TETRA TECH

2022 Commercial and Industrial Programs Free-Ridership and Spillover Study

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1.0 EXECUTIVE SUMMARY

This Executive Summary summarizes the findings of the Free-Ridership and Spillover Study conducted for Rhode Island Energy for their 2022 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, along with small business projects. Upstream measures were also included for both gas and electric.

1.1 STUDY OBJECTIVE

The primary objective of the program year (PY) 2022 (PY2022) Free-Ridership and Spillover Study was to assist Rhode Island Energy in quantifying the net impacts of their C&I electric and natural gas energy efficiency programs in Rhode Island by estimating the extent of:

- program free-ridership,
- early participant *like* and *unlike* spillover, and
- nonparticipant *like* spillover.

This Executive Summary first provides an overview of the study methodology. It also includes the free-ridership, participant *like* spillover, and nonparticipant *like* spillover estimates at the program level by fuel type. The full report provides more detail on each program's results at the measure type level and provides early observations of participant *unlike* spillover.

1.2 STUDY METHODOLOGY

In May 2022, National Grid Rhode Island became Rhode Island Energy. The methodology used for this study follows those previously conducted for National Grid Rhode Island, which included the 2019, 2017, 2013, and 2011 Commercial and Industrial Programs Free-Ridership and Spillover Studies.[1] For the upstream programs, the study follows the previous Commercial and Industrial Programs Free-ridership and Spillover studies for Rhode Island and referenced a 2012 study previously implemented by KEMA in Massachusetts[2].

To accomplish the above objective, telephone surveys were conducted with a sample of 2022 program participants in each of the C&I electric and natural gas programs. The 2022 study included the following C&I programs:

- Large Commercial New Construction (custom and prescriptive) (gas),
- Large Commercial Retrofit (custom and prescriptive) (gas),

[1] These studies followed the methodology presented most recently, in the "National Grid Rhode Island 2019 Commercial and Industrial Programs Free-ridership and Spillover Study Final Report," January 18, 2021. Previous studies included the following: "National Grid Rhode Island 2011 Commercial and Industrial Programs Free-ridership and Spillover Study Final Report," September 6, 2012, "National Grid Rhode Island 2013 Commercial and Industrial Programs Free-ridership and Spillover Study Final Report," September 30, 2014, and "National Grid Rhode Island 2016 Commercial and Industrial Programs Free-Ridership and Spillover Study" Sept 11, 2017.

[2] "Process Evaluation of the 2012 Bright Opportunities Program Final Report" prepared by KEMA, Inc., June 14, 2013.

- Small Business Solutions (electric and gas),
- Design 2000 (new construction) (electric),
- Energy Initiative (retrofit) (electric), and
- Upstream Gas (gas).

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

- *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 vendor nonparticipant *like* spillover at a statewide level for all the programs.
- *Distributors from the upstream program who sold products at a discounted price.* These surveys were used to estimate the free-ridership rate, which is averaged with the participant (end-user) data.

The evaluation team also attempted to complete surveys with *design professionals and vendors identified by customers as influential in their decision to install the energy-efficient equipment through the programs.* While these surveys are used to estimate free-ridership for those installations where customers said the design professional/equipment vendor was influential in the decision, the evaluation team was unable to complete any surveys for this group.[3]

1.3 NET-TO-GROSS RESULTS—FILING RESULTS SUMMARY

Table 1 summarizes the free-ridership and spillover estimates to be used in setting prospective net-to-gross (NTG) ratios for the 2025−2026 period. These figures were calculated by combining the electric and gas programs because of the low number of completes achieved across programs and measures. These prospective figures should be used for both electric and gas programs. The recommended values are broken out by the following delivery and program types: upstream non-small business, downstream prescriptive non-small business, custom non-small business, and small business. The retrospective detailed results for each measure within each program can be found in Appendix A of this report.

Table 1. C&I Free-Ridership and Spillover Results Summary by Program for Filing

Delivery and program type	FR	90% FR margin error (±)	Participant *like* SO rate	90% PSO margin error (±)	Nonparticipant *like* SO rate	NTG rate
Upstream, Prescriptive, Non-Small Business	32.9%	1.4%	7.7%	0.3%	0.0%	74.8%
Downstream, Prescriptive, Non-Small Business	17.4%	2.1%	4.3%	0.3%	2.6%	89.6%
Custom, Non-Small Business	18.6%	3.0%	7.5%	0.6%	0.0%	88.9%
Small business	19.9%	0.8%	1.5%	0.0%	1.0%	82.5%
Overall	**24.4%**	**2.0%**	**4.7%**	**0.8%**	**0.7%**	**81.0%**

FR = free-ridership; SO = spillover

[3] Two influential vendors were identified but the evaluation team was not able to complete either survey.

1.4 ORGANIZATION OF REPORT

In Section 2.0, we review the study's objectives, methodology, and survey response rates. Section 3.0 summarizes the survey questions used to identify the key decision-maker and the questions designed to serve as a project review for the respondent. Section 3.0 also describes the questions and approach used to estimate the extent of participant free-ridership, participant *like* spillover, and participant *unlike* spillover. Section 4.0 presents the questions and approach for vendors whom customers identified as being influential in their decision to participate, along with the questions and approach used to estimate nonparticipant *like* spillover. Section 5.0 presents the questions asked to distributors who sold equipment through the upstream initiatives and how the results were calculated. In Section 6.0, free-ridership and spillover results for filing purposes are presented.

The following appendices are also included:

- Appendix A contains the detailed results tables presented at the program level and the individual measure level with the sampling weights and error margins.
- Appendix B details the sampling plan for the participant survey.
- Appendix C documents the weighting methodology used to produce the participant free-ridership and *like* spillover estimates.
- Appendix D contains the survey instruments.
- Appendix E details the response rate and program savings coverage.
- Appendix F contains an example of the design professional and vendor spillover calculation.
- Appendix G contains the free-ridership and spillover scoring algorithms.

2.0 INTRODUCTION

This report summarizes the findings of the free-ridership and spillover study conducted for Rhode Island Energy for their 2022 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 retrofit and new construction programs. These included custom and prescriptive measures for all sectors (large and small businesses). Also included were gas and electric upstream initiatives.

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 2022 program year participants and the design professionals and equipment vendors who were active in the 2022 program year. Essentially, the current study is a performance audit of the year 2022 programs using survey research methods to estimate the free-ridership and spillover rates. Using the most recent program participants is the best approach to setting prospective figures and why free-ridership and spillover studies should be completed on a regular basis.

2.1 STUDY OBJECTIVE

The primary objective of the program year (PY) 2022 (PY2022) Free-Ridership and Spillover Study was to assist Rhode Island Energy in quantifying the net impacts of their C&I energy efficiency programs by estimating the extent of:

- program free-ridership,
- early participant *like* and *unlike* spillover, and
- nonparticipant *like* spillover.

2.2 STUDY METHODOLOGY

In May 2022, National Grid Rhode Island became Rhode Island Energy. The methodology used for this study follows those previously conducted for National Grid Rhode Island, which included the 2019, 2017, 2013, and 2011 Commercial and Industrial Programs Free-Ridership and Spillover Studies.[4] For the upstream programs, the study follows the methodology used for Rhode Island and referenced a 2012 study previously implemented by KEMA in Massachusetts[5]. The following C&I programs were included in the 2022 study:

- Large Commercial New Construction (custom and prescriptive) (gas),
- Large Commercial Retrofit (custom and prescriptive) (gas),
- Small Business Solutions (electric and gas),
- Design 2000 (electric),

[4] These studies followed the methodology presented most recently, in the "National Grid Rhode Island 2019 Commercial and Industrial Programs Free-ridership and Spillover Study Final Report," January 18, 2021. Previous studies included the following: "National Grid Rhode Island 2011 Commercial and Industrial Programs Free-ridership and Spillover Study Final Report," September 6, 2012, "National Grid Rhode Island 2013 Commercial and Industrial Programs Free-ridership and Spillover Study Final Report," September 30, 2014, and "National Grid Rhode Island 2016 Commercial and Industrial Programs Free-Ridership and Spillover Study" Sept 11, 2017.

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

- Energy Initiative (electric), and
- Upstream Gas (gas).

2.2.1 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 an energy efficiency program and would have installed the same high-efficiency measure type[6] 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 percent) 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 percent) 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 percent) are those who would not have installed or implemented any energy-efficient measure type (within a specified time period) 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 operates and allow for cost-effectiveness testing by measure category. In addition, for C&I 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 to help them recall the program's impact on all aspects of project decision-making.

Program total free-ridership (*pure* and *partial*) rates illustrated in the tables in the *Appendix A* are weighted by measure therm or kilowatt-hour savings (or MMBtu when electric and gas results are combined). Weighting by (therm or kilowatt-hour) 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 all measure types for that program. In these situations, results do not include those measure types. When reviewing the measure-type free-

[6] 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*.

ridership rates, it is important to consider the number of survey completions that the estimate is based upon.

