MEASCST2> Cost of individual measure
<MEASCAT1, MEASCAT2> = End-use Category (i.e. lighting)
<QTY1, QTY2> Quantity of first sample NTG measure, second NTG measure
<QTYFLAG1, QTYFLAG2>
0 = quantity is not applicable for this measure category (measure count = 1 or quantity is not relevant as in delamping, recycling)
1 = quantity greater than 1
<INC1, INC2> = PA incentive for specific measure categories
<EQUIP1, EQUIP2> = 0 if installed measure is not equipment that is operational (e.g., insulation), 1=if installed measure is operational
<EFF1, EFF2>
0 = efficiency is not applicable for this measure category (e.g., insulation, VFD, delamping, recycling, occupancy sensors)
1 = efficiency is applicable
<KWH1, KWH2> Gross kWh savings for first sampled NTG measure, second sampled NTG measure
<THERM1, THERM2> Gross therms savings for first sampled NTG measure, second sampled NTG measure
<FUEL1, FUEL2> = electric or natural gas (measure one, measure 2)
<MEASDES1, MEASDES2> Detailed description of the measure(s) installed under the sampled measure category
<TOP1, TOP 2> Top 10 percent of savings flag for electric savings – measure one, measure two

NOTE:
For all questions, "DON'T KNOW" and "REFUSED" will be coded if offered as a response. Interviewers will probe as needed to minimize the amount of missing data.

For any case where the interview terminates early, respondent doesn't recall measures, measures are not installed, or the contact no longer work at the company and we cannot locate a knowledgeable respondent, the case will be pulled and sent to the PA for review.

Introduction

Hello, my name is <INTERVIEWER>, and I'm calling on behalf of National Grid regarding your firm's participation in their commercial and industrial energy efficiency programs, for example the <PROGRAM>. May I please speak with <CONTACT>?

1	Yes	
2	No	[ATTEMPT TO CONVERT. MENTION ADVANCE LETTER THEY SHOULD HAVE RECEIVED REGARDING THE CALL.]

I1 Are you the person who was most involved in making the decision to get <ASSIST> through the <PROGRAM> in <DATE> at <ADDR> in <CITY>?

1	Yes	[SKIP TO I2]
2	No	[SKIP TO I1A]
D	Don't know	[PROBE TO IDENTIFY SOMEONE RESPONSIBLE FOR MAKING DECISIONS ABOUT ENERGY USING EQUIPMENT AT THAT FACILITY; IF DK, THANK AND TERMINATE]
R	Refused	[THANK AND TERMINATE]

I1a. Who was primarily responsible for making the decision to get <ASSIST> through the program?

[RECORD NAME AND DISPOSITION]

1	Transfers you	
2	Can only give contact information	[RECORD CONTACT INFO; THANK AND TERMINATE]
D	Don't know	[THANK AND TERMINATE]
R	Refused	[THANK AND TERMINATE]

I2. Are you employed by <CUST> or are you a contractor who provides design and/or installation services for <CUST>?

[INTERVIEWER NOTE: CODE UNPAID MEMBERS OF AN ADVISORY BOARD OR COMMITTEE AS EMPLOYEES]

1	Work directly for company/Employee/Volunteer	
2	Vendor/Contractor	[TERMINATE and USE VENDOR SURVEY]

INTRO1.

I'm with Tetra Tech, an independent research firm. On behalf of National Grid, we are following up with customers who participated in the <PROGRAM> in 2013 to learn about their experiences. You or someone at your facility may have received a letter from National Grid letting you know to expect this call. I'm not selling anything; I'd just like to ask about the energy efficiency project you implemented through this program at <ADDR>. Your individual responses will be kept confidential by Tetra Tech and National Grid and this should take about 15 minutes.

Before we start, I would like to inform you that for quality control purposes, this call will be recorded and monitored.

READ FOLLOWING ONLY AS NEEDED:
(Sales concern: I am not selling anything; I simply want to understand what factors were important to your company when deciding to implement this new energy efficiency project and receive an incentive through this program. Your responses will be kept confidential by our firm and National Grid. If you would like to talk with someone from National Grid, you can call <NGrid CONTACT INFORMATION>.)

(Who is doing this study: National Grid has hired our firm to evaluate the program. As part of the evaluation, we're talking with customers that participated in the program to better understand their experiences with the program.)

(Why are you conducting this study: Studies like this help National Grid better understand customers' need for and interest in energy efficiency programs and services, and to improve the effectiveness of their programs.)

(Timing: This survey should take about 15 minutes of your time. Is this a good time for us to speak with you? IF NOT, SET UP CALL BACK APPOINTMENT OR OFFER TO LET THEM CALL US BACK AT 1-800-454-5070.)

Decision Making

INTRO2.
In the remainder of this interview, I'd like to focus on the <MEASCAT1, MEASCAT2> you implemented through the <PROGRAM>.

REPEAT R1A THROUGH R1D FOR MEASCAT1 AND MEASCAT2.

R1a. According to our records, the [EFFICIENCY IS APPLICABLE (IF EFF1, EFF2 = 1): energy efficient] <MEASCAT1, MEASCAT2> project you implemented through the program included <MEASDES1, MEASDES2>.

This equipment will be referred to as the <MEASCAT1, MEASCAT2> project.

Were you involved in the decision-making process when the [EFFICIENCY IS APPLICABLE (IF EFF1, EFF2 = 1): energy efficient] <MEASCAT1, MEASCAT2> was being considered for this facility?

1 Yes
2 No
D Don't know
R Refused

R1b. Aside from yourself, who else within your company or outside your company was involved in the decision of whether or not to purchase the [EFFICIENCY IS APPLICABLE (IF EFF1, EFF2 = 1): energy efficient] <MEASCAT1, MEASCAT2> through the <PROGRAM>?

[PROBE: IF MORE THAN ONE DECISION MAKER, ASK R WHO WAS RESPONSIBLE FOR MAKING THE ULTIMATE DECISION]

1 No one else [SKIP TO R1C]
2 (SPECIFY):

Name	Title	Phone number	Probe for role:

R1c. Is this <MEASCAT1, MEASCAT2> equipment still at least partially installed [IF INSTALLED MEASURE IS OPERATIONAL; (IF EQUIP1, EQUIP2=1): and operating] at this facility?

1 Yes [SKIP TO NEXT MEASURE]
2 No
D Don't know
R Refused

R1d. Why is the <MEASCAT1, MEASCAT2> equipment no longer installed [IF INSTALLED MEASURE IS OPERATIONAL; (IF EQUIP1, EQUIP2=1): or no longer operating] at this facility?

(RECORD VERBATIM RESPONSE)

(IF RESPONDENT WAS MOST INVOLVED IN THE DECISION AND MEASURE IS STILL OPERATING, ASK FREE RIDERSHIP QUESTIONS RELATED TO MEASCAT1, MEASCAT2)

(IF NOT PRIMARY DECISION MAKER FOR EITHER MEASURE, SKIP TO I1 AND DIAL THE MAIN DECISION MAKER IN R1b)

R3. Does your organization have any formal requirements or informal guidelines for the purchase, replacement, or maintenance of energy-using equipment? (Select one)

1	Yes	
2	No	[SKIP TO R6i]
D	Don't know	[SKIP TO R6i]
R	Refused	[SKIP TO R6i]

R4. Which of the following best describes these requirements or guidelines? [READ LIST]

1	Purchase energy efficient measures regardless of cost
2	Purchase energy efficient measures if it meets payback or return on investment criteria
3	Purchase standard efficiency measures that meet code
4	Something else (SPECIFY)
D	Don't know
R	Refused

R4bb Does your organization have a dedicated account representative from National Grid? (Select one)

1	Yes	
2	No	[SKIP TO M1]
D	Don't know	[SKIP TO M1]

R4bc Did your account representative assist you with the <MEASCAT1, MEASCAT2> project that you implemented through the <PROGRAM>? This could have included identifying potential energy saving opportunities, specifying program-qualifying equipment, or providing assistance during project implementation. (Select one)

1	Yes
2	No
D	Don't know
R	Refused

M1 Do you recall any print or radio advertisements that talk about the number of ways that businesses can save energy with National Grid? (Select one)

1	Yes	
2	No	[Skip to R6i]
D	Don't know	[Skip to R6i]
R	Refused	[Skip to R6i]

M1a Where did you see or hear this advertising? (DO NOT READ; Select all that apply) Prompt: anywhere else?

1 Newspaper
2 Radio
3 TV
4 Movie theater
5 Other (specify)

M2 To help us understand the advertising effort, can you tell me how many ways businesses can save energy with National Grid?

___ Number of ways
88 Don't know

[REPEAT M3 FOR EACH MEASURE]

M3 Did you hear these advertisements before or after you decided to purchase the <MEASCAT1, MEASCAT2> equipment? (Select one)

1 Before
2 After [Skip to R6i]
8 Don't know [Skip to R6i]

M4 [M1 = 1] On a scale of 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence", how much did advertisements by National Grid that talked about the number of ways you can save energy influence your decision to install some or all of this equipment? (Select one)

__ 0-10 rating
88 Don't know

R6i. [IF STUDY = 2] Did your company receive a technical assessment as part of your participation in the <PROGRAM>?

1 Yes [STUDY = 1]
2 No
D Don't know
R Refused

[IF NO <STUDY>, SKIP TO R9]

R6. If National Grid had not paid a portion of the cost, would your company have paid to have a similar technical assessment done at that same time?

1	Yes	[SKIP TO R9]
2	No	
D	Don't know	[SKIP TO R9]
R	Refused	[SKIP TO R9]

R7. Would you have paid to have the study done earlier than you did, at a later date, or never?

1	Earlier	
2	Same time	[REPEAT R6]
3	Later	
4	Never	[SKIP TO C2]
D	Don't know	
R	Refused	

R8. [IF R7 = EARLIER OR LATER (IF R7 = 1 OR 3)] How much [earlier/later] would you have had the study done?

___ YEARS (AND/OR) ___ MONTHS

D DK
R Refused

[REPEAT C2 FOR EACH MEASURE]

C2. [IF R6=2] On a scale of 0 to 10, with 0 being no influence and 10 being a great deal of influence, how much influence did the information provided by the <STUDY> have on your decision to implement the [IF EFFICIENCY IS APPLICABLE; *IF EFF1, EFF2 = 1:* high efficiency] <MEASCAT1,MEASCAT2> project? (REPEAT FOR EACH MEASURE)

_____ (ENTER INFLUENCE RANKING)
D Don't know
R Refused

R9. Did you receive interest-free financing from National Grid which allowed you to pay for your portion of the project cost over time?

1	Yes	
2	No	
D	DK	[Skip to UL1_1]

R9aa Why did you choose to [use/not use] the interest-free financing from National Grid? (Record verbatim response)

[Verbatim response]

[REPEAT R9ab FOR EACH MEASURE]

R9ab [If R9 = 1, yes] If interest-free financing from National Grid was not available, would you have installed the <MEASCAT1, MEASCAT2> equipment at the same time? (Select one)

1	Yes	
2	No	
D	Don't know	
R	Refused	

R9ac [If R9 = 1, yes] Did the availability of the interest-free financing from National Grid change the scope of your project in any way? (Select one)

1	Yes	
2	No	[Skip to R9ae]
D	Don't know	[Skip to R9ae]
R	Refused	[Skip to R9ae]

R9ad [If R9 = 1, yes] How did the availability of the interest-free financing from National Grid change the scope of your project? (Select all that apply)

1	Increased scope of the work (installed more equipment)
2	Installed more efficient equipment
3	Other (specify)
D	Don't know

R9ae [If R9 = 1, yes] Please rate your level of satisfaction with the following elements of the interest-free financing from National Grid. For each of the following, would you say you are very dissatisfied, … ? (Select one for each)

Very dissatisfied
Somewhat dissatisfied
Neither satisfied nor dissatisfied
Somewhat satisfied
Very satisfied

a. The information provided about the interest-free financing
b. The application process for the financing
c. [if R4bb <>1 skip] The role of your account representative in helping you obtain financing
d. The terms of the interest-free financing
e. The convenience of having financing readily available
f. Anything else? [PROMPT; Is there anything else that you'd like to add about your financing experience?]