The upstream initiatives start with the same methodology and then include distributor survey information to refine the results. Distributors were asked about customer's decision-making process and how the project would have changed absent the program. These results were then averaged with the participant results to come up with an overall free-ridership rate.

2.2.2 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 is 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 2022) of any additional energy-efficient equipment that were made *without* any additional technical or financial assistance from Rhode Island Energy 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 they participated in a Rhode Island Energy program. These early spillover estimates are included in the report tables.

2.2.2.1 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 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 customers *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 Appendix A are weighted by measure category therm or kilowatt-hour 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.

2.2.2.2 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.

2.2.2.3 Nonparticipant *Like* Spillover Estimates

*N*onparticipant 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 2022 study estimated only a portion of nonparticipant like-measure type spillover based on responses from design professionals and vendors participating in Rhode Island Energy's programs. The data for the analysis could have been collected from nonparticipants directly or from the design professionals and vendors who recommended 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 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, 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 kilowatt-hour savings estimates to nonparticipant spillover. In the program tracking system database, measure type-specific program therm or kilowatt-hour savings are associated with each design professional and vendor who participated in the program in 2022.

To determine nonparticipant spillover, design professionals and equipment vendors were asked (by measure type they installed through the program in 2022) 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 or install this efficient equipment outside the program. Using the survey responses and 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 are familiar with the programs specified or installed equipment through the program in 2022. 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 2022).

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 2022 programs. Thus, if a vendor installed program-eligible equipment in other measure type categories in the year 2022 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 2022.

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.

2.3 SURVEY RESPONSE

Primary data collection was used to collect feedback from participants, contractors, and distributors. The study period collected feedback from 2022 program participants. This happened to align with when National Grid Rhode Island became Rhode Island Energy. During interviewer training, the evaluation team discussed the transition of ownership and that customers may be familiar with National Grid Rhode Island and not Rhode Island Energy. Interviewers adapted accordingly to reflect feedback they received from the respondent and proceeded to complete the survey.

2.3.1 Participant Free-Ridership, *Like* and *Unlike* Spillover Surveys

The program participant sample consisted of unique *accounts*[7], not unique customer names. The same customer's 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 this study, a customer or participant is defined as a unique account.[8] Appendix B presents the number of participant accounts sampled for the 2022 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 July 14 and August 4, 2023. The duration of interviews with program participants averaged 15 minutes. Repeated call attempts (an average of 11 call attempts per customer was made to reach sampled customers during the calling period) resulted in an overall response rate of nine percent. Multiple factors contributed to the lower-than-average response rate:

- We received no phone numbers or contact names for all *upstream food service*, *HVAC*, *water heating*, and *other* records.
- A large portion of the sample (43 percent) was identified as having duplicate contact name, phone number, or company, which further reduced the size of the sample. [9]
- The number of survey completions for some measure types is low because the number of installations within these measure categories for program year 2022 was small (i.e., less than 50). Thus, some caution should be used when interpreting these results for specific measure types.

[7] 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.

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

[9] The number of records associated with the same contact information ranged from two records to 26 records.

To obtain a greater response, customers with an email address were sent an email requesting their participation in the survey, while those without were sent a hard-copy postcard. Hard-copy postcards were mailed to all sampled upstream records, where we did not have phone numbers.

Table 2. 2022 Participant Free-Ridership and Spillover Survey Disposition and Response Rate[10]

Disposition	Total
Starting sample	**2,215**
Residential line	0
Adjusted sample	**2,215**
Does not recall participating	200
Ineligible—referred to landlord	11
Ineligible—vendor/contractor	77
Refusal	132
Incompletes (partial surveys)	7
Language barrier	24
Bad phone number[11]	190
Attempted but not completed	1,376
Completed surveys	198
Completes measures	*257*
Response rate	
Response rate (completed surveys/adjusted sample)	**8.9%**

2.3.2 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 2022. 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 customers who were responsible for their own installation) and duplicate names, 64 design professionals and vendors remained. A census was taken for data collection due to the lower quantity.

Table 3 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 August 2023.

[10] Appendix D contains a detailed response rate by program.

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

Table 3. 2022 Vendor Nonparticipant Spillover Survey Disposition and Response Rate

Disposition	Total
Starting sample	**64**
Residential line	0
Adjusted sample	**64**
Does not recall participating	8
Refusal	2
Bad phone number	6
Attempted but not completed	30
Completed	18
Response rate	
Response rate (completed/adjusted sample)	**28.1%**

In conjunction with the vendor nonparticipant spillover survey, interviews were attempted with two of the design professionals and equipment vendors mentioned by customers during the participant surveys as being influential in the decision to install the efficient measures. We were unable to complete surveys with either of those vendors.

2.3.3 Distributor Interviews

Interviews were conducted with distributors who offered lighting, HVAC, food service, and kitchen products at a discounted price through the upstream initiatives in 2022. The interviews were used for estimating participant free-ridership for the programs.

The program tracking system databases contained the names of 46 distributors for the upstream projects. The evaluation team attempted to contact all 46 distributors and completed interviews with 16 distributors.

Table 4. 2022 Distributor Interview Disposition and Response Rate

Disposition	Total
Starting sample	**46**
Residential line	0
Adjusted sample	**46**
Does not recall customer	3
Refusal	4
Business closed	1
Respondent not available	5
Attempted but not completed	17
Completed	16
Response rate	
Response rate (completed/adjusted sample)	**34.8%**

3.0 PARTICIPANT SURVEY QUESTIONS

This chapter summarizes the survey questions used when talking with program participants. Questions were used to identify a decision maker and put the decision-making into context by reviewing the project, and the questions were 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 the discussion of the questions, we have only shown the questions and not the potential response categories or skip patterns. The upstream participants were asked the same series of questions except for customers who were unaware of the discount; these unaware customers received questions with modified wording reminding them of the discount they received. Appendix D of this document contains survey instruments with full free-ridership survey questions, response options, and skip patterns for participants in both the upstream and downstream programs. Appendix D 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 designer/vendor nonparticipant spillover survey.

3.1 FORMAT

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

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

Table 5. Survey Fills and Explanations

Fill	Explanation
Address	Street address of the project
City	City of project
Date	Date project was completed
Company name	Name of the participating company
Measure category 1	First measure installed through the program
Measure category 2	Second measure installed through the program
Upstream measure category	Measure installed through the upstream program
Measure description 1	Detailed measure description for the first measure installed
Measure description 2	Detailed measure description for the second measure installed
Study type	Indicator of whether the customer received an assessment (audit), or study funded by the program
Incentive (INC)	Amount of financial incentive
Project cost (CST)	Total cost of the project for the customer

3.2 SUMMARY OF THE 2022 SURVEY QUESTIONS

The customer survey instrument contains nine key sections that include the following:

- identification of key decision maker(s),
- project and decision-making review,
- event type identification,
- initial free-ridership questions,
- consistency check questions,
- influence of technical assessment (if applicable),
- participant *like* spillover questions, and
- 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 the listed contact person was not the primary decision maker, information is collected on the person within the company who was the primary decision maker, and the survey is conducted with that individual. In cases where the customer told the interviewer that a designer/vendor was the key decision maker, 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 are typically used to estimate free-ridership for that customer. However, in 2022, only two vendors were identified by customers as being influential and while attempted, surveys were not completed. 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 Rhode Island Energy.

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

Question	Question text
IN2	Are you the person who was most involved in making the decision to get the equipment from Rhode Island Energy at <ADDRESS> in <CITY>?
OTHER_R	Who was primarily responsible for making the decision to get the equipment through Rhode Island Energy?
IN4	Are you employed by <COMPANY_NAME> or are you a contractor who provides design and/or installation services for <COMPANY_NAME>?

Question	Question text
DM2	Just to confirm, our records indicate the [EFFICIENCY IS APPLICABLE (IF EFF = 1): energy efficient] <MEASURE CATEGORY> project around <DATE> you implemented at <ADDRESS> with Rhode Island Energy's assistance included <MEASURE DESCRIPTION>. Were you involved in the decision-making process when the [EFFICIENCY IS APPLICABLE (IF EFF = 1): energy efficient] <MEASURE CATEGORY> equipment was being considered for this facility?

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 participants by asking them to recall all the various factors that may have been important in the purchase decision. The questions and question text are listed below.