1 Yes (specify)
2 No

R9af Thinking about the financing and the rebate you received, if the rebate had been less but you could have financed a larger portion of the project cost, how would you feel about this: very positive, generally positive, about equal, generally negative or very negative? (Select one)

1	Very positive	
2	Generally positive	
3	About equal	[Skip to R9ah]
4	Generally negative	[Skip to R9ah]
5	Very negative	[Skip to R9ah]
D	Don’t know	[Skip to R9ah]
R	Refused	[Skip to R9ah]

R9ag How much more of the project cost would you have liked to finance? (Select one)

1 Less than 10 percent
2 10 percent to 25 percent
3 26 percent to 50 percent
4 51 percent to 75 percent
5 More than 75 percent
D Don’t know
R Refused

[REPEAT R9ah FOR EACH MEASURE]

R9ah [if R9 = 1 & study = 0 SKIP] Which of the following was most important in your decision to install the <MEASCAT1, MEASCAT2> equipment: the rebate, the financing [if study = 1 (received technical assistance): or the technical assistance]? (Select one)

1 Rebate
2 Financing
3 [if study = 1] Technical assistance
D Don't know
R Refused

Awareness (for Upstream Lighting)

[REPEAT UL1 FOR EACH MEASURE]

UL1 Were you aware the <MEASCAT1, MEASCAT2> you purchased received a price discount sponsored by National Grid? (Select one)

1 Yes
2 No [SKIP TO INTRO3c]
D Don't know [SKIP TO INTRO3c]
R Refused [SKIP TO INTRO3c]

UL2 Where did you learn about the price discount? (DO NOT READ; Select one)

1 Contractor or equipment vendor
2 Electricity service provider or National Grid
3 Internet other than the utility provider
4 Colleagues within organization
5 Colleagues outside organization
6 Other (specify –be as specific as possible, include the organization)
D Don't know
R Refused

Free-Ridership

FR0. Please think back to the time when you were considering implementing the specific <MEASCAT1 and MEASCAT2> projects.

What factors motivated your business to consider implementing new <MEASCAT1 and MEASCAT2> equipment? (PROBE: What other factors did you consider?)

DO NOT READ LIST. PLEASE CHOOSE ALL THAT APPLY.

1 (Old equipment failed)
2 (Old equipment working poorly)
3 (Old equipment scheduled for replacement)
4 (Wanted to reduce maintenance costs)
5 (The incentive being offered through the program)
6 (The technical assistance offered through the program)
7 (Wanted to reduce energy bills)
8 (Wanted to save energy)
9 (Recommendation of third party contractor/engineer/design professional)
10 (Recommendation of National Grid staff)
11 (Recommendation of internal staff)
12 (Past experience with the program)
13 (Other - specify)
D Don't know
R Refused

START OF MEASURE LOOP
FR1-C9 will be asked of each measure category recalled that are still installed and operating - up to TWO measure categories.

INTRO3a
Now, I'd like to ask you about your decision to implement the <MEASCAT1> project. [IF THERE IS ALSO A SECOND MEASURE: Then, I'll repeat these questions for <MEASCAT2>].

INTRO3b
[IF SECOND MEASURE] Now I'd like to review the <MEASCAT2> project you implemented.

FR1. On a scale of 0 to 10, with 0 being not at all likely and 10 being very likely, how likely is it that your business would have implemented the same [IF QUANTITY IS GREATER THAN (IF QTYFLAG1, QTYFLAG2 = 1): quantity] [IF EFFICIENCY IS APPLICABLE (IF EFF1, EFF2 = 1): and efficiency of] <MEASCAT1, MEASCAT2> at that same time if the National Grid had not provided the <ALL ASSISTANCE>?

___ (0 TO 10)
D Don't know
R Refused

FR2. Did your company have any funds allocated to implement the <MEASCAT1, MEASCAT2> project before you talked with anyone about the program?

1	Yes	
2	No	[SKIP TO FR4]
D	Don't know	[SKIP TO FR4]
R	Refused	[SKIP TO FR4]

FR3a. Was it necessary to change the timing of the implementation, [IF QUANTITY IS GREATER THAN 1 (if QTYFLAG1, QTYFLAG2 = 1): the quantity of equipment] [IF EFFICIENCY IS APPLICABLE (IF EFF1, EFF2 = 1): or the efficiency level] of the <MEASCAT1, MEASCAT2> in order to qualify for the <PROGRAM> through National Grid?

1	Yes	
2	No	[SKIP TO FR4]
D	Don't know	[SKIP TO FR4]
R	Refused	[SKIP TO FR4]

FR3b. [IF FR3a=1] What changes were necessary? [DO NOT READ; SELECT ALL THAT APPLY]

1 (Installation occurred SOONER than planned)
2 (Installation occurred LATER than planned)
3 (Installed MORE equipment than planned)
4 (Installed LESS equipment than planned)
5 (Equipment was MORE efficient than planned)
6 (Equipment was LESS efficient than planned)
7 (Removed MORE equipment than planned)
8 (Removed LESS equipment than planned)
9 (Other) (SPECIFY)
D Don't know
R Refused

FR4. Who was MOST responsible for actually recommending or specifying the [IF EFFICIENCY IS APPLICABLE (IF EFF1, EFF2 = 1): high efficiency] <MEASCAT1, MEASCAT2> project that was implemented through <PA's> <PROGRAM>?

DO NOT READ LIST, RECORD ONLY ONE

1 Respondent
2 Someone else in company (SPECIFY AND PROBE TO SEE IF SHOULD BE SPEAKING WITH THIS R)
3 Third-party design professional
4 Third-party engineer
5 Contractor/Vendor
6 Manufacturer's representative
7 National Grid account manager
8 Someone else (SPECIFY)
9 Auditor
D Don't know
R Refused

C1. [IF FR4= THIRD-PARTY DESIGN PROFESSIONAL, THIRD-PARTY ENGINEER, CONTRACTOR MANUFACTURER'S REPRESENTATIVE, OR National Grid ACCOUNT MANAGER (IF FR4=3, 4, 5, 6, 7, 8)]

On a scale of 0 to 10, with 0 being no influence and 10 being a great deal of influence, how much influence did (FR4 response) have on your company's decision to implement the [IF EFFICIENCY IS APPLICABLE; *IF EFF1, EFF2 = 1:* high efficiency] <MEASCAT1, MEASCAT2> project so that it would qualify for the National Grid program?

_____ (ENTER INFLUENCE RANKING)
D Don't know
R Refused

FR5i. I'd like to go over all the assistance you received from National Grid. According to our records:

(IF CST > 0) the total cost for the project implemented at your facility in <DATE> through the <PROGRAM> was about <CST>. National Grid paid about <INC1, INC2 or, if INC1 or INC2=0 "a portion"> of the total cost of the [IF EFFICIENCY IS APPLICABLE; *IF EFF1, EFF2 = 1:* energy efficient] <MEASCAT1, MEASCAT2> project implemented through the program.

(IF CST = 0) National Grid paid a portion of the total cost of the [IF EFFICIENCY IS APPLICABLE; *IF EFF1, EFF2 = 1:* energy efficient] <MEASCAT1, MEASCAT2> project implemented through the program.

[IF <STUDY=1>: In addition, as I previously mentioned, National Grid paid a portion of the cost for a <STUDY>.]
[IF <R9=1> = Yes] National Grid also provided interest-free financing for up to 24 months for your portion of the project costs.

[PRESS '1' TO CONTINUE]

FR5. If National Grid had not paid a portion of the implementation cost OR provided any technical assistance or education [IF <R9=1>: OR provided interest-free financing], would your business have implemented <u>any</u> <u>type</u> of <MEASCAT1, MEASCAT2> project <u>at the same time</u>?

1	Yes	[SKIP TO FR7a]
2	No	
D	Don't know	
R	Refused	

FR6a. [IF FR5<>1] Would you have implemented the <MEASCAT1, MEASCAT2> project earlier than you did, at a later date, or never?

1	Earlier	
2	Same time	[REPEAT FR5]
3	Later	
4	Never	[SKIP TO C3]
D	Don't know	[SKIP TO C3]
R	Refused	[SKIP TO C3]

FR6b. [IF FR6a=1] How much [earlier/later] would you have implemented the <MEASCAT1, MEASCAT2> project?

FR6b_1a ___ YEARS
FR6b_1b ___ MONTHS
D DK [SKIP TO C3]
R Refused

[IF QUANTITY IS NOT APPLICABLE FOR THIS MEASURE CATEGORY (IF QTYFLAG1, QTYFLAG2 = 0), SKIP TO FR8D]

[IF FR6b_1a = 88 & FR6b_1b = 88, SKIP TO C3]

FR7a. Without the National Grid program incentive, technical assistance, or financing, would your business have implemented the exact same quantity of <MEASCAT1, MEASCAT2> equipment [IF FR5=YES or DK: at that same time; IF FR5=2: within (TIMEFRAME IN FR6b)]?

1	Yes	[SKIP TO FR8]
2	No	
D	Don't know	[SKIP TO FR8]
R	Refused	[SKIP TO FR8]

FR7b. Compared to the amount of <MEASCAT1, MEASCAT2> that you implemented through National Grid's program, what percent of the project do you think your business would have purchased on its own during that timeframe?

(PROBE: Would you have purchased about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the National Grid program?)

____ (ENTER PERCENTAGE: 1-99%)
D Don't know
R Refused

[IF EFFICIENCY IS NOT APPLICABLE FOR THIS MEASURE CATEGORY (IF EFF1, EFF2 = 0), SKIP TO RVL1]

FR8. You said your business would have installed [IF FR7A=YES: all; IF FR7A= NO: (FILL WITH FR7B %); IF (FR7B=DK/RF), fill with "some"] of the equipment on your own if the National Grid program had not been available. [ALL] Thinking about the <MEASCAT1, MEASCAT2> equipment you would have installed on your own, what percent of this equipment would have been . . . ?

(PROBE: Would about one-fourth (25%), one-half (50%), three fourths (75%) been of equal efficiency?)

a. of the same high efficiency as what was installed through the National Grid program?
____ (ENTER PERCENTAGE: 0-100%)
D Don't know

b. lower efficiency than what was purchased but higher than standard efficiency or code?
____ (ENTER PERCENTAGE: 0-100%)
D Don't know

c. standard efficiency or code?
____ (ENTER PERCENTAGE: 0-100%)
D Don't know

(CHECK THAT THE THREE % SUM TO 100%; PROBE TO CLARIFY).

FR8ck1 [IF FR8_1a + FR8_1b + FR8_1c <> 100] The quantities that you have given me do not add up to 100. Can you please tell me which to correct?

Here is what you have given me:

% of the same high efficiency as what was installed through the program

% lower efficiency than what was purchased but higher than standard efficiency or code?

% standard efficiency or code

[PLEASE BACK UP AND CORRECT]

[IF QUANTITY IS GREATER THAN 1 (IF QTYFLAG1, QTYFLAG2 = 1), SKIP TO C3]

FR8d. [IF QTYFLAG<>1] Thinking about the <MEASCAT1, MEASCAT2> project you would have implemented on your own if the National Grid program had not been available, would it have been of the same high efficiency as what was installed through the program, lower efficiency than what was purchased but higher than standard efficiency, or standard efficiency or code?

1 Of the same high efficiency as what was installed through the program?
2 Lower efficiency than what was purchased but higher than standard efficiency
3 Standard efficiency or code
D Don't know
R Refused

RVL1 [IF measure type=Insulation] Thinking about the insulation project you would have implemented on your own if the National Grid program had not been available, would it have been of the same R Value as what was installed through the program?

1 Yes [SKIP TO C3]
2 No
D Don't know
R Refused

RVL2 [ASK IF measure type=Insulation] Compared to what you installed through the National Grid program, what R Value would you have installed? (PROBE: "For example, would it have been 50% as much as what was installed through the National Grid program?")

__ [1-99%]
D Don't know
R Refused

C3. On a scale of 0 to 10, with 0 being no influence and 10 being a great deal of influence, how much influence did the <INC1,INC2> you received from National Grid have on your decision to implement the [IF EFFICIENCY IS APPLICABLE; *IF EFF1, EFF2 = 1:* high efficiency] <MEASCAT1,MEASCAT2> project?

_____ (ENTER INFLUENCE RANKING)
D Don't know
R Refused

Consistency Check Prompts

100% Free Ridership Consistency Check

[IF WOULD HAVE PURCHASED AT THE SAME TIME, IN THE SAME QUANTITY, AND OF THE SAME EFFICIENCY LEVEL; *IF FR5=1 AND FR7a=1 AND (FR8a=100% or FR8d = 1), ASK C4a-C7c*, ELSE SKIP TO C8]

C4a. Now I want to focus on what it would have cost your business to install this equipment on its own without the program. On a scale of 0 to 10, with 0 being not at all likely and 10 being very likely, how likely is it that your business would have paid the additional (IF INC1, INC2 > 0: "<INC1,INC2>", ELSE "cost of the equipment") on top of the amount you already paid, to implement the same quantity and efficiency of <MEASCAT1,MEASCAT2> equipment at that same time?

___ (0 TO 10)
D Don't know
R Refused

C4b. [IF C4a < 8] You said that you would have installed the same quantity and efficiency of equipment at that same time, but you also just said that there was a (FILL WITH C4a SCORE) in 10 likelihood of you paying the additional incentive provided by the National Grid program. Which of these is more accurate?

1 Installed same quantity & efficiency at same time [SKIP TO C9]
2 Likelihood of installing this without the program assistance was (C4a SCORE)
3 Something else (SPECIFY)

C5. [IF C4B <> 1] How would your project have changed if National Grid had not contributed to the cost of the <MEASCAT1, MEASCAT2>? (INDICATE ALL THAT APPLY) (DO NOT READ)

1 (Would not have changed) [SKIP TO C8A]
2 (Would have postponed the project) [SKIP TO C5_1mon]
3 (Would have cancelled the project altogether)
4 (Would have repaired existing equipment)
5 (Kept using existing equipment)
6 (Purchased less efficient equipment) (ASK C7)
7 (Purchased fewer quantity) (ASK C6)
8 (Installed DIFFERENT type of equipment than planned) (SPECIFY)
9 (Other) (SPECIFY)
D Don't know
R Refused

C5_1mon [IF C5=2] How many months would you have postponed the project?

__ [RECORD NUMBER OF MONTHS]
88 Don't know
99 Refused

C6. [IF C5=PURCHASED FEWER QUANTITY; *IF C5=7*) Compared to the amount of <MEASCAT1, MEASCAT2> that you implemented through the National Grid program, what percent do you think your business would have purchased on its own at that same time?
(PROBE: Would you have purchased about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the National Grid program?)

____ (ENTER PERCENTAGE: 1-99%)
D Don't know
R Refused

C7. [IF C5=PURCHASED LESS EFFICIENT EQUIPMENT; *IF C5=6*) Thinking about the equipment you would have implemented on your own, what percent of this equipment would have been . . . ?

(PROBE: Would about one-fourth (25%), one-half (50%), three fourths (75%) been of equal efficiency?)

a. of the same high efficiency as what was installed through the National Grid program?
____ (ENTER PERCENTAGE: 0-100%)
D Don't know

b. lower efficiency than what was purchased but higher than standard efficiency or code?
____ (ENTER PERCENTAGE: 0-100%)
D Don't know

c. standard efficiency or code?
____ (ENTER PERCENTAGE: 0-100%)
D Don't know

(CHECK THAT THE THREE % SUM TO 100%; PROBE TO CLARIFY).

0% Free Ridership Consistency Check

C8A (IF SMALL BUSINESS (IF SMALL=1] - & IF AT LEAST SOMEWHAT LIKELY TO HAVE INSTALLED THE MEASURE WITHOUT THE PROGRAM BUT LATER STATES WOULD HAVE WAITED AT LEAST TWO YEARS (FR1 > 3 AND FR6b > **24** MONTHS OR NEVER) and FR5<>1)

Earlier in the interview, you said there was a (FR1 SCORE) in 10 likelihood that you would have implemented the same quantity and efficiency of <MEASCAT1, MEASCAT2>equipment at that same time in the absence of the National Grid program assistance. But you also said you would not have implemented the <MEASCAT1, MEASCAT2> project within 2 years of when you did. Which of these is more accurate?

1 The likelihood of installing this without the National Grid program assistance was (FR1 SCORE)
2 Would not have installed anything within 2 years
3 Something else (SPECIFY)
D Don't know
R Refused

C8B (IF SMALL<>1 & IF AT LEAST SOMEWHAT LIKELY TO HAVE INSTALLED THE MEASURE WITHOUT THE PROGRAM BUT LATER STATES WOULD HAVE WAITED AT LEAST FOUR YEARS (FR1 > 3 AND FR6b > 48 MONTHS OR NEVER) and FR5<>1)

Earlier in the interview, you said there was a (FR1 SCORE) in 10 likelihood that you would have implemented the same quantity and efficiency of <MEASCAT1, MEASCAT2>equipment at that same time in the absence of the National Grid program assistance. But you also said you would not have implemented the <MEASCAT1, MEASCAT2> project within 4 years of when you did. Which of these is more accurate?

1 The likelihood of installing this without the National Grid program assistance was (FR1 SCORE)
2 Would not have installed anything within 4 years
3 Something else (SPECIFY)
D Don't know
R Refused

Additional Consistency Check

C9a (IF 100% FREE-RIDER; *IF FR5=1 AND FR7a=1 AND (FR8a=100% or FR8d = 1) AND C4b = 1 AND (C2 > 6 OR C3 > 6*)) **PROMPT**: "Previously you stated that you would have installed the exact same equipment at the same time without the National Grid program. But, you also stated that the …

(IF C2 > 6 FILL: program-sponsored study)
(IF C3 > 6 FILL: program incentive and financing options)
(IF C2 > 6 & C3 > 6 FILL: program-sponsored study, incentive, and financing options)

… was influential in your decision.)

[PRESS 1 TO CONTINUE] [SKIP TO C9c]

C9b (IF 0% FREE-RIDER: *IF FR6a = NEVER OR DK AND (C2 < 5 OR C3 < 5)* **PROMPT**: "Previously you stated that you would not have installed any equipment without the National Grid program. You also stated that the …
(IF C2 < 5 FILL: program-sponsored study)
(IF C3 < 5 FILL: program incentive and financing options)
(IF C2 < 5 & C3 < 5 FILL: program-sponsored study, incentive, and financing options)

… was not influential in your decision.)

[PRESS 1 TO CONTINUE] [SKIP TO C9c]

C9c (ASK ALL) I'd like to better understand your purchase decision. In your own words, please describe what impact, if any, all the assistance you received through the National Grid program had on your decision to install the amount of energy efficient <MEASCAT1, MEASCAT2> equipment at the time you did?

(RECORD VERBATIM RESPONSE)

SKIP1

(REPEATS QUESTIONS BEGINNING FROM INTRO3B FOR SECOND MEASURE – IF NO OTHER MEASURES – CONTINUE)

[IF TOTMEAS = 1 SKIP TO s1a]

Free-Ridership if not aware of Lighting Incentive (not aware of UL1 <> 1)

START OF MEASURE LOOP
FR1-C9 will be asked of each measure category recalled that are still installed and operating - up to TWO measure categories.

INTRO3C/D
Now I'd like to review the <MEASCAT2> project you implemented.

FR41. According to our information, the distributor or retailer you bought the <MEASCAT> bulbs from received a discount of < TOTAL INCENTIVE > from National Grid which was passed on to you. On a scale of 0 to 10, with 0 being not at all likely and 10 being very likely, how likely is it that your business would have implemented the same [IF QUANTITY IS GREATER THAN (IF QTYFLAG1, QTYFLAG2 = 1): quantity] [IF EFFICIENCY IS APPLICABLE (IF EFF1): and efficiency of] <MEASCAT1> at that same time if they had cost < TOTAL INCENTIVE > more?

___	(0 TO 10)	
D	Don't know	
R	Refused	

FR45. If the <MEASCAT> bulbs had cost <TOTAL INCENTIVE> more, would your business have installed **any** lighting at all?

[if necessary: by any lighting, I mean <MEASCAT> or any other kind of bulbs.]

1	Yes	
2	No	[SKIP TO C43]
D	Don't know	[SKIP TO C43]
R	Refused	[SKIP TO C43]

FR46a. Would you have installed the lighting earlier than you did, at a later date, or never?

1	Earlier	
2	Same time	[SKIP TO FR47a]
3	Later	
4	Never	[SKIP TO C43]
D	Don't know	[SKIP TO C43]
R	Refused	[SKIP TO C43]

FR46b. How much [earlier/later] would you have installed the lighting?

FR6b_yr	___	YEARS
FR6b_mo	___	MONTHS
	88	DK
	99	Refused

FR47a_1. If the <MEASCAT> bulbs would have cost <TOTAL INCENTIVE> more, would your business have installed less, more or the exact same quantity of <MEASCAT>?

1	Less	[SKIP TO FR47b]
2	More	[SKIP TO FR47c]
3	Exact same amount	[SKIP TO FR48]
D	Don't know	[SKIP TO FR48]
R	Refused	[SKIP TO FR48]

FR47b_1. [if FR47a = 1] Compared to the number of <MEASCAT> bulbs that you installed, what percent less do you think your business would have installed if they had cost <TOTAL INCENTIVE> more?

(PROBE: Would you have purchased about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the National Grid program?)

____	(ENTER PERCENTAGE: 1-99%)	
D	Don't know	[SKIP TO C43]
R	Refused	[SKIP TO C43]

FR47c_1. [if FR47a = 2] Compared to the number of <MEASCAT> bulbs that you installed, what percent **more** do you think your business would have installed if they had cost <TOTAL INCENTIVE> more?

(PROBE: Would you have purchased about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the National Grid program?)

____	(ENTER PERCENTAGE: 1-99%)	
D	Don't know	[SKIP TO C43]
R	Refused	[SKIP TO C43]

FR48_1. You said your business would have installed [IF FR47A=3: all; IF FR47A= 1 or 2: (FILL WITH FR47b/FR47c %); IF (FR47b=DK/RF), fill with "some"] of the equipment on your own if the National Grid program had not been available. [ALL] Thinking about the <MEASCAT > equipment you would have installed on your own, what percent of this equipment would have been . . . ?

[PROBE: Would about one-fourth (25%), one-half (50%), three fourths (75%) been of equal efficiency?]

[THESE CATEGORIES MUST ADD TO 100%]

[ENTER PERCENTAGE: 0-100%; ENTER 888 FOR DON'T KNOW]

a. of the same high efficiency as what was installed through the National Grid program?
____ (ENTER PERCENTAGE: 0-100%)
888 Don't know

b. lower efficiency than what was purchased but higher than standard efficiency or code?
____ (ENTER PERCENTAGE: 0-100%)
888 Don't know

c. standard efficiency or code?
____ (ENTER PERCENTAGE: 0-100%)
888 Don't know

(CHECK THAT THE THREE % SUM TO 100%; PROBE TO CLARIFY).