Question	Question text
BG3	Does your company have any formal requirements or informal guidelines for the purchase, replacement or maintenance of energy-using equipment?
BG4	Which of the following best describes these requirements or guidelines? Purchase energy efficient equipment regardless of cost, purchase energy efficient equipment if it meets payback or return on investment criteria, purchase standard efficiency equipment that meets code or something else.
DM15c	Do you have a memo of understanding, or MOU with Rhode Island Energy? [IF NEEDED: A MOU where Rhode Island Energy works with you to encourage, support and financially incentivize energy saving improvements typically on a three-year commitment?]
DM15d	How would you describe your involvement with the MOU development? Aware but not at all involved in meetings where improvements are discussed, aware and sometimes participate in meetings, primarily responsible for meeting MOU requirements with Rhode Island Energy, or something else.
FR1	Please think back to the time when you were considering implementing the specific <MEASURE CATEGORY 1> project [IF TOTMEAS=2 SHOW "and <MEASURE CATEGORY 2> project"] around <DATE 1> [IF TOTMEAS=2 SHOW "and <DATE 2>"]. What factors motivated your business to consider implementing new <MEASURE CATEGORY 1> [IF TOTMEAS=2 SHOW "and <MEASURE CATEGORY 2> equipment through Rhode Island Energy's program?

3.2.3 Event Type Identification

The survey includes a series of questions to identify if the equipment was for a new construction project, new equipment that did not replace existing equipment, equipment that was replaced because it failed, or equipment that was replaced early. These questions were used to determine if respondents should be asked about timing. New construction and replace on failure projects were skipped out of the timing component (see questions below). The questions used to identify the event type are listed below.

Question	Question text
ET1	Was the high efficiency <MESAURE CATEGORY> installed as part of a new construction or major renovation project?
ET2	Did the high efficiency <MESAURE CATEGORY> you installed replace any existing equipment or was it a new type of equipment that you did not have in your organization before?
ET3	Which of the following best describes the condition of your old equipment? The old equipment was working with no need of repair, working with need of minor repair, working with need of major repair, no longer working.
ET4	Do you think your old equipment would have lasted another 2 (for small businesses) or 4 (for non-small businesses) years?

3.2.4 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,[12] the battery of questions discusses the timing of the installation and the quantity and 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 initiatives, before the free-ridership battery, customers were asked if they were aware they received their equipment at a discount. If so, respondents were asked the standard free-ridership questions. Those who were unaware were asked similar questions but were reminded of the discount they received. Questions where the wording was revised in these instances are included below.

Question	Question text
FR10	I'd like to go over all the program assistance you received from Rhode Island Energy. According to our records: IF (DualFuelProj=1)] You received rebates for both gas and electric equipment around the same time through Rhode Island Energy. (IF incentive amount was missing) The total cost for the project implemented at your facility around <DATE> through the program was about $<CST>. Rhode Island Energy paid about $<INCENTIVE> of the total cost of the [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "energy efficient"] <MEASURE CATEGORY> project implemented through the program. (IF CST=0 OR INC=0) Rhode Island Energy paid a portion of the total cost of the [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "energy efficient"] <MEASURE CATEGORY> project implemented through the program. [IF STUDY=1 OR DM8=1: In addition, as I previously mentioned, Rhode Island Energy paid a portion of the cost for the <STUDYTYPE1, STUDYTYPE2>.] [IF DM14 = 1] Rhode Island Energy also provided financing or repayment assistance for your portion of the project costs.
FR12	Would your business have implemented any type of <MEASURE CATEGORY> project at the same time without the assistance from Rhode Island Energy?

[12] The instrument is designed to handle both rebated equipment (e.g., HVAC equipment) and rebated services (e.g., boiler tune-ups).

Question	Question text
FR42	[upstream unaware question wording] If the <UPSTREAM MEASURE CATEGORY> lamp had cost [IF INC>0 SHOW "$<INCENTIVE>"] more, would your organization have installed **any** <UPSTREAM MEASURE CATEGORY> at all at the same time?
FR13	Would your business have implemented the exact same quantity or size of <MEASURE CATEGORY> project without the assistance from Rhode Island Energy?
FR43	[upstream unaware question wording] If the <UPSTREAM MEASURE CATEGORY> had cost [IF INC>0 SHOW "$<INCENTIVE>"] more, would your organization have implemented the exact same **quantity** of <UPSTREAM MEASURE CATEGORY> discounted from Rhode Island Energy?
FR14	Would your business have implemented the exact same high efficiency <MEASURE CATEGORY> equipment as what was installed through the program without the assistance from Rhode Island Energy?
FR44	[upstream unaware question wording] If the <UPSTREAM MEASURE CATEGORY> had cost [IF INC>0 SHOW "$<INCENTIVE>"] more, would your organization have implemented the exact same high efficiency <if lighting show “lighting”> equipment?
FR15	Would you have implemented the <MEASURE CATEGORY> project earlier than you did, at a later date, or never without the assistance from Rhode Island Energy?
FR45	[upstream unaware question wording] Would you have installed the <UPSTREAM MEASURE CATEGORY> earlier than you did, at a later date, or never if the <UPSTREAM MEASURE CATEGORY> had cost [IF INC >0 SHOW "$<INCENTIVE>"] more?
FR16	How much [earlier/later] would you have implemented the <MEASURE CATEGORY> project?
FR46	How much [earlier/later] would you have implemented the <UPSTREAM MEASURE CATEGORY> project?
FR17	[ASK IF FR13 = 02, 88, 99] Compared to the amount of <MEASURE CATEGORY> equipment that you implemented through the Rhode Island Energy program, what percent of the project do you think your business would have purchased on its own without the assistance from Rhode Island Energy?
FR47	[upstream unaware question wording] Compared to the amount of <UPSTREAM MEASURE CATEGORY> that you installed, what percent of the <UPSTREAM MEASURE CATEGORY> do you think your organization would have installed on its own if they had cost [IF INC>0 SHOW "$<INCENTIVE>"] more?
FR18	You said your business would have installed [IF FR13=1-Yes SHOW "all"; IF FR13= 2-No SHOW <FR17> %; IF FR17=888,999 SHOW "some"; IF FR13=88,99 SHOW "some"] of the equipment on its own if the assistance from Rhode Island Energy had not been available. What percent of this equipment would have been standard efficiency or minimum code?
FR48	You said your business would have installed [IF FR13=1-Yes SHOW "all"; IF FR13= 2-No SHOW <FR17> %; IF FR17=888,999 SHOW "some"; IF FR13=88,99 SHOW "some"] of the equipment on its own if the assistance from Rhode Island Energy had not been available. What percent of this equipment would have been standard efficiency or minimum code?

Question	Question text
FR19	and what percent would have been between standard efficiency and what you installed through the program?
FR49	and what percent would have been between standard efficiency and what you installed through the program?
FR20	[ASK IF QTYFLAG=0 AND IF FR14=02,88,99 AND INTEFF=1] Thinking about the <MEASURE CATEGORY> project you would have implemented on your own if the Rhode Island Energy assistance had not been available, would it have been standard efficiency or minimum code **or** between standard efficiency and what you installed through the program?
FR50	[upstream unaware question wording] Thinking about the <UPSTREAM CATEGORY> project you would have implemented on your own if they had cost [IF INC >0 SHOW "$<INCENTIVE>"] more, would it have been standard efficiency or minimum code **or** between standard efficiency and what you installed through the program?
FR21	[for insulation projects] Thinking about the energy saving improvements you would have implemented on your own if the Rhode Island Energy assistance had not been available; would you have done the same improvements as you did?
FR22	[for insulation projects] Compared to what you installed through the Rhode Island Energy program, how much would you have done? For example, would it have been 50% as much as what was done with the Rhode Island Energy assistance?

3.2.5 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.

Question	Question text
FR11	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 QTYFLAG=1) SHOW "quantity of"] [IF EFFICIENCY IS APPLICABLE (IF EFF=1) SHOW "efficiency of"] <MEASURE CATEGORY> equipment at that same time if Rhode Island Energy had not provided all of this program assistance?
FR41	[upstream unaware question wording] According to our information, the distributor or retailer you bought the <MEASURE CATEGORY> lamps from received a discount [IF INC>0 SHOW "of $<INCENTIVE>"] from Rhode Island Energy which was passed on to you. On a scale of 0 to 10, with 0 being “not at all likely” and 10 being “very likely,” how likely is it that your organization would have implemented the same [IF QTYFLAG=1 SHOW "quantity"] [IF EFFICIENCY IS APPLICABLE (IF EFF=1) SHOW "and efficiency of"] <MEASURE CATEGORY> at that same time if they had cost [IF INC>0 SHOW "$<INCENTIVE>"] more?
FR25	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 SHOW "roughly $<INCENTIVE>" ELSE SHOW "incentive"] you received from Rhode Island Energy have on your decision to implement the [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "high efficiency"] <MEASURE CATEGORY> project?

Question	Question text
C43	[upstream 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 discounted price have on your decision to install the <MEASURE CATEGORY>?
CC1	You said that you would have installed the same quantity and efficiency equipment at that same time, but you also just said that the Rhode Island Energy incentive was influential in your decision to implement the <MEASURE CATEGORY> project. Which of these is more accurate?
CC6	Earlier in the interview, you said there was a <FR11 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 Rhode Island Energy 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?
CC8	Please think about all the assistance you received through the Rhode Island Energy program. In your own words, please describe what impact, if any, that assistance 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 the 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, 50 percent of the savings is assumed 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 6 details these calculations.