FR8ck1 [IF FR48a + FR48b + FR48c <> 100] The quantities that you have given me do not add up to 100. Can you please tell me which to correct?

Here is what you have given me:

% of the same high efficiency as what was installed through the program

% lower efficiency than what was purchased but higher than standard efficiency or code?

% standard efficiency or code

[PLEASE BACK UP AND CORRECT]

C43_1. On a scale of 0 to 10, with 0 being no influence and 10 being a great deal of influence, how much influence did the price have on your decision to install <MEASCAT1> bulbs?

_____ (ENTER INFLUENCE RANKING)
88 Don't know
99 Refused

Consistency Check Prompts

100% Free Ridership Consistency Check
[IF WOULD HAVE PURCHASED AT THE SAME TIME, IN THE SAME QUANTITY, AND OF THE SAME EFFICIENCY LEVEL; *IF FR41=1 AND FR47a=1 AND (FR48a=100%), ASK C44a-C47c*, ELSE SKIP TO C49]

C44a. Now I want to focus on what it would have cost your business to install this equipment if it had been more expensive. On a scale of 0 to 10, with 0 being not at all likely and 10 being very likely, how likely is it that your business would have paid the additional <TOTAL INCENTIVE> on top of the amount you already paid, to purchase the same quantity and efficiency of <MEASCAT> bulbs at that same time?

___ (0 TO 10)
88 Don't know
99 Refused

C44b. [IF C44a < 8] You said that you would have installed the same quantity and efficiency of equipment at that same time, but you also just said that there was a (FILL WITH C44a SCORE) in 10 likelihood of you would have paid more for the lighting equipment. Which of these is more accurate?

1 Installed same quantity & efficiency at same time
2 Likelihood of installing this without the program assistance was (C44a SCORE)
3 Something else (SPECIFY)

C45. [IF C44B <> 1] How would your project have changed if National Grid had not contributed <TOTAL INCENTIVE> to the cost of the <MEASCAT>? (INDICATE ALL THAT APPLY) (DO NOT READ)

1 Would not have changed
2 Would have postponed the project [SKIP TO C45_1mon]
3 Would have cancelled the project altogether
4 Would have repaired existing equipment
5 Kept using existing equipment
6 Purchased less efficient equipment
7 Purchased fewer quantity
8 Installed DIFFERENT type of equipment than planned [SPECIFY]
9 Other [SPECIFY]
D Don't know
R Refused

C45_1mon [IF C45=2] How many months would you have postponed the project?

__ [RECORD NUMBER OF MONTHS]
88 Don't know
99 Refused

Additional Consistency Check

C49a (IF 100% FREE-RIDER; *IF FR45=1 AND FR47a=1 AND (FR48a=100) AND C44b = 1 AND (C2 > 6 OR C43 > 6*)) **PROMPT**: "Previously you stated that you would have installed the exact same equipment at the same time without the National Grid program. But, you also stated that the …

(IF C2 > 6 FILL: program-sponsored study)
(IF C43 > 6 FILL: program incentive and financing options)
(IF C2 > 6 & C43 > 6 FILL: program-sponsored study, incentive, and financing options)

… was influential in your decision.)

[PRESS 1 TO CONTINUE] [SKIP TO C49c]

C49b (IF 0% FREE-RIDER: *IF (FR46a = 3 OR D) AND (C2 < 5 OR C43 < 5)* **PROMPT**: "Previously you stated that you would not have installed any equipment without the National Grid program. You also stated that the …

(IF C2 < 5 FILL: program-sponsored study)
(IF C3 < 5 FILL: program incentive and financing options)
(IF C2 < 5 & C3 < 5 FILL: program-sponsored study, incentive, and financing options)

… was not influential in your decision.)

[PRESS 1 TO CONTINUE] [SKIP TO C49c]

C49c (ASK ALL) I'd like to better understand your purchase decision. In your own words, please describe what impact, if any, all the assistance you received through the National Grid program had on your decision to install the amount of energy efficient <MEASCAT1, MEASCAT2> equipment at the time you did?

(RECORD VERBATIM RESPONSE)

Like Spillover[37]

START OF MEASURE LOOP
S1a-S4b will be asked of each measure category recalled - up to TWO measure categories.

S1a. Now I'd like you to think of the time since you participated in the <PROGRAM> on <DATE>.

Has your company implemented any <MEASCAT1, MEASCAT2> projects for this or other facilities in <STATE> **on your own,** that is without a rebate from National Grid?

1	Yes	
2	No	[SKIP TO SKIP2]
D	Don't know	[SKIP TO SKIP2]

[IF EFFICIENCY IS NOT APPLICABLE; *IF EFF1, EFF2 = 0, SKIP TO S2a*]

[37] As these surveys are being conducted soon after implementation, estimates of like and unlike spillover are likely to be limited as participants have not had adequate time to install additional equipment.

S1b. Was this equipment of **the same efficiency level or a higher level of efficiency** as the equipment you installed through the program?

1 Yes [SKIP TO S2a]
2 No
D Don't know

S1c. [IF S1b<>1] Was this equipment more energy efficient than standard efficiency or code equipment?

1 Yes
2 No [SKIP TO SKIP2]
D Don't know [SKIP TO SKIP2]

S2a. [F S1a=1 or S1c=1] Thinking of the <MEASCAT1, MEASCAT2> equipment that you installed on your own, was this more, less or the same amount of <MEASCAT1, MEASCAT2> as what you installed through the program?

1 More [SKIP TO S2aM]
2 Less [SKIP TO S2aL]
3 Same [SKIP TO S3a]
D Don't know [SKIP TO S3a]

S2aM [If S2a = 1] Compared to the amount of <MEASCAT> that you installed through the program at <ADDR>, how much <MEASCAT> equipment did you install on your own?

We're looking for a percent compared to the amount installed through the program. For example, if it was about twice as much as what you installed through the program you would say 200%. (Enter whole number)

____ Enter percentage: 101-1000%
D Don't know

S2aL [If S2a = 2] Compared to the amount of <MEASCAT> that you installed through the program at <ADDR>, how much <MEASCAT> equipment did you install on your own? We're looking for a percent compared to the amount installed through the program. For example, if it was about half as much as what you installed through the program you would say 50%. (Enter whole number)

____ Enter percentage: 1-99%
D Don't know

S2b. [IF S2a <> SAME AMOUNT OF <MEASCAT1, MEASCAT2>; *IF S2a <> 3 and S2a<>DK*] So the additional energy efficient equipment you bought on your own was <percentage from S2aM or s2aL> <more/less> as much as you got through the program?

1 Yes
2 No [correct S2a]

S3a. [S1c=1 & S1a=1] Did a recommendation by the contractor, engineer, or designer who you worked with under the <PROGRAM> influence your decision to implement some or all of this [IF EFFICIENCY IS APPLICABLE; (IF EFF1, EFF2 = 1): efficient] <MEASCAT1, MEASCAT2> equipment on your own?

1 Yes
2 No
D Don't know
R Refused

S3b. [S1c=1 & S1a=1] Did your experience with the energy efficient projects implemented through the <PROGRAM> influence your decision to implement some or all of this [IF EFFICIENCY IS APPLICABLE; (IF EFF1, EFF2 = 1): efficient] <MEASCAT1, MEASCAT2> equipment on your own?

1 Yes
2 No
D Don't know
R Refused

S3c. [S1c=1 & S1a=1] Did your participation in any past program offered by National Grid influence your decision to implement some or all of this [IF EFFICIENCY IS APPLICABLE; (IF EFF1, EFF2 = 1): efficient] <MEASCAT1, MEASCAT2> equipment on your own?

1 Yes
2 No
D Don't know
R Refused

S3d. [S1c=1 & S1a=1] On a scale of 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence", how much influence did your participation in the National Grid program have on your decision to install this equipment without an incentive?

__ 0-10 rating
D Don't know

S4a. [S1c=1 & S1a=1] Why didn't you implement this <MEASCAT1, MEASCAT2> project through a National Grid program?

[DO NOT READ - SELECT ALL THAT APPLY]

1 (Too much paperwork)
2 (Cost savings not worth the effort of applying)
3 (Takes too long for approval)
4 (The equipment would not qualify)
5 (Vendor does not participate in program)
6 (Outside National Grid's service territory)
7 (No time - needed equipment immediately)
8 (Thought the program ended)
9 (Didn't know the equipment qualified under another program)
10 (Just didn't think of it)
11 (Unable to get rebate--unsure why)
12 (Other) (SPECIFY)
D Don't know

S4b. [IF S4a = THE EQUIPMENT WOULD NOT QUALIFY; *IF S4a = 4*) Why wouldn't the equipment qualify?

(RECORD VERBATIM RESPONSE)

M5 [M1 = 1 and S1a = 1 and S1c = 1] On a scale of 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence", how much did advertisements by National Grid that talked about the number of ways you can save energy influence your decision to install some or all of this equipment on your own without an incentive? (Select one)

__ 0-10 rating
D Don't know

SKIP2

(REPEATS SPILLOVER QUESTIONS FOR SECOND MEASURE – IF NO OTHER MEASURES – CONTINUE)

[IF MEAS2 = 1 GO TO S1A]
[IF MEAS2 = 0 GO TO S5]

Impact of Previous Program Participation

[IF NEVER WOULD HAVE INSTALLED OR ALL EQUIPMENT WOULD HAVE BEEN OF STANDARD EFFICIENCY AND UNLIKELY TO HAVE PURCHASED WITHOUT PROGRAM ((IF FR6A = NEVER OR FR8A = 0% OR FR8D <> 1) AND FR1 < 4) SKIP TO COM]

PP1. Had your business previously participated in a National Grid program before you implemented the energy efficient project around <DATE>?

1	Yes	
2	No	[SKIP TO S5]
D	Don't know	[SKIP TO S5]
R	Refused	[SKIP TO S5]

PP2. [IF PP1=1] On a scale of 0 to 10, with 0 being 'not at all important and 10 being 'very important', how important was your previous experience with a National Grid program when making the decision to implement the <MEASCAT1, MEASCAT2> project at this facility around <DATE>?

__	[RECORD RATING 0 - 10]
D	Don't know

PP3. [IF PP1=1] I'm going to read you several statements. For each statement, please tell me whether you agree or disagree that this statement applies to your business. There are no right or wrong answers; we just want your honest opinion.
(REPEAT IF NECESSARY)

1	Agree
2	Disagree
D	Don't know
R	Refused

Our previous experience implementing energy efficient projects through a National Grid program . . .

PP3_1	Has made our firm more likely to consider energy efficient equipment
PP3_2	Has made our firm more likely to install energy efficient equipment
PP3_3	Has given us more confidence in the financial benefits of energy efficient equipment
PP3_4	Has given us more confidence in the nonfinancial benefits of energy efficient equipment

Unlike Spillover

S5. Since participating in <PROGRAM>, had your company purchased, installed, or implemented any other type of energy efficiency equipment **on your own,** that is without a rebate from National Grid?

1	Yes	
2	No	[SKIP TO COM]
D	Don't know	[SKIP TO COM]

S6a [IF S5=1] What type of equipment did you install? [Record type:]
S6b [IF S5=1] What quantity of equipment did you install? [Record quantity:]
S6c [IF S5=1] What was the size or capacity of the equipment you installed? [Record size or quantity:]

S7a. [IF S5=1] Would this project have qualified for an incentive through the <PROGRAM> from National Grid?