Table 6. Quantity and Efficiency Scores

Score	Responses	Result
Quantity Score (FR_QTY)	If would have installed same quantity without program (FR13 or FR43 = Yes)	FR_QTY = 1
	If would have installed fewer quantity without program (FR17 or FR47= No)	FR_QTY = FR17 upstream: FR_QTY = FR47
	If never would have installed (FR15 or FR45 = Never)	FR_QTY = 0
Efficiency Score (FR_EFF)	If would have installed at least some equipment on their own	FR_EFF = (1-FR18-FR19) + (FR18*.50) upstream: FR_EFF = (1-FR48-FR49) + (FR48*.50)
	If never would have installed (FR15 or FR45 = never)	FR_EFF = 0
	If insulation and would not have installed same R value	FR_EFF = FR22

Score	Responses	Result
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.[13] 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[14]. This adjustment is detailed in Table 7 and visualized in Figure 1.

Table 7. Timing Factor Adjustment

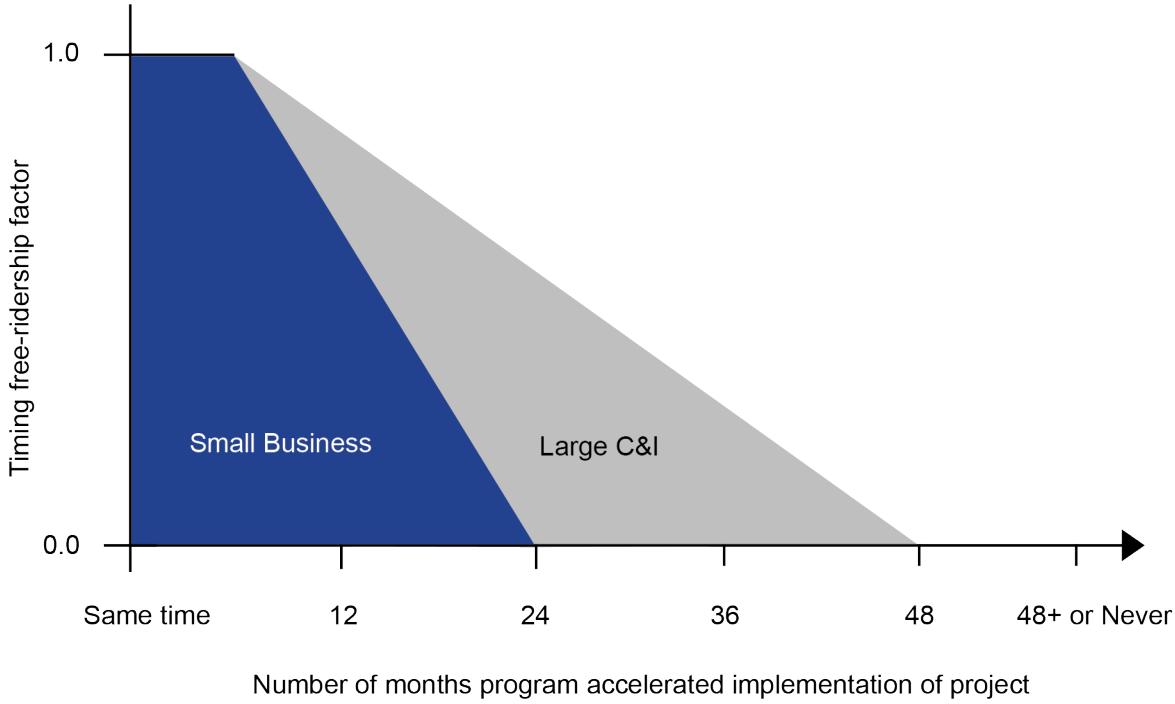
Score	Responses	Result
Timing Factor—Small Business Programs (FR_TIMING)	Would have installed at the same time without the program (FR12 or FR42 = Yes)	*FR_TIMING = 1*
	Would have installed within six months of when participant actually did without the program (FR16 or FR46 <= 6 months)	*FR_TIMING = 1*
	Would have installed sometime between 7 and 24 months of when participant actually did without the program (FR16 or FR46 > 6 months & < 24 months)	*FR_TIMING = 1-((FR16-6) * .056)* *Upstream: FR_TIMING = 1-((FR46-6) * .056)*
	Would have installed sometime after 24 months of when participant actually did without the program (FR16 or FR46 > 24 months)	*FR_TIMING = 0*
	Would have never installed without the program (FR15 or FR45 = Never)	*FR_TIMING = 0*

[13] Projects that were accelerated by fewer than six 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.

[14] 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
Timing Factor—Large Business Programs (FR_TIMING)	Would have installed at the same time without the program (FR12 or FR42 = Yes)	*FR_TIMING = 1*
	Would have installed within six months of when participant actually did without the program (FR16 or FR46 ≤ 6 months)	*FR_TIMING = 1*
	Would have installed sometime between 7 and 48 months of when participant actually did without the program (FR16 or FR46 > 6 months & < 48 months)	*FR_TIMING = 1-((FR16-6 * .024)* *Upstream: FR_TIMING = 1-((FR46-6 * .024)*
	Would have installed sometime after 48 months of when participant actually did without the program (FR16 or FR46 > 48 months)	*FR_TIMING = 0*
	Would have never installed without the program (FR15 or FR45 = 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 1. Timing Free-Ridership Factor—Number of Months Program Accelerated Implementation by Business Type



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 FR7 and FR8 (below) are used to assess vendor influence. Details regarding the Influential Vendor survey are discussed in Section 4 of this report.

Question	Question text
FR7	Who was MOST responsible for actually recommending or specifying the [IF EFFICIENCY IS APPLICABLE (IF EFF=1) SHOW "high efficiency"] <MEASURE CATEGORY> project that was implemented through the program?
FR8	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) [FR7 response] have on your company's decision to implement the [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "high efficiency"] <MEASURE CATEGORY> project so that it would qualify for the program?

3.2.6 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.

Question	Question text
DM11	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 technical assessment have on your decision to implement the [IF EFFICIENCY IS APPLICABLE; IF EFF=1: high efficiency] <MEASURE CATEGORY> project?

Table 8 details these adjustments.

Table 8. Adjustment for the Influence of Technical Assessments

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 (DM11 ≤ 6)	No adjustment
	Participant would **not** have performed assessment, audit, or study without program assistance, and it was influential (DM11 > 6)	Adjusted Free-Ridership Score * .5

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

3.2.7 Influence of Past Program Participation

In past evaluations for National Grid Rhode Island, a free-ridership scoring adjustment was applied if a participant indicated past program participation influenced their decision to do additional energy-saving improvements outside any National Grid Rhode Island program. The effects were identified through a series of statements. Their free-ridership score was adjusted if responses indicated past participation influence on their decision-making. This adjustment can have a significant impact on free-ridership rates, and with the change in program administration during the evaluation period, the evaluation team felt this adjustment was unnecessary.

3.2.8 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 (i.e., without a program incentive) that was 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:

Question	Question text
SP1	Now I'd like you to think of the time since you participated in the Rhode Island Energy program around <DATE>. Has your company implemented any <MEASURE CATEGORY> projects for this or other facilities in Rhode Island on your own, that is, without a rebate from Rhode Island Energy?
SP2	Was this equipment of the same efficiency level or a higher level of efficiency as the equipment you installed through the program?
SP3	Was this equipment more energy efficient than standard efficiency or code equipment?
SP4	Thinking of the <MEASURE CATEGORY> equipment that you installed on your own, was this more, less or the same amount of <MEASURE CATEGORY> equipment as what you installed through the program?

For respondents that answer *yes* to SP1 and SP2, spillover savings are calculated as the measure-specific savings identified by the program multiplied by the quantity identified in SP4. For respondents that answer *yes* to SP1 and SP3, spillover savings are calculated as 50 percent of the measure-specific savings identified by the program multiplied by the quantity identified in SP4. If the respondent answers *no* to SP1 or SP3, there are no identifiable *like* spillover savings.

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

Question	Question text
SP8	Did a recommendation by the contractor, engineer, or designer who you worked with under the Rhode Island Energy program influence your decision to implement some or all of this [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "efficient"] <MEASURE CATEGORY> equipment on your own?
SP9	Did your experience with the energy efficient projects implemented through the Rhode Island Energy program influence your decision to implement some or all of this [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "efficient"] <MEASURE CATEGORY> equipment on your own?
SP10	Did your participation in any past program offered by Rhode Island Energy influence your decision to implement some or all of this [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "efficient"] <MEASURE CATEGORY> equipment on your own?
SP11	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 Rhode Island Energy program have on your decision to install this equipment without an incentive?
SP12	Why didn't you implement this <MEASURE CATEGORY> project through a Rhode Island Energy program?
SP13	[IF THE EQUIPMENT WOULD NOT QUALIFY] 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 (SP8 = yes **AND** (SP9 = no **AND** SP10 = no)), spillover rate = 50 percent.
>
> If (SP9 = yes **OR** SP10 = yes), spillover rate = 100 percent.