1	Yes	
2	Yes, implemented through a program	[SKIP TO COM]
3	No	[SKIP TO COM]
D	Don't know	[SKIP TO COM]

S7b. [IF S5=1 & S7a=1] Did a recommendation by the contractor, engineer, or designer who you worked with under the <PROGRAM> influence your decision to implement some or this equipment on your own?

1	Yes
2	No
D	Don't know
R	Refused

S7c. [IF S5=1 & S7a=1] Did your experience with the energy efficient projects implemented through the <PROGRAM> influence your decision to implement some or this equipment on your own?

1	Yes
2	No
D	Don't know
R	Refused

S7d. [IF S5=1 & S7a=1] Did your participation in any past program offered by National Grid influence your decision to implement some or all of this equipment on your own?

1 Yes
2 No
D Don't know
R Refused

S7e. [IF S5=1 & S7a=1] On a scale of 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence", how much influence did your participation in the National Grid program have on your decision to install this equipment without an incentive?

__ 0-10 rating
D Don't know

S8a. [IF S5=1 & S7a=1] Why didn't you implement this project through a National Grid program?

DO NOT READ - SELECT ALL THAT APPLY

1 (Too much paperwork)
2 (Cost savings not worth the effort of applying)
3 (Takes too long for approval)
4 (The equipment would not qualify)
5 (Vendor does not participate in program)
6 (Outside National Grid's service territory)
7 (No time - needed equipment immediately)
8 (Thought the program ended)
9 (Didn't know the equipment qualified under another program)
10 (Just didn't think of it)
11 (Unable to get rebate--unsure why)
12 (Other) (SPECIFY)
D Don't know

S8b. [IF S8a = EQUIPMENT WOULD NOT QUALIFY (IF S8a = 4)] Why wouldn't the project qualify?

(RECORD VERBATIM RESPONSE)

M6 [M1 = 1 and S5=1] On a scale of 0 to 10, where 0 is “no influence at all” and 10 is “a great deal of influence”, how much did advertisements by National Grid that talked about the number of ways you can save energy influence your decision to install this equipment on your own without an incentive? (Select one)

__ 0-10 rating
D Don’t know

Wrap-up

COM. Do you have any comments or suggestions for the program?

1 Yes (RECORD VERBATIM RESPONSE)
2 No

QRNAME.
For verification purposes, would you spell your first and last name for me?

(RECORD VERBATIM RESPONSE)

CLARIFY.
If we would need to clarify some of the information I asked you, would it be alright if we called you back?

1 Yes
2 No

A4. [ASK IF C1 > 6]
We would like to talk to the person who was most influential in recommending or specifying the efficient <MEASCAT1, MEASCAT2> equipment to install through the program. Earlier you mentioned that this was [FILL WITH FR4 RESPONSE]. Could you give me the name and telephone number of this person?

1 Yes (Record contact information)
2 No, REFUSED to give this information
3 No, no outside advisor involved
4 [IF SECOND MEASURE] (SAME CONTACT INFO AS PREVIOUS MEASURE)
D Don’t know

END Those are all the questions I have for you. I’d like to thank you for your time with this important evaluation.

C.2 INFLUENTIAL DESIGN PROFESSIONAL/VENDOR FREE-RIDERSHIP SURVEY

Variable List

<CONTACT>	Customer Contact Name
<CUST>	Customer/Facility Name
<ADDR>	Service address where equipment was installed
<MEASCAT1, MEASCAT2>	End-use Category (i.e. lighting)
<MEASDES1, MEASDES2>	Equipment descriptions
<INC1, INC2>	Utility/sponsor incentive for Measure categories
<QTYFLAG1, QTYFLAG2>	0=quantity is not applicable for this measure category (measure qty = 1 or quantity is not relevant as in delamping, recycling), 1=quantity greater than 1
<EFF1, EFF2>	0=efficiency is not applicable for this measure category (e.g., insulation, VFD, delamping, recycling), 1=efficiency is applicable

Procedure

The customer-identified vendors will be exported from each PA study and combined into a single sample file. This file will be checked for missing contact information and we will fill in phone numbers where possible. Cases will then be sorted by company, contact, and phone number to identify “multiples”. Cases with the same contact names will be called together and the contact will be alerted that they have been referred by more than one customer. This set of sample cases will receive the free-rider questions only.

Introduction

INTRO
Hello, my name is __, and I am calling on behalf of National Grid. We are talking with some of the design professionals and contactors who were involved with energy efficiency programs in 2013. I’m not selling anything; I’d just like to ask you about the types of equipment that your firm recommended, sold, or installed through this/these program(s) in 2013.

Before we start, I would like to inform you that for quality control purposes, this call will be recorded and monitored.

(Timing: This survey will take less than 15 minutes of your time. IF NOT A GOOD TIME, SET UP CALL BACK APPOINTMENT OR OFFER TO LET THEM CALL US BACK AT 1-800-454-5070)

(Sales concern: I am not selling anything. Your responses will be kept confidential by our firm and the National Grid. If you would like to talk with someone from there, you can call [CONTACT NAME AND PHONE NUMBER FOR SPONSORS INCLUDED IN THIS CALL].

Free-Ridership Questions

INTRO2
I'd like to review the <**MEASCAT1**, **MEASCAT2**> project(s) you recommended or specified through the program for National Grid.

VR1 Do you recall recommending the <**MEASCAT1**> project, which included <**DESC1**> for <**CUST**> at <**ADDR**> through the <PROGRAM> in 2013?

1 Yes [SKIP TO V1a]
2 No
3 This equipment was never installed [IF NUMBER OF MEASURE CATEGORIES=2, SKIP TO VR2; ELSE SKIP TO END]
D (DK)
R (Refused)

VR1a Is there someone else at your firm who would be more familiar with this project?

1 Yes - Continue [ENTER CONTACT INFO & TRANSFER. GO THROUGH INTERVIEW WITH OTHER CONTACT IF AVAILABLE, OTHERWISE SET CALLBACK AND UPDATE CONTACT INFORMATION.]
2 Yes – Not available [ENTER CONTACT INFO & EXIT]
3 No [SKIP TO NEXT MEASURE]

V1a First I'd like to ask you about your decisions to recommend the <**MEASCAT1**> project through the program. Were you involved in the decision-making process at the design stage when the <**MEASCAT1**> project was specified and agreed upon for this facility?

1 Yes [IF # OF MEASURE CATEGORIES = 2, SKIP TO VR2, ELSE SKIP TO VR9]
2 No
D (DK)

V1b At what point in the process did you become involved?

(RECORD VERBATIM RESPONSE)
(DK)
(REFUSED)

V1c What was your role?

(RECORD VERBATIM RESPONSE)
(DK)
(REFUSED)

[IF NO SECOND MEASURE, SKIP TO VR9]

VR2 Do you recall recommending the <**MEASCAT2**> project which included <**DESC2**> for <**CUST**> at <**ADDR**> through the program in 2013?

1 Yes [SKIP TO V2a]
2 No
3 This equipment was never installed [SKIP TO VP0A IF INSTALLED MEASURE CATEGORY 1; ELSE SKIP TO END]
D (DK)

VR2a Is there someone else at your firm who would be more familiar with this project?

1 Yes - Continue [ENTER CONTACT INFO & TRANSFER IF NOT CONTACT FOR MEASURE 1]
2 Yes – Not available [ENTER CONTACT INFO & EXIT IF NOT CONTACT FOR MEASURE 1]
3 No – Continue
4 Contact no longer with the company

[IF DIDN'T RECALL MEASURES 1 AND 2, MEASURES 1 AND 2 WERE NOT INSTALLED, OR R WAS NOT THE CONTACT FOR MEASURES 1 AND 2, SKIP TO END; ELSE SKIP TO VR9 AND ONLY ASK QUESTIONS FOR MEASURE 1]

V2a Were you involved in the decision-making process at the design stage when the <**MEASCAT2**> project was specified and agreed upon for this facility?

1 Yes [SKIP TO VR9]
2 No
D (DK)

V2b At what point in the process did you become involved?

(RECORD VERBATIM RESPONSE)
(DK)
(REFUSED)

V2c What was your role?

(RECORD VERBATIM RESPONSE)
(DK)
(REFUSED)

VR9 To the best of your knowledge, did <CUSTOMER> receive interest-free financing from National Grid which allowed them to pay for their portion of the project cost over time?

1 Yes
2 No

[INTERVIEWER: START OF MEASURE LOOPS. VA1 THROUGH VF9 WILL BE ASKED OF EACH MEASURE CATEGORY RECALLED - UP TO TWO MEASURES.]

INTRO3a [FIRST MEASURE]
Now I'd like to ask you some questions about your decision to recommend the <**MEASCAT1**> project. [IF THERE IS ALSO A SECOND MEASURE: Then, I'll repeat these questions for the <**MEASCAT2**> project.]

INTRO3b [IF SECOND MEASURE]
Now I'd like to review the <**MEASCAT2**> project you recommended.

VA1 On a scale of 0 to 10, with 0 being no influence and 10 being a great deal of influence, how much influence did your firm have on specifying the efficiency levels or features of the <**MEASCAT1, MEASCAT2**> project so that it would qualify for the program?

__ (0-10)
D (DK)

(IF VA1 < 7 AND NO OTHER MEASURE, SKIP TO END; IF VA1<7 AND ANOTHER MEASURE CATEGORY, REASK VA1 OF SECOND MEASURE CATEGORY; ELSE SKIP TO VP1a)

FR The next set of questions ask about <**CUST**>'s planning and installation decisions through the program in 2011.

VP1a As far as you know, did <**CUST**> have funds allocated to install any part of this project before you talked with them about the program?

1 Yes
2 Yes, but don't remember specifics [SKIP TO ATXT3]
3 No [SKIP TO ATXT3]
D (DK) [SKIP TO ATXT3]
R (Refused) [SKIP TO ATXT3]

VP1b (IF YES) What plans existed?

(RECORD VERBATIM RESPONSE)
(DK)
(REFUSED)

VP2a Was it necessary to change the timing of the installation, the quantity of equipment installed or the efficiency level of the <**MEASCAT1**, **MEASCAT2**> project installed in order to qualify for the program?

1 Yes
2 Yes, but don't remember specifics [SKIP TO ATXT3]
3 No [SKIP TO ATXT3]
D (DK) [SKIP TO ATXT3]
R (Refused) [SKIP TO ATXT3]

VP2b What changes were necessary? [INDICATE ALL THAT APPLY]

1 (Installation occurred SOONER than planned)
2 (Installation occurred LATER than planned)
3 (Installed MORE equipment than planned)
4 (Installed LESS equipment than planned)
5 (Equipment was MORE efficient than planned)
6 (Equipment was LESS efficient than planned)
7 (Other - specify)
D (Don't know)
R (Refused)

ATXT3
National Grid paid about <**INC1**, **INC2**> of the total cost of the <**MEASCAT1**, **MEASCAT2**>. **[OR if inc=0** "National Grid offered a rebate to incentivize the project."**]**

<**CUST**> may have also received some technical assistance from National Grid or a contribution toward the cost of a technical assessment study.

VF1 If National Grid had not paid a portion of the implementation cost, would your company have recommended or specified any type of <**MEASCAT1**, **MEASCAT2**> equipment to <**CUST**> at the same time?

1 Yes
2 No [SKIP TO VC3]
D (DK) [SKIP TO VC3]

[IF QTYFLAG1, QTYFLAG2 = 0, SKIP TO VF3d]

VF2a Without the program incentive, technical assistance, or education, would your company have recommended or specified the exact same quantity of <**MEASCAT1**, **MEASCAT2**> for <**CUST**> at the same time?

1 Yes [SKIP TO VF3]
2 No
D (DK)

VF2b Compared to the amount that you recommended through the program, what percentage of the overall quantity of <**MEASCAT1**, **MEASCAT2**> project do you think your company would have recommended or specified without assistance from National Grid?