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

3.2.9 Participant *Unlike* Spillover

In addition to *like* spillover, the 2022 study also asked about *unlike* spillover (i.e., measures outside of those installed through the program). The following questions were used to identify *unlike* spillover.

Question	Question text
US1	Since participating in Rhode Island Energy program, has your company purchased, installed, or implemented any other type of energy efficient equipment on your own, that is, without a rebate from Rhode Island Energy?
US2	What type of energy efficient equipment did you install on your own?
US3	What quantity of energy efficient equipment did you install?
US4	What size or capacity of energy efficient equipment did you install?
US5	Would this project have qualified for an incentive through a Rhode Island Energy program?

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. The following questions are used:

Question	Question text
US6	Did a recommendation by the contractor, engineer, or designer who you worked with under a Rhode Island Energy program influence your decision to implement some or all of this equipment on your own?
US7	Did your experience with the energy efficient project implemented through a Rhode Island Energy program influence your decision to implement some or all of this equipment on your own?
US8	Did your participation in any past program offered by Rhode Island Energy influence your decision to implement some or all of this equipment on your own?

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

4.0 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 energy-saving measures through the program (Questions FR7 and FR8 discussed above). A separate survey tailored to these designers/vendors was administered to estimate free-ridership (see Appendix D). For this year's study, only two contractors were identified as being influential vendors, and we were not able to complete either survey. As a result, the questions below are illustrative of how the questions would have been used.

Design professional/vendor responses to the free-ridership questions replaced participant 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 < 4), or if attempts to survey the designer/vendor failed, the customer 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 (VA1 > 6). The questions are shown below:

Question	Question text
V1A	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 the <MEASURE CATEGORY> project so that it would qualify for Rhode Island Energy assistance?

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 VENDOR 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, or operation of that equipment to decide 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 percentage of their sales to the customers of Rhode Island Energy 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 percentage of these sales did not receive an incentive. They were then asked several questions about the program's impact on their decision to recommend or 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 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 or installed outside the program in Rhode Island Energy'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.

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 had installed and how that equipment fit into measure categories. For those measure categories, design professionals/vendors were asked what percentage of the equipment would have been eligible for a program and what percentage of that eligible equipment did not receive an incentive through a program. Those who said some of the eligible equipment did not receive an incentive through a program are included in Step 2 of the nonparticipant spillover analysis (see below).

Question	Question text
VNP1a	Our records show that your firm specified, sold, and/or installed <MEASURE CATEGORY> to commercial and industrial customers in 2022 through the Rhode Island Energy offerings. Is that correct?
VNP2	Please think about all the program-eligible <MEASURE CATEGORY> you specified, sold, and/or installed for Rhode Island Energy customers in 2022. Did you specify, sell and/or install any of this program-eligible <MEASURE CATEGORY> to customers of Rhode Island Energy without the customer receiving assistance from Rhode Island Energy?
VNP3	[IF VNP2 = Yes] Again, thinking about all the program-eligible <MEASURE CATEGORY> you specified, sold, and/or installed for Rhode Island Energy customers in 2019, what percent did not receive an incentive through Rhode Island Energy?

Step 2: Determine Whether the Program-Eligible Equipment Specified/Installed Outside the Program Was Due to the Program

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

Question	Question text
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 and offerings has convinced us that this equipment is cost effective or beneficial even without a program incentive."

Question	Question text
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 offerings, and what we learned through working with Rhode Island Energy."
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 offerings, and what we learned through working with Rhode Island Energy."

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

Table 9. Preliminary Nonparticipant *Like* Spillover Rate

Number of agreements to VNP5–VNP7	Preliminary nonparticipant like spillover rate
3	100%
2	50%
1 or 0	0%

4.2.1.1 Vendor Nonparticipant Spillover Consistency Checks

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

Question	Question text
VNP4	In 2022, you mentioned that about <VNP3> of the <MEASURE CATEGORY> you specified and/or installed would have been eligible for an incentive through Rhode Island Energy but did not receive an incentive. What are the main reasons why your firm or the customer did not request a customer incentive for this energy saving equipment you specified/installed?
VNP8	Please describe what impact, if any, the Rhode Island Energy offerings had on your decision to specify or install <MEASURE CATEGORY> outside of the Rhode Island Energy programs and offerings.

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 respond "*did not qualify*" to VNP4. However, in the event this response was provided, the preliminary nonparticipant estimate was 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. Responses to this last question were 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 three 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 "*did not qualify*" (e.g., was not worth the paperwork hassle), the adjusted nonparticipant spillover rate remained at 100 percent. If, however, in the open-ended question, the vendor said, "It really didn't impact the business because our business is driven by more than rebates," or "I don't think it has had much," or "almost no" impact, the final nonparticipant spillover rate was reduced to 50 percent. These responses may indicate that the program influenced some installations or sales, but the customer/vendor did not want to prepare the paperwork to get the incentive. The evaluation team made two adjustments based on this open-ended question, both resulted in a reduction of 50 percent.

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 percentage 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.[15]

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 therms * 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 zero percent.

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[15] 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 = Percentage 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).

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 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.

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.

5.0 DISTRIBUTOR SURVEY QUESTIONS AND RESULTS

As mentioned earlier, we attempted to contact distributors who offered lighting, HVAC, food service, and kitchen products at a discounted price through the upstream initiatives. A separate survey tailored to these distributors was administered to estimate free-ridership (see Appendix D).

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 initiatives and at the measure-type level.

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:

Question	Question text
I1	According to our records, your company has been selling equipment/lighting products as part of upstream initiatives. [If needed, name some recent projects that used the program discounts]. We would like to ask you some questions about your participation in these initiatives. 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 <equipment/lighting products> that were discounted by Rhode Island Energy's Upstream Initiatives to <Customer Name> in 2022. Do you recall this sale?

5.2 DISTRIBUTOR FREE-RIDERSHIP QUESTIONS

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

Question	Question text
PI3	According to our records you sold <TYPE> 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 <TYPE> to this customer in 2022?
PI4	[IF RESPONSE TO PI3 <> "NO"] If this discount of <DISCOUNT> percent had not been available, would your sales of these <TYPE> to <Customer Name> 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> to <Customer Name> to be lower in absence of the discount?

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

Table 10. Distributor Free-Ridership Calculations

Responses	Result
If customer would not have purchased any equipment without program (PI3 = No)	FR = 0%
If customer would have purchased fewer quantity without program (PI3 = Yes or Don't know)	FR = PI4b/100
If customer 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 in the 2020, 2017, and 2013 Commercial and Industrial Programs Free-Ridership and Spillover Study report for National Grid Rhode Island and as previously implemented by KEMA in Massachusetts[16].

Table 11. Upstream Free-Ridership Rates by Measure Type

Fuel	Measure	End-user free-ridership rate	Distributor free-ridership rate	Recommended free-ridership rate
Electric	(Upstream) Food service	65.2%	N/A	65.2%
	(Upstream) HVAC	29.0%	0.0%	14.5%
	(Upstream) Lighting–fixture, fixture with controls, retrofit kits	34.8%	0.0%	17.4%
	(Upstream) Lighting–screw-ins, TLEDs	54.3%	16.7%	35.5%
	(Upstream) Other	N/A	N/A	N/A
	(Upstream) Water heating	N/A	N/A	N/A
Gas	(Upstream) Food service	74.8%	35.7%	55.3%
	(Upstream) HVAC	100.0%	N/A	100.0%
	(Upstream) Water heating	99.2%	18.2%	58.7%
	(Upstream) Other	N/A	N/A	N/A

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

6.0 FREE-RIDERSHIP AND SPILLOVER STUDY RESULTS

This section presents the summary table that includes figures to be used for filing purposes. The values in Table 12 are for setting prospective net-to-gross (NTG) ratios for the 2025−2026 period. These prospective figures should be used for both electric and gas programs. The recommended values are broken out by the following delivery and program types: upstream non-small business, downstream prescriptive non-small business, custom non-small business, and small business.

We adjusted the retrospective NTG estimate values to combine the electric and gas programs because of the low number of completes achieved across programs and measures. As a general guideline, the evaluation team strives to achieve statistical precision of better than 90/10 but may use figures if statistical precision meets 90/25. Further, the evaluation team used a threshold of at least 10 completes to be able to report at the measure or program-level to ensure robustness around the estimate. Because many programs and measures had low participation and therefore low number of completes (specifically on the gas side), all programs were combined to produce more robust figures to develop prospective values.

Table 12 shows recommended prospective NTG values. Free-ridership was highest for the upstream, prescriptive measures among non-small businesses (32.9 percent) and also saw the most participant *like* spillover (7.7 percent). The lowest free-ridership was found for downstream, prescriptive measures for non-small businesses (17.4 percent) and also saw the highest nonparticipant *like* spillover with 2.6 percent), resulting in the highest NTG rate (89.6 percent). The full table with the surveyed and population counts can be found in Appendix A.

Table 12. C&I Recommended Net-to-Gross Values for 2024−2026 for Filing Purposes

Delivery and Program Type	Surveyed	Population	Population Savings (MMBtu)	Savings for weighting (MMBtu)	Sampling margin error (±)*	FR rate	90% FR margin error (±)	Participant *like* SO rate	90% PSO margin error (±)	Nonparticipant *like* SO rate	NTG rate
Upstream, Prescriptive, Non-Small Business	99	7,324	143,345	141,954	0.6%	32.9%	1.4%	7.7%	0.3%	0.0%	74.8%
Downstream, Prescriptive, Non-Small Business	23	2,281	101,776	101,577	1.0%	17.4%	2.1%	4.3%	0.3%	2.6%	89.6%
Custom, Non-Small Business	18	116	80,705	73,286	3.4%	18.6%	3.0%	7.5%	0.6%	0.0%	88.9%
Small business	103	2,407	20,015	20,008	1.2%	19.9%	0.8%	1.5%	0.0%	1.0%	82.5%
Overall	**243**	**12,128**	**345,841**	**336,826**	**1.9%**	**24.4%**	**2.0%**	**4.7%**	**0.8%**	**0.7%**	**81.0%**

FR = free-ridership; SO = spillover; PSO = participant spillover

APPENDIX A: DETAILED RESULTS TABLES

Please note: Many of the detailed, measure-level results are based on a low number of survey completes. Therefore, only the recommended values described in Chapter 6 should be used to calculate net savings.

This appendix provides detailed results for each program. The detailed results include free-ridership and spillover rates by program type, measure type, and delivery type, along with corresponding error margins. The results are presented for each measure type, which can vary by program type and fuel. The measure type categories were assigned based on the equipment installed. Table 13 details which equipment was assigned to which measure type classification, combining gas and electric measures.

Table 13. Breakdown of Equipment in Measure Type Categories

Measure type	Equipment
Compressed air	Compressors
Controls	Energy management system
Custom	HVAC
	Refrigeration
	Lighting
	Motors
Food service	Fryer and griddle
	Oven
	Pasta and stream cookers
	Dishwasher
	Holding cabinet
	Refrigerator
	Ice machine
HVAC	Boiler
	VFD, fans
	Furnace
	Thermostat
	Heat pump
HVAC—distribution	Steam traps
	Pump
HVAC—plant	Boiler
	Pump
	Chiller

Measure type	Equipment
Insulation	Air sealing
	Roof, wall, floor, basement insulation
	Door curtain
Lighting	Custom lighting
	Fixtures, fixtures with controls
	LEDs
	Occupancy sensor
Non-lighting	Controls
	Air sealing and insulation
	HVAC
	Motors/drives
	Refrigeration
Other	Comprehensive design/retrofit
	Other
	Clothes washer
	Freezer
Water heating	Aerator, showerhead, spray nozzle
	Pipe and tank insulation
	Water heater

Vendor 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 *compressed air* and *lighting* measure types to the electric programs.

Table 14 presents free-ridership and spillover rates estimated by this study for each electric measure type by program. The highest free-ridership rates were among *HVAC—plant* (100 percent), *upstream food service* (65.2 percent), and *compressed air* (37.4 percent) measures within the Design 2000 new construction program, although the results are based on only a few cases. Within the Energy Initiative retrofit program, the screw-in/TLED bulbs had the highest free-ridership rate at 35.5 percent. The *custom* measure category within the Small Business Solutions program had the highest free-ridership rate at 24.2 percent. The highest participant *like* spillover rate was with the Energy Initiative program *HVAC—distribution* measure with 50.0 percent. This was driven by one respondent who said they installed 200 percent more than what was done through the program without receiving program incentives. Their reason for not going through the program was because there was too much paperwork involved.

Table 14. 2022 C&I Electric Free-Ridership and Spillover Results by Program and Measure Type

Program	Measure	Surveyed	Population	Population savings	Savings used for weighting	Sampling margin error (±)*	FR rate	90% FR margin error (±)	Participant *like* SO rate	90% PSO margin error (±)	Nonparticipant *like* SO rate	NTG rate
Design 2000	(Upstream) Food service	6	377	784,394	784,394	2.0%	65.2%	5.7%	0.0%	0.0%	0.0%	34.8%
	(Upstream) HVAC	4	178	2,267,561	2,267,561	Census	14.5%	1.2%	0.0%	0.0%	0.0%	85.5%
	Compressed Air	2	19	585,928	585,928	Census	37.4%	14.2%	0.0%	0.0%	16.7%	79.3%
	HVAC—Plant	1	3	312,089	312,089	Census	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	(Upstream) Water heating	0	98	237,682	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
	HVAC	0	3	20,636	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
	HVAC—Distribution	0	2	15,983	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
	Lighting	0	2	63,727	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Total		**13**	**682**	**4,288,000**	**3,949,972**	**3.7%**	**34.7%**	**3.9%**	**0.0%**	**0.0%**	**2.5%**	**67.8%**

Program	Measure	Surveyed	Population	Population savings	Savings used for weighting	Sampling margin error (±)*	FR rate	90% FR margin error (±)	Participant *like* SO rate	90% PSO margin error (±)	Nonparticipant *like* SO rate	NTG rate
Energy Initiative	(Upstream) Lighting—fixture, fixture with controls, retrofit kits	54	5,374	20,981,761	20,981,761	0.8%	17.4%	0.8%	5.6%	0.3%	0.0%	88.1%
	(Upstream) Lighting— screw-ins, TLEDs	19	830	5,003,504	5,003,504	2.0%	35.5%	2.7%	16.7%	2.4%	0.0%	81.2%
	HVAC	4	63	3,304,538	3,304,538	Census	2.3%	0.9%	0.0%	0.0%	0.0%	97.7%
	HVAC—Distribution	2	23	1,262,047	1,262,047	Census	2.2%	0.9%	50.0%	28.4%	0.0%	147.8%
	Lighting	16	2,175	25,879,605	25,879,605	1.0%	17.9%	2.3%	0.0%	0.0%	1.7%	83.9%
	(Upstream) Other	0	11	74,581	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
	HVAC—Plant	0	6	22,422	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Total		**95**	**8,482**	**56,528,459**	**56,431,456**	**1.6%**	**18.0%**	**1.7%**	**4.7%**	**1.0%**	**0.8%**	**87.5%**
Small Business Solutions	Custom	17	185	1,494,453	1,494,453	3.8%	24.2%	1.1%	0.0%	0.0%	0.0%	75.8%
	HVAC—Thermostat	12	30	20,583	20,583	Census	9.2%	0.4%	0.0%	0.0%	0.0%	90.8%
	Lighting	58	2,102	3,482,147	3,482,147	1.1%	19.7%	1.2%	0.0%	0.0%	1.7%	82.0%
	Water heating	0	1	387	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Total		**87**	**2,318**	**4,997,570**	**4,997,183**	**1.9%**	**21.0%**	**1.2%**	**0.0%**	**0.0%**	**1.2%**	**80.2%**
Overall		**195**	**11,482**	**65,814,028**	**65,378,611**	**1.8%**	**19.2%**	**1.8%**	**4.0%**	**0.8%**	**0.9%**	**85.7%**

FR = free-ridership; SO = spillover; PSO = participant spillover

*When sampling margin error is "census," we reached out to all customers; therefore, the sampling margin of error is zero.

Table 15 presents detailed free-ridership and participant *like* spillover rates for each natural gas measure type and program. The Large Commercial New Construction program had the highest free-ridership rate (83.4 percent), driven by the HVAC measures (upstream and downstream), although the number of completes for the program is low. The Small Business Solutions program had the highest NTG rate (95.9 percent) resulting from the free-ridership (13.4 percent) and participant spillover (9.2 percent). The Upstream Gas program had an NTG rate of 54.2 percent, driven by the high free-ridership rate (56.6 percent) and participant spillover (10.7 percent). No nonparticipant *like* spillover was identified for gas measures.