(PROBE: Would you have recommended/specified about one-fourth (25%), one-half (50%), three fourths (75%) of what was installed through the program?)

____ ENTER PERCENTAGE (0-100%, 998=DK)

[IF VF2b = 0, SKIP TO VC3]
[IF MEASCAT = "Insulation" SKIP TO VRVL1]
[IF EFF1, EFF2 = 0, SKIP TO VC3]

VF3 You said you would have recommended or specified [IF VF2a=1: all the] [IF VF2a=2 OR D SHOW: at least some] <**MEASCAT1**, **MEASCAT2**> for <**CUST**> if the program had not been available.

What percent of the equipment that you would have recommended would have been…

a. of the same high efficiency as what was installed through the program?

____ (ENTER PERCENTAGE: 0-100%)
D (DK)

b. lower efficiency than what was purchased but higher than standard efficiency or code?

____ (ENTER PERCENTAGE: 0-100%)
D (DK)

c. standard efficiency or code?

____ (ENTER PERCENTAGE: 0-100%)
D (DK)

[IF QTYFLAG1, QTYFLAG2 = 1, SKIP TO VC3]
[IF EFF1, EFF2 = 0, SKIP TO VC3]

VF3d Thinking about the <**MEASCAT1**, **MEASCAT2**> equipment you would have recommended if the program had not been available, would it have been of the same high efficiency as what was installed through the program, lower efficiency than what was purchased but higher than standard efficiency, or standard efficiency or code?

1 Of the same high efficiency as what was installed through the program?
2 Lower efficiency than what was purchased but higher than standard efficiency
3 Standard efficiency or code
D (DK)
R (REFUSED)

[IF MEASCAT <> "Insulation" SKIP TO VC3]

VRVL1 Thinking about the insulation project you would have recommended if the program had not been available, would it have been of the same R Value as what was installed through the program?

1 Yes [SKIP TO VC3]
2 No
D (DK)
R (REFUSED)

VRVL2 Compared to what you recommended through the program, what R Value would you have recommended? (PROBE: "For example, would it have been 50% as much as what was installed through the program?")

__ [1-99%]
D (DK)
R (REFUSED)

VC3 On a scale of 0 to 10, with 0 being no influence and 10 being a great deal of influence, how much influence did the [if inc=0, "rebate that", else <**INC1**,**INC2**>] <**CUST**> received from National Grid have on your decision to recommend the [IF **EFF1**, **EFF2** = 1:high efficiency] <**MEASCAT1**,**MEASCAT2**> project?

_____ (ENTER INFLUENCE RANKING)
D (DK)
R (REFUSED)

(IF VF1=1 AND VF2a=1 AND VF3a=100%, ASK VF4-VF7; ELSE SKIP TO VF8)

VF4 Now I want to focus on what it would have cost <**CUST**> to install this equipment on its own without the program. On a scale of 0 to 10, with 0 being not at all likely and 10 being very likely, how likely would they have been to pay the additional **[IF INC=0,** "rebate total", **else** <**INC1**,**INC2**>] on top of the cost they already paid, to implement the same quantity and efficiency of <**MEASCAT1**, **MEASCAT2**> equipment at that same time?

___ (0 TO 10)
D (DK)
R (REFUSED)

(IF VF4 > 7 SKIP TO VF8)

VF5 How would their project have changed if the program had not contributed to the cost of the <**MEASCAT1**, **MEASCAT2**>?
(INDICATE ALL THAT APPLY) (DO NOT READ)

1 Would not have changed [SKIP TO VF8]
2 (Would have postponed the project) (SPECIFY # MONTHS)
3 (Would have cancelled the project altogether)
4 (Would have repaired existing equipment)
5 (Kept using existing equipment)
6 (Purchased less efficient equipment) (ASK VF7)
7 (Purchased fewer quantity) (ASK VF6)
8 (Installed DIFFERENT type of equipment than planned) (SPECIFY)
9 (Other) (SPECIFY)
D (DK)
R (REFUSED)

VF6 (IF VF5=7) Compared to the amount of <**MEASCAT1**, **MEASCAT2**> that <**CUST**> implemented through the program, what percent do you think they would have purchased on their own at that same time?

(PROBE: Would you have purchased about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the program?)

____ (ENTER PERCENTAGE: 0-99%)
D (DK)
R (REFUSED)

[IF VF6 = 0 SKIP TO VF8]
[IF QTYFLAG1, QTYFLAG2 = 0 SKIP TO VF8]

VF7 (IF VF5=6) Thinking about the equipment <**CUST**> would have implemented on their own, what percent of this equipment would have been . . . ?

(PROBE: Would about one-fourth (25%), one-half (50%), three fourths (75%) been of equal efficiency?)

a. of the same high efficiency as what was installed through the program?

____ (ENTER PERCENTAGE: 0-100%)
D (DK)

b. lower efficiency than what was purchased but higher than standard efficiency or code?

____ (ENTER PERCENTAGE: 0-100%)
D (DK)

c. standard efficiency or code?

____ (ENTER PERCENTAGE: 0-100%)
D (DK)

(CHECK THAT THE THREE % SUM TO 100%; PROBE TO CLARIFY).

VF8 On a scale of 0 to 10, with 0 being 'not at all important and 10 being 'very important', how important was your previous experience with a National Grid program when making the decision to recommend or install the <**MEASCAT1**, **MEASCAT2**> project for this customer?

_____
D (DK)
N NA – No previous program experience

VF9 (IF VF1=1 AND VF2a=1 AND (VF3a=100% or VF3d = 1) AND VF5 = 1 AND VC3 > 6) PROMPT: "Previously you stated that you would have recommended the exact same equipment at the same time without the program. But, you also stated that the program incentive was influential in your decision to make the recommendations that you did.)

(IF VF1 = NO OR DK AND VC3 < 5) PROMPT: "Previously you stated that <**CUST**> would not have installed any equipment without the program. You also stated that the program incentive was not influential in their decision.)

I'd like to better understand <**CUST**>'s purchase decision. Please describe what impact, if any, the program had <**CUST**>'s decision to install the energy efficient <**MEASCAT1**,**MEASCAT2**> equipment at the time they did?

(RECORD VERBATIM RESPONSE)
(DK)
(REFUSED)

END We are almost finished calling customers about their experience with the program. If another customer identifies you as being influential in their decision to install energy efficient equipment, would it be alright for us to call you back for just a couple of questions?

1 YES
2 NO

VRNAME

For verification purposes, would you spell your first and last name for me?

(RECORD VERBATIM RESPONSE)

COMMENTS

That is all the questions I have for you. Thank you for your participation. Do you have any comments?

(RECORD VERBATIM RESPONSE)

C.3 DESIGN PROFESSIONAL/VENDOR NONPARTICIPANT SPILLOVER SURVEY

Variable List

<CONTACT>	Customer Contact Name
<PROGRAMS>	Programs the vendor has been involved with
<ME1-ME18>	Types of equipment specified/sold as part of spillover questions
<DESC>	Types of equipment specified/sold as part of spillover questions

Procedure

The vendors identified in the sponsor databases will be asked the nonparticipant spillover questions. We will focus on reaching the contacts listed in the database.

Introduction

INTRO4

Hello, my name is _____, and I am calling from Tetra Tech on behalf of National Grid. We are talking with some of the design professionals, vendors, and contactors who were involved with the <PROGRAMS> in 2013. I'm not selling anything; I'd just like to ask you about the types of equipment that your firm recommended, sold, or installed through this/these program(s) in 2013.

Before we start, I would like to inform you that for quality control purposes, this call will be recorded and monitored.

(Timing: This survey will take less than 15 minutes of your time. IF NOT A GOOD TIME, SET UP CALL BACK APPOINTMENT OR OFFER TO LET THEM CALL US BACK AT 1-800-454-5070)

(Sales concern: I am not selling anything. Your responses will be kept confidential by our firm and National Grid. If you would like to talk with someone from there, you can call [CONTACT NAME AND PHONE NUMBER FOR SPONSORS INCLUDED IN THIS CALL].

[VNP1a-VNP8 WILL BE ASKED FOR EACH MEASURE WHERE MEx=1 where x=measure category number defined below].

MEx Measure Category
DESC: Measure Description

VNP1a Our records show that your firm specified, sold, and/or installed <**MEx**> to commercial and industrial customers in 2013 through the <PROGRAMS>. This includes equipment such as <**DESC**>.

Is that correct?

[INTERVIEWER: PLEASE VERIFY EACH TYPE OF EQUIPMENT THAT SHOWS FOR THE VENDOR]

1 Yes
2 No [SKIP TO NEXT CATEGORY]
D Don't know [SKIP TO NEXT CATEGORY]
R Refused [SKIP TO NEXT CATEGORY]

Note: The measure categories listed above will closely match measure categories as defined in the customer sample. When asking vendors about each measure category, we will reference the specific measure-level descriptions noted in the database.

VNP1b Prior to participating in the National Grid program, in what percentage of your commercial projects did you install high efficiency <**MEx**>?

___ [ENTER PERCENTAGE 0-100]
888 DON'T KNOW
999 REFUSED

VNP1c And during the past year, in what percentage of your commercial projects did you install high efficiency <**MEx**>?

___ [ENTER PERCENTAGE 1-100]
888 DON'T KNOW
999 REFUSED

VNP2 Please think about all the program-eligible <**MEx**> [you specified, sold and/or installed for National Grid customers in 2013.

Did you specify, sell and/or install any of this program-eligible <**MEx**> to customers of National Grid <u>without</u> the customer participating in a National Grid program?

1 Yes
2 No [SKIP TO NEXT CATEGORY]
D Don't know [SKIP TO NEXT CATEGORY]
R Refused [SKIP TO NEXT CATEGORY]

VNP3 (IF VNP2 = Yes) Again, thinking about all the program-eligible <**MEx**> you specified, sold and/or installed for National Grid customers in 2013, what percent did not receive an incentive through a National Grid program?

___ [ENTER PERCENTAGE 0-100]
888 Don't know
999 Refused

(ASK VNP4-VNP8 OF EACH MEASURE WHERE VNP3 > 0%)

VNP4 In 2013, you mentioned that about [___%] of the <**MEx**> you specified and/or installed would have been eligible for an incentive through a National Grid program, but did not receive an incentive.
What are the main reasons why your firm did not request a customer incentive for this energy saving equipment you specified/installed?
(DO NOT READ—INDICATE ALL THAT APPLY; PROBE, WHAT ELSE?)

1 Not worth the paperwork for our firm to help the customer apply for the incentive
2 Customer did not want the hassle of applying for the incentive
3 Takes too long for approval
4 Reached the maximum amount I could install through the program
5 The equipment would not qualify→ [Why not? (SPECIFY)]
6 Vendor does not participate in program
7 Outside [retail company] service territory
8 No time – needed equipment immediately
9 Thought the program ended
10 Didn't know the equipment qualified under another program
11 Just didn't think of it
12 Unable to get rebate (unsure why)
13 Other (SPECIFY)
14 Don't know

VNP5 I'm going to read you 3 statements. For each statement, please tell me whether you agree or disagree that this statement applies to your company. There are no right or wrong answers; we just want your honest opinion.

Our past experience specifying or installing <**MEx**> through energy efficiency programs has convinced us that this equipment is cost effective or beneficial even without a program incentive.

0 Agree
1 Disagree

VNP6 We are better able to identify opportunities to improve energy efficiency by using high efficiency <**MEx**> because of our previous experience with the performance of energy efficient equipment installed through energy efficiency programs, and what we learned through working with National Grid.

0 Agree
1 Disagree

VNP7 We are more likely to discuss energy efficient options with all of our customers when developing project plans for <**MEx**> because of our previous experience with the performance of energy efficient equipment installed through energy efficiency programs, and what we learned through working with National Grid.