Table 15. 2022 C&I Natural Gas Free-Ridership and Spillover Results by Program and Measure Type

Program	Measure	Surveyed	Population	Population savings	Savings used for weighting	Sampling margin error (±)*	FR rate	90% FR margin error (±)	Participant *like* SO rate	90% PSO margin error (±)	Nonparticipant *like* SO rate	NTG rate
Large Commercial New Construction	(Upstream) HVAC	2	16	25,596	25,596	Census	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	HVAC	2	8	12,706	12,706	Census	50.0%	0.0%	0.0%	0.0%	0.0%	50.0%
	Controls	0	3	6,390	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
	HVAC—Plant	0	1	514	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
	Other	0	10	12,671	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Total		**4**	**38**	**57,877**	**38,302**	**Census**	**83.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**16.6%**
Large Commercial Retrofit	Controls	2	13	33,535	33,535	Census	92.1%	31.0%	0.0%	0.0%	0.0%	7.9%
	HVAC—Distribution	6	15	141,557	141,557	Census	68.5%	8.7%	17.5%	3.5%	0.0%	49.0%
	Other	3	31	389,374	389,374	Census	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	Water heating	3	11	101,999	101,999	Census	0.0%	0.0%	10.0%	1.2%	0.0%	110.0%
	(Upstream) HVAC	0	8	1,648	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
	HVAC	0	5	29,565	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
	HVAC—Plant	0	1	16,423	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A

Program	Measure	Surveyed	Population	Population savings	Savings used for weighting	Sampling margin error (±)*	FR rate	90% FR margin error (±)	Participant *like* SO rate	90% PSO margin error (±)	Nonparticipant *like* SO rate	NTG rate
	HVAC—Thermostat	0	2	5,874	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
	Insulation	0	1	554	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Total		**14**	**87**	**720,529**	**666,465**	**Census**	**19.2%**	**3.4%**	**5.2%**	**0.9%**	**0.0%**	**86.1%**
Small Business Solutions	Insulation	14	82	25,523	25,523	Census	15.5%	1.8%	10.7%	1.2%	0.0%	95.2%
	Other	2	6	4,058	4,058	Census	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	Water heating	0	1	47	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Total		**16**	**89**	**29,628**	**29,581**	**Census**	**13.4%**	**1.6%**	**9.2%**	**1.0%**	**0.0%**	**95.9%**
Upstream Gas	(Upstream) Food service	9	236	246,916	246,916	1.3%	55.3%	3.8%	11.2%	1.9%	0.0%	55.9%
	(Upstream) Water heating	5	192	156,276	156,276	2.2%	58.7%	6.6%	10.0%	1.5%	0.0%	51.3%
	(Upstream) Other	0	4	1,609	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Total		**14**	**432**	**404,801**	**403,192**	**1.7%**	**56.6%**	**4.9%**	**10.7%**	**1.7%**	**0.0%**	**54.2%**
Overall		**48**	**646**	**1,212,835**	**1,137,541**	**4.8%**	**34.4%**	**3.8%**	**7.1%**	**1.2%**	**0.0%**	**72.7%**

FR = free-ridership; SO = spillover; PSO = participant spillover

*When sampling margin error is "census," we reached out to all customers; therefore, the sampling margin of error is zero.

Table 16 presents free-ridership and spillover rates for the electric programs by program type. Overall, the custom projects had an NTG rate of 86.0 percent, being driven by a free-ridership rate of 14.0 percent. Prescriptive projects had a similar NTG rate (85.4 percent) with a free-ridership rate of 19.5 percent. The Design 2000 new construction program only had prescriptive projects and had the lowest NTG rate of 67.8 percent. The Small Business Solutions program custom projects had a lower NTG rate than the prescriptive projects, 75.8 percent compared to 81.8 percent, respectively. On the other hand, the Energy Initiative program custom projects had a higher NTG rate compared to prescriptive projects (95.3 percent compared to 89.5 percent). Participant *like* spillover was limited to the prescriptive program type within the Energy Initiative retrofit program, while nonparticipant *like* spillover was found in the prescriptive measures across all programs.

Table 16. 2022 C&I Electric Free-Ridership and Spillover Results by Program and Program Type

Program	Program type	Surveyed	Population	Population savings	Savings used for weighting	Sampling margin error (±)*	FR rate	90% FR margin error (±)	Participant *like* SO rate	90% PSO margin error (±)	Nonparticipant *like* SO rate	NTG rate
Design 2000	Prescriptive	13	682	4,288,000	3,949,972	3.7%	34.7%	3.9%	0.0%	0.0%	2.5%	67.8%
Total		**13**	**682**	**4,288,000**	**3,949,972**	**3.7%**	**34.7%**	**3.9%**	**0.0%**	**0.0%**	**2.5%**	**67.8%**
Energy Initiative	Custom	2	15	1,638,056	1,573,558	7.9%	4.7%	3.5%	0.0%	0.0%	0.0%	95.3%
	Prescriptive	93	8,467	54,890,403	54,857,898	0.7%	18.4%	0.8%	7.6%	0.3%	0.3%	89.5%
Total		**95**	**8,482**	**56,528,459**	**56,431,456**	**1.6%**	**18.0%**	**1.7%**	**4.7%**	**1.0%**	**0.8%**	**87.5%**
Small Business Solutions	Custom	17	185	1,494,453	1,494,453	3.8%	24.2%	1.1%	0.0%	0.0%	0.0%	75.8%
	Prescriptive	70	2,133	3,503,117	3,502,730	1.1%	19.7%	1.0%	0.0%	0.0%	1.4%	81.8%
Total		**87**	**2,318**	**4,997,570**	**4,997,183**	**1.9%**	**21.0%**	**1.2%**	**0.0%**	**0.0%**	**1.2%**	**80.2%**
Custom overall		**19**	**200**	3,132,509	3,068,011	**3.6%**	**14.0%**	**1.3%**	**0.0%**	**0.0%**	**0.0%**	**86.0%**
Prescriptive overall		**176**	**11,282**	62,681,519	62,310,600	**0.6%**	**19.5%**	**0.6%**	**4.0%**	**0.1%**	**0.9%**	**85.4%**
Overall		**195**	**11,482**	**65,814,028**	**65,378,611**	**1.8%**	**19.2%**	**1.8%**	**4.0%**	**0.8%**	**0.9%**	**85.7%**

FR = free-ridership; SO = spillover; PSO = participant spillover

*When sampling margin error is "census," we reached out to all customers; therefore, the sampling margin of error is zero.

Table 17 presents free-ridership and spillover rates by natural gas programs and program type. Custom projects had a free-ridership rate of 19.5 percent, with 8.9 percent participant *like* spillover and 0.0 percent nonparticipant *like* spillover, resulting in an NTG rate of 89.4 percent. Prescriptive projects had an overall NTG rate of 50.3 percent, driven by a free-ridership rate of 59.2 percent, a participant *like* spillover rate of 9.4 percent, and no nonparticipant *like* spillover.

Table 17. 2022 C&I Natural Gas Free-Ridership and Spillover Results by Program and Program Type

Program	Program type	Surveyed	Population	Population savings	Savings used for weighting	Sampling margin error (±)*	FR rate	90% FR margin error (±)	Participant *like* SO rate	90% PSO margin error (±)	Nonparticipant *like* SO rate	NTG rate
Large Commercial New Construction	Custom	2	22	32,281	12,706	Census	50.0%	0.0%	0.0%	0.0%	0.0%	50.0%
	Prescriptive	2	16	25,596	25,596	Census	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total		**4**	**38**	**57,877**	**38,302**	**Census**	**83.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**16.6%**
Large Commercial Retrofit	Custom	14	79	718,881	666,465	Census	19.2%	3.4%	5.2%	0.9%	0.0%	86.1%
	Prescriptive	0	8	1,648	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Total		**14**	**87**	**720,529**	**666,465**	**Census**	**19.2%**	**3.4%**	**5.2%**	**0.9%**	**0.0%**	**86.1%**
Small Business Solutions	Custom	16	89	29,628	29,581	Census	13.4%	1.6%	9.2%	1.0%	0.0%	95.9%
Total		**16**	**89**	**29,628**	**29,581**	**Census**	**13.4%**	**1.6%**	**9.2%**	**1.0%**	**0.0%**	**95.9%**
Upstream Gas	Prescriptive	14	432	404,801	403,192	1.7%	56.6%	4.9%	10.7%	1.7%	0.0%	54.2%
Total		**14**	**432**	**404,801**	**403,192**	**1.7%**	**56.6%**	**4.9%**	**10.7%**	**1.7%**	**0.0%**	**54.2%**
Custom overall		**32**	**190**	**780,790**	**708,752**	**3.6%**	**19.5%**	**1.9%**	**8.9%**	**0.6%**	**0.0%**	**89.4%**
Prescriptive overall		**16**	**456**	**432,045**	**428,788**	**1.2%**	**59.2%**	**4.6%**	**9.4%**	**1.0%**	**0.0%**	**50.3%**
Overall		**48**	**646**	**1,212,835**	**1,137,541**	**4.8%**	**34.4%**	**3.8%**	**7.1%**	**1.2%**	**0.0%**	**72.7%**

FR = free-ridership; SO = spillover; PSO = participant spillover

*When sampling margin error is "census," we reached out to all customers; therefore, the sampling margin of error is zero.

Table 18 presents free-ridership and spillover rates by electric programs and delivery type. Overall, the upstream and downstream projects had very similar NTG rates (85.7 percent and 85.0 percent, respectively). Upstream measures had a free-ridership rate of 21.6 percent, with 7.3 percent participant *like* spillover and no nonparticipant *like* spillover. Downstream NTG was driven by a free-ridership rate of 17.4 percent, a participant *like* spillover rate of 0.9 percent, and a 1.4 percent nonparticipant *like* spillover.