0 Agree
1 Disagree

VNP8 Please describe what impact, if any, the <PROGRAMS> had on your decision to specify or install energy efficient <**MEx**> outside of the program.

[PROBE IF NECESSARY: "Can you please elaborate on that?", "What do you mean by...", "Anything else?"]

(RECORD VERBATIM RESPONSE)

END We are almost finished calling customers about their experience with the program. If a customer identifies you as being influential in their decision to install energy efficient equipment, would it be alright for us to call you back for just a couple of questions?

1 Yes
2 No

VRNAME

For verification purposes, would you spell your first and last name for me?

COMMENTS

Those are all the questions I have for you. Thank you for your participation. Do you have any comments?

C.4 UPSTREAM LIGHTING DISTRIBUTOR SURVEY

Distributor Name:
Distributor Phone:

Attempt #	Date/Time	Dispo	Notes
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

I1 Hi, my name is _____ and I am calling from Tetra Tech on behalf of National Grid regarding the Rhode Island Upstream Lighting initiative, also known as Bright Opportunities. Bright Opportunities provides buydowns to distributors for LEDs and reduced wattage linear fluorescent, lamps.

According to our records, your company has been selling lighting products as part of Bright Opportunities initiative. **[If needed, name some recent projects that used the program discounts].** We would like to ask you some questions about your participation in this program. Who would be most familiar with your participation?

[If respondent is not familiar with the program, ask for someone who may be familiar and repeat I1.]

[IF NEEDED] The objective of this interview is to help us understand if or how the Bright Opportunities initiative impacts the types of lighting you sell.

[IF ASKED] We anticipate this interview will take about 15 minutes. Any information you provide will be treated as confidential.

[IF ASKED] Tetra Tech is an independent research firm hired to do this study. You can verify the legitimacy of this research by calling Jeremy Newberger of National Grid at 781-907-1548.

Caseid:
Distributor Name:

Customer Name:
Contact Name:
Address:
City, State, Zip:

[For Distributors who made sales to multiple customers, customers were randomly selected. Distributors who had more than 3 customers are only asked about 3 randomly selected customers]

PI0 According to our records you sold some lighting products that were discounted by the Bright Opportunities initiative to [CUSTOMER] in 2013. Do you recall this sale? **[If they do not recall sale, skip to the next customer. If they do not recall any sales, SKIP TO PI1]**

PI1 According to our records you sold the following lighting products to [CUSTOMER] in 2013. **[READ LIST]**

Customer-Specific Quantity Table

TYPE	Quantity from Tracking Data A.	Revisions to quantities? B.
A-Line		
Decoratives		
LED Retrofit Kit		
MR16		
PAR20		
PAR30		
PAR38		
T5HO		
T8-25		
T8-28		
Ubend T8-25		
Ubend T8-28		

PI2 Do these sales quantities sound about right to you?

1 Yes
2 No, **[make note of any difference in column B above]**

PI3 According to our records you sold the [A: TYPE] bulbs/lamps at a [B: PROMOTIONAL PRICE] which was [C: BUYDOWN AMOUNT] less than your normal retail price for a discount of [D: DISCOUNT] percent. If this discount had not been available, do you think you would have sold any of these types of bulbs/lamps to this customer?

PI4 **[IF RESPONSE TO PI3 <> "NO"]** If this discount of [DISCOUNT] percent had not been available, would your sales of these [TYPE] bulbs/lamps to [CUSTOMER] been the same, lower, or higher?

PI4A **[IF SAME OR HIGHER]** Why do you say this?

PI4B **[IF LOWER]** By what percentage do you estimate your sales of these [TYPE] bulbs/lamps to [CUSTOMER] to be lower in the absence of the discount?

[REPEAT PI3 AND PI4 FOR EACH LIGHTING TYPE LISTED IN THE TABLE BELOW]

Customer-Specific Discount Table

TYPE	Retail Price per Bulb/ Lamp ($) A.	Promotional Price per Bulb/Lamp ($) B.	Buydown Amount ($) C.	Discount (%) D.	Sold Any? (Y/ N/ DK) PI3	Impact on sales? (Same/ Higher/ Lower) PI4	% Change in Sales in Absence of Discounts (%) PI4b
A-Line							
Decoratives							
LED Retrofit Kit							
MR16							
PAR20							
PAR30							
PAR38							
T5HO							
T8-25							
T8-28							
Ubend T8-25							
Ubend T8-28							

APPENDIX D: CUSTOMER ACCOUNT AND PROGRAM SAVINGS COVERAGE

D.1 DETAILED RESPONSE RATE

Table D-1. Response Rate by Program

	Design 2000plus	Energy Initiative	Commercial New Construction - Custom	Commercial New Construction - Prescriptive	Large Commercial Retrofit - Custom	Large Commercial Retrofit - Prescriptive	Small Business	Bright Opportunities	Total
Starting sample	**119**	**142**	**28**	**81**	**49**	**146**	**304**	**116**	**985**
Bad phone number	8	0	2	22	9	42	17	4	104
No knowledgeable respondent	1	0	0	2	0	2	0	0	5
Ineligible	3	3	2	0	2	11	5	4	30
Language barrier	0	0	1	1	1	0	4	2	9
Adjusted Sample	**107**	**139**	**23**	**56**	**37**	**91**	**278**	**106**	**837**
Refusal	3	1	1	1	0	3	20	1	30
Unable to contact after multiple attempts	41	48	10	34	17	66	101	42	359
Completed interviews	61	88	11	21	19	20	152	62	434
Cooperation Rate	**57%**	**63%**	**48%**	**38%**	**51%**	**22%**	**55%**	**58%**	**52%**
Response Rate	**51%**	**62%**	**39%**	**26%**	**39%**	**14%**	**50%**	**53%**	**44%**

D.2 DETAILED SAVINGS COVERAGE

Table D-2. Detailed Savings Coverage by Program

Program	Measure Type	Population of Measures	Sample of Measures	Population kWh Savings	Completed kWh Savings	Population Therm Savings	Completed Therm Savings	Percent of kWh Savings Completed*	Percent of Therm Savings Completed*	Expected Completed Measures from Survey**	Completed Measure Surveys	+/- 90% Confidence Interval at Measures Level***
Design 2000plus	Compressed Air	49	44	1,312,235	762,874	-	-	55%	55%	22	27	NA
	Custom	34	22	4,615,894	2,528,227	-	-	29%	29%	11	10	NA
	Food Service	1	1	5,110	-	-	-	0%	0%	1	0	NA
	HVAC Non-unitary	3	2	210,165	-	-	-	0%	0%	1	0	NA
	HVAC Unitary	51	37	392,495	130,998	-	-	27%	27%	19	14	NA
	Lighting	40	19	1,714,702	241,689	-	-	25%	25%	10	10	NA
	VSD	6	4	991,048	100,186	-	-	17%	17%	2	1	NA
	Total	**184**	**129**	**9,241,650**	**3,763,974**	**-**	**-**	**34%**	**34%**	**65**	**62**	**NA**
Energy Initiative	Custom	92	41	18,938,578	6,200,592	-	-	26%	26%	21	24	NA
	HVAC	20	7	4,110,798	1,166,510	-	-	20%	20%	4	4	NA
	Lighting	236	99	12,545,070	2,508,965	-	-	22%	22%	50	53	6.0%
	VSD	34	19	6,690,344	4,027,164	-	-	47%	47%	10	16	NA
	Total	**382**	**166**	**42,284,790**	**13,903,231**	**-**	**-**	**25%**	**25%**	**83**	**97**	**NA**
Commercial New Construction - Custom	Controls	6	4	-	-	31,063	-	0%	0%	2	0	NA
	HVAC - Distribution	3	1	-	-	30,104	-	0%	0%	1	0	NA
	HVAC - Plant	24	18	-	-	180,727	12,071	33%	33%	9	8	NA
	Insulation	3	1	-	-	35,632	-	-	0%	1	0	NA
	Other	5	3	-	-	90,893	3,104	40%	40%	2	2	NA
	Water Heating	12	6	-	-	29,688	1,520	8%	8%	3	1	NA
	Total	**53**	**33**	**-**	**-**	**398,107**	**9,481**	**21%**	**21%**	**17**	**11**	**NA**

Program	Measure Type	Population of Measures	Sample of Measures	Population kWh Savings	Completed kWh Savings	Population Therm Savings	Completed Therm Savings	Percent of kWh Savings Completed*	Percent of Therm Savings Completed*	Expected Completed Measures from Survey**	Completed Measure Surveys	+/- 90% Confidence Interval at Measures Level***
Commercial New Construction - Prescriptive	Food Service	13	9	-	-	10,212	306	8%	8%	5	1	NA
	HVAC	75	56	-	-	60,322	868	21%	21%	28	16	NA
	Other	1	1	-	-	15,154	-	-	0%	1	0	NA
	Water Heating	35	27	-	-	9,859	216	20%	20%	14	7	NA
	Total	**124**	**93**	**-**	**-**	**95,548**	**654**	**19%**	**19%**	**47**	**24**	**NA**
Large Commercial Retrofit - Custom	Controls	25	14	-	-	156,352	4,126	12%	12%	7	3	NA
	HVAC - Distribution	41	24	-	-	788,496	11,090	37%	37%	12	15	NA
	HVAC - Plant	6	3	-	-	26,170	-	-	0%	2	0	NA
	Insulation	17	9	-	-	128,119	12,853	24%	24%	5	4	NA
	Other	16	5	-	-	217,942	32,201	6%	6%	3	1	NA
	Water Heating	1	1	-	-	244	-	-	0%	1	0	NA
	Total	**106**	**56**	**-**	**-**	**1,317,323**	**11,406**	**22%**	**22%**	**28**	**23**	**NA**
Large Commercial Retrofit - Prescriptive	Controls	18	10	-	-	3,951	278	11%	11%	5	2	NA
	Insulation	10	4	-	-	57,195	5,507	30%	30%	2	3	NA
	Other	6	5	-	-	136,981	2,313	17%	17%	3	1	NA
	Water Heating	339	127	-	-	77,518	522	4%	4%	64	14	12.9%
	Total	**373**	**146**	**-**	**-**	**275,645**	**1,335**	**5%**	**5%**	**73**	**20**	**NA**
Small Business	Controls	41	17	-	-	9,950	237	29%	29%	9	12	NA
	Insulation	1	0	-	-	260	-	0%	0%	0	0	NA
	Lighting	1,104	219	19,642,765	3,667,116	-	-	10%	10%	110	107	4.5%
	Non-lighting	185	107	2,372,442	415,604	-	-	23%	23%	54	42	6.7%
	Water Heating	70	36	-	-	23,900	734	20%	20%	18	14	NA
	Total	**1,401**	**379**	**22,015,207**	**4,082,720**	**34,110**	**505**	**12%**	**12%**	**190**	**175**	**NA**

Program	Measure Type	Population of Measures	Sample of Measures	Population kWh Savings	Completed kWh Savings	Population Therm Savings	Completed Therm Savings	Percent of kWh Savings Completed*	Percent of Therm Savings Completed*	Expected Completed Measures from Survey**	Completed Measure Surveys	+/- 90% Confidence Interval at Measures Level***
Bright Opportunities	(Upstream) Lighting	2,883	116	5,738,739	646,825	-	-	2%	2%	58	62	6.2%
	Total	**2,883**	**116**	**5,738,739**	**646,825**	**-**	**-**	**2%**	**2%**	**58**	**62**	**NA**
Total		**5,506**	**1,118**	**79,280,385**	**22,396,750**	**2,120,732**	**4,059**	**9%**	**9%**	**559**	**474**	**NA**

APPENDIX E: DESIGN PROFESSIONAL AND VENDOR SPILLOVER CALCULATION

As an example, assume a vendor had 1,000 kwh savings in the program tracking system database attributable to lighting equipment. If that vendor said that 25 percent of all their energy efficiency lighting equipment were sold outside the program, the potential nonparticipant spillover savings would be (1,000 kwh * 0.25/(1–0.25) = 333 kwh). If this vendor was assigned a nonparticipant spillover rate of 100 percent for lighting equipment, the nonparticipant spillover kwh savings for that vendor was 333 kwh. If that same vendor was assigned a nonparticipant spillover rate of only 50 percent for lighting equipment, the nonparticipant spillover kwh savings for that vendor was 333 * 0.5 = 167 kwh. This type of calculation was made for each design professional and equipment vendor (by measure category) who had a nonparticipant spillover rate of more than 0 percent.

Table E-1. Nonparticipant HVAC Spillover Rate Calculation

% Sold Outside Program (A)	Savings from program tracking system database (B)	Assigned Spillover Rate (C)
25%	1,000	50%

Potential nonparticipant spillover savings = B * A/(1 – A)

= 1,000 kwh *0.25/(1–0.25)

= 333 kwh

Nonparticipant spillover savings = potential savings * C

= 333 * 0.5

= 167 kwh

APPENDIX F: SCORING FLOWCHARTS

Figure F-1. 2012 Free-Ridership Scoring

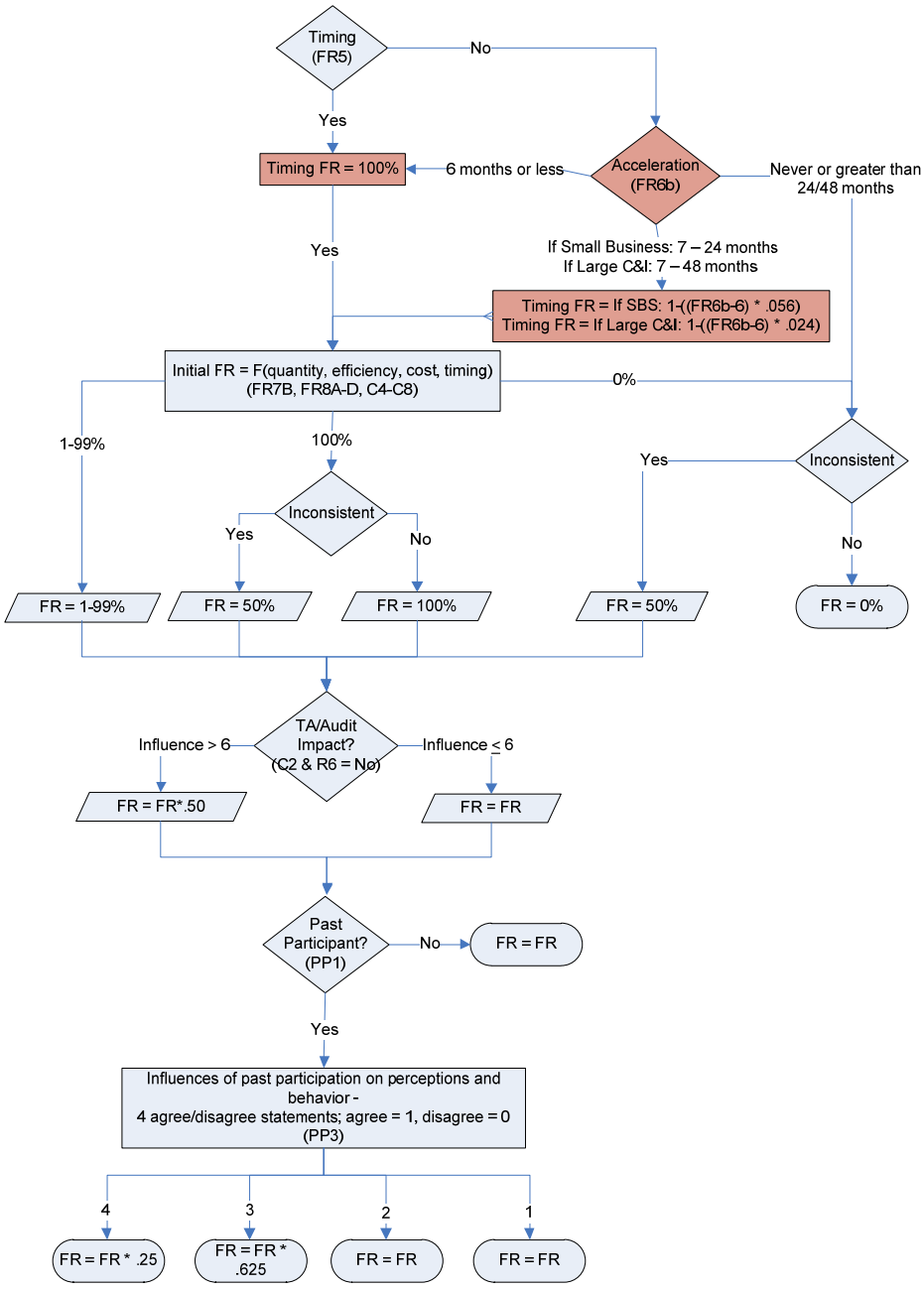


Figure F-2. 2010 Free-Ridership Consistency Checks

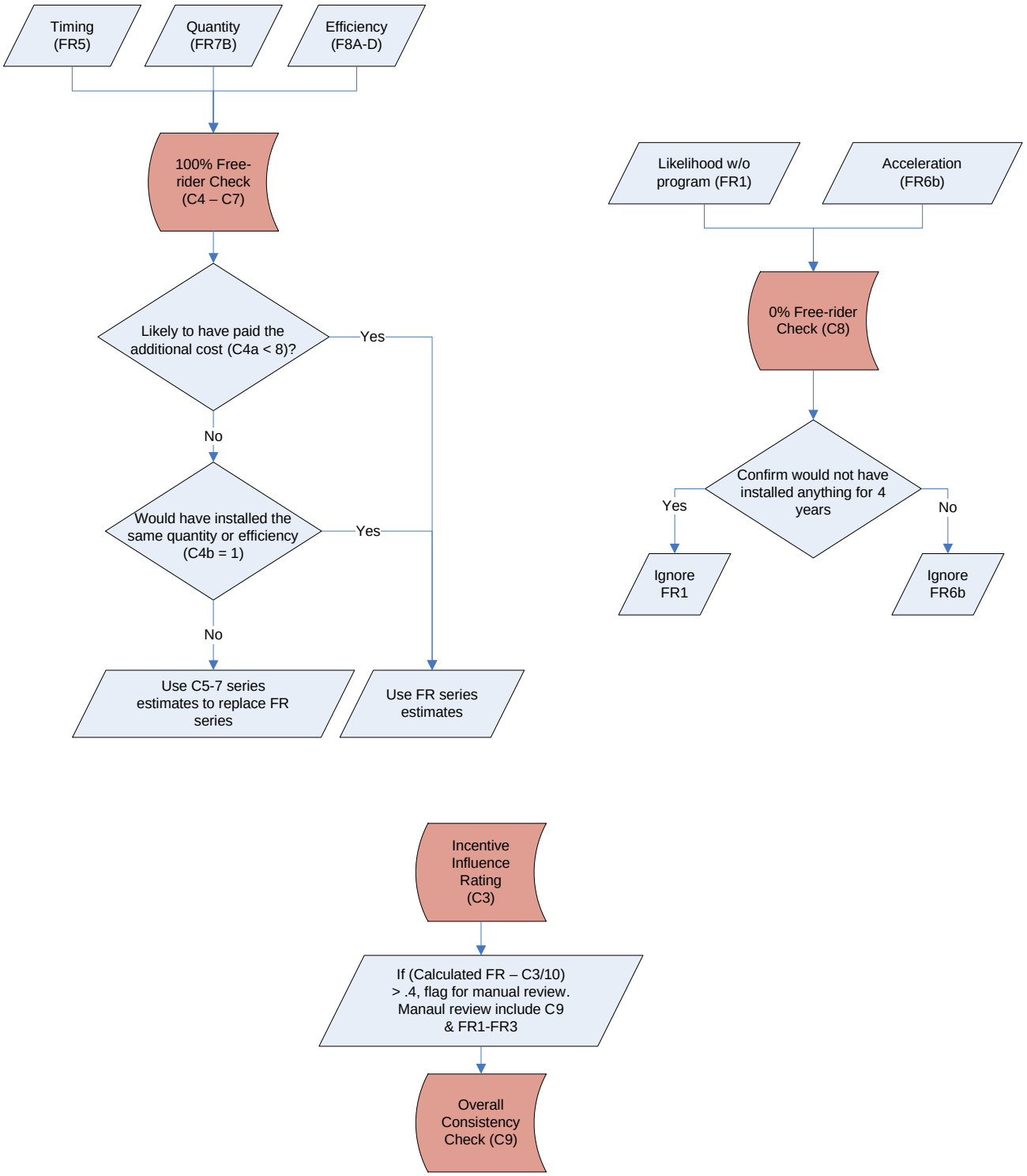


Figure F-3. Vendor Trigger for Free-Ridership Survey

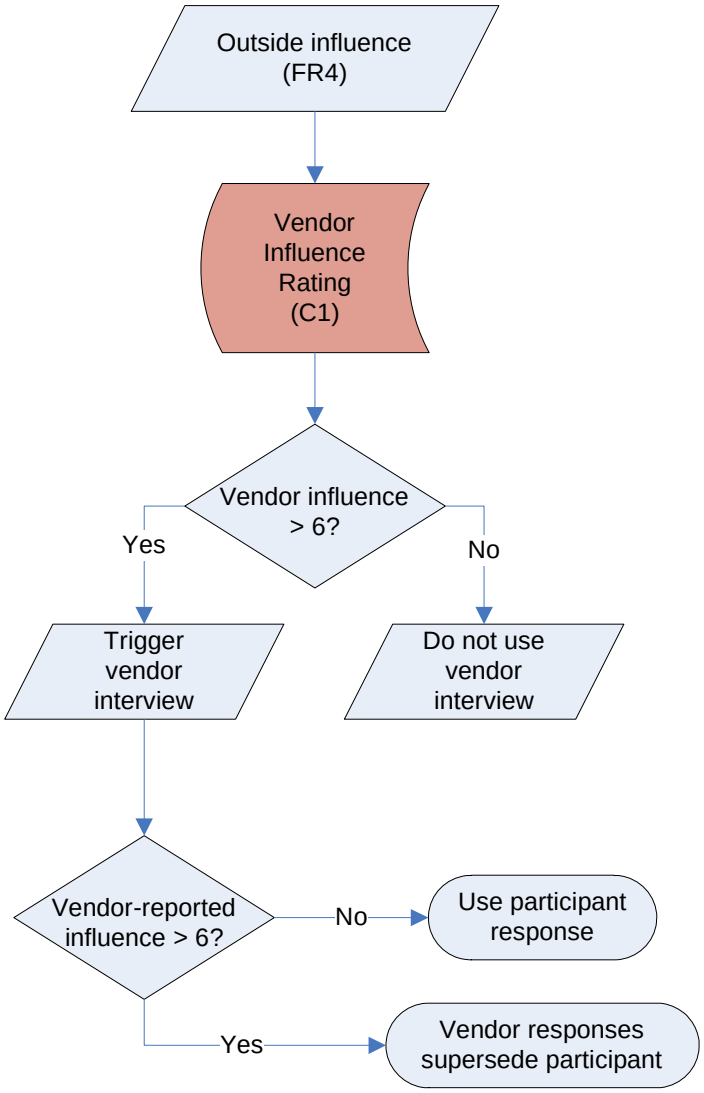


Figure F-4. Nonparticipant Spillover Scoring