Table 18. 2022 C&I Electric Free-Ridership and Spillover Results by Program and Delivery Type

Program	Delivery type	Surveyed	Population	Population savings	Savings used for weighting	Sampling margin error (±)*	FR rate	90% FR margin error (+)	Participant *like* SO rate	90% PSO margin error (+)	Nonparticipant *like* SO rate	NTG rate
Design 2000	Downstream	3	29	998,363	898,017	Census	59.1%	22.6%	0.0%	0.0%	11.1%	52.0%
	Upstream	10	653	3,289,637	3,051,955	1.6%	27.5%	4.2%	0.0%	0.0%	0.0%	72.5%
Total		**13**	**682**	**4,288,000**	**3,949,972**	**3.7%**	**34.7%**	**3.9%**	**0.0%**	**0.0%**	**2.5%**	**67.8%**
Energy Initiative	Downstream	22	2,267	30,468,612	30,446,190	1.0%	15.5%	1.9%	4.5%	0.3%	1.2%	90.3%
	Upstream	73	6,215	26,059,846	25,985,265	0.7%	20.9%	0.9%	8.3%	0.4%	0.0%	87.4%
Total		**95**	**8,482**	**56,528,459**	**56,431,456**	**1.6%**	**18.0%**	**1.7%**	**4.7%**	**1.0%**	**0.8%**	**87.5%**
Small Business Solutions	Downstream	87	2,318	4,997,570	4,997,183	1.9%	21.0%	1.2%	0.0%	0.0%	1.2%	80.2%
Total		**87**	**2,318**	**4,997,570**	**4,997,183**	**1.9%**	**21.0%**	**1.2%**	**0.0%**	**0.0%**	**1.2%**	**80.2%**
Upstream overall		**83**	**6,868**	**29,349,483**	**29,037,221**	**0.7%**	**21.6%**	**0.9%**	**7.3%**	**0.3%**	**0.0%**	**85.7%**
Downstream overall		**112**	**4,614**	**36,464,545**	**36,341,390**	**0.8%**	**17.4%**	**0.7%**	**0.9%**	**0.0%**	**1.4%**	**85.0%**
Overall		**195**	**11,482**	**65,814,028**	**65,378,611**	**1.8%**	**19.2%**	**1.8%**	**4.0%**	**0.8%**	**0.9%**	**85.7%**

FR = free-ridership; SO = spillover; PSO = participant spillover
*When sampling margin error is "census," we reached out to all customers; therefore, the sampling margin of error is zero.

Table 19 presents free-ridership and spillover rates for the natural gas programs by delivery type. Overall, the upstream projects had an NTG rate of 50.3 percent, driven by a free-ridership rate of 59.2 percent and participant *like* spillover of 9.4 percent. Downstream projects had a higher NTG rate of 89.4 percent, resulting from a 19.5 percent free-ridership rate and an 8.9 percent participant *like* spillover rate. The Small Business Solutions program only had downstream measures and had the highest program NTG at 95.9 percent.

Table 19. 2022 C&I Natural Gas Free-Ridership and Spillover Results by Program and Delivery Type

Program	Delivery type	Surveyed	Population	Population savings	Savings used for weighting	Sampling margin error (±)*	FR rate	90% FR margin error (±)	Participant *like* SO rate	90% PSO margin error (±)	Nonparticipant *like* SO rate	NTG rate
Large Commercial New Construction	Downstream	2	22	32,281	12,706	Census	50.0%	0.0%	0.0%	0.0%	0.0%	50.0%
	Upstream	2	16	25,596	25,596	Census	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total		**4**	**38**	**57,877**	**38,302**	**Census**	**83.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**16.6%**
Large Commercial Retrofit	Downstream	14	79	718,881	666,465	Census	19.2%	3.4%	5.2%	0.9%	0.0%	86.1%
	Upstream	0	8	1,648	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Total		**14**	**87**	**720,529**	**666,465**	**Census**	**19.2%**	**3.4%**	**5.2%**	**0.9%**	**0.0%**	**86.1%**
Small Business Solutions	Downstream	16	89	29,628	29,581	Census	13.4%	1.6%	9.2%	1.0%	0.0%	95.9%
Total		**16**	**89**	**29,628**	**29,581**	**Census**	**13.4%**	**1.6%**	**9.2%**	**1.0%**	**0.0%**	**95.9%**
Upstream Gas	Upstream	14	432	404,801	403,192	1.7%	56.6%	4.9%	10.7%	1.7%	0.0%	54.2%
Total		**14**	**432**	**404,801**	**403,192**	**1.7%**	**56.6%**	**4.9%**	**10.7%**	**1.7%**	**0.0%**	**54.2%**
Upstream overall		**16**	**456**	**432,045**	**428,788**	**1.2%**	**59.2%**	**4.6%**	**9.4%**	**1.0%**	**0.0%**	**50.3%**
Downstream overall		**32**	**190**	**780,790**	**708,752**	**3.6%**	**19.5%**	**1.9%**	**8.9%**	**0.6%**	**0.0%**	**89.4%**
Overall		**48**	**646**	**1,212,835**	**1,137,541**	**4.8%**	**34.4%**	**3.8%**	**7.1%**	**1.2%**	**0.0%**	**72.7%**

FR = free-ridership; SO = spillover; PSO = participant spillover
*When sampling margin error is "census," we reached out to all customers; therefore, the sampling margin of error is zero.

Table 20 presents free-ridership and spillover rates for each measure type combined across all electric programs. The *HVAC* and *HVAC—distribution* measure types had the lowest level of free-ridership (2.3 percent and 2.2 percent, respectively). The *HVAC—plant* and *upstream food service* measure types had the highest free-ridership rate (100.0 percent and 65.2 percent, respectively); although *HVAC—plant* only had one respondent. Participant *like* spillover is highest for the *HVAC—distribution* measure type (50.0 percent). Nonparticipant *like* spillover was identified for *compressed air* and *lighting* measure types.

Table 20. 2022 C&I Electric Free-Ridership and Spillover Results by Measure Type

Measure	Surveyed	Population	Population savings	Savings used for weighting	Sampling margin error (±)*	FR rate	90% FR margin error (±)	Participant like SO rate	90% PSO margin error (±)	Nonparticipant like SO rate	NTG rate
(Upstream) Food service	6	377	784,394	784,394	2.0%	65.2%	5.7%	0.0%	0.0%	0.0%	34.8%
(Upstream) HVAC	4	178	2,267,561	2,267,561	Census	14.5%	1.2%	0.0%	0.0%	0.0%	85.5%
(Upstream) Lighting—fixture, fixture with controls, retrofit kits	54	5,374	20,981,761	20,981,761	0.8%	17.4%	0.8%	5.6%	0.3%	0.0%	88.1%
(Upstream) Lighting—screw-ins, TLEDs	19	830	5,003,504	5,003,504	2.0%	35.5%	2.7%	16.7%	2.4%	0.0%	81.2%
Compressed air	2	19	585,928	585,928	Census	37.4%	14.2%	0.0%	0.0%	16.7%	79.3%
Custom	17	185	1,494,453	1,494,453	3.8%	24.2%	1.1%	0.0%	0.0%	0.0%	75.8%
HVAC	4	66	3,325,174	3,304,538	Census	2.3%	0.9%	0.0%	0.0%	0.0%	97.7%
HVAC—Distribution	2	25	1,278,031	1,262,047	Census	2.2%	0.9%	50.0%	28.4%	0.0%	147.8%
HVAC—Plant	1	9	334,511	312,089	Census	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
HVAC—Thermostat	12	30	20,583	20,583	Census	9.2%	0.4%	0.0%	0.0%	0.0%	90.8%
Lighting	74	4,279	29,425,479	29,361,752	0.7%	18.1%	1.0%	0.0%	0.0%	1.7%	83.6%
(Upstream) Other	0	11	74,581	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
(Upstream) Water heating	0	98	237,682	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Water heating	0	1	387	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Overall	**195**	**11,482**	**65,814,028**	**65,378,611**	**1.8%**	**19.2%**	**1.8%**	**4.0%**	**0.8%**	**0.9%**	**85.7%**

FR = free-ridership; SO = spillover; PSO = participant spillover

*When sampling margin error is "census," we reached out to all customers; therefore, the sampling margin of error is zero.

Table 21 presents free-ridership and spillover rates for each measure type combined across all natural gas programs. The *other* and *water heating* measure types had the lowest level of free-ridership (0.0 percent each), although both had few responses (five for *other* and three for *water heating*). The upstream *HVAC* measure type had the highest free-ridership rate (100.0 percent), but again only two respondents. The *insulation* measure type had the most respondents (14) and had a lower free-ridership rate of 15.5 percent. The *HVAC—distribution* measure type had the most participant *like* spillover (17.5 percent).

Table 21. 2022 C&I Natural Gas Free-Ridership and Spillover Results by Measure Type

Measure	Surveyed	Population	Population savings	Savings used for weighting	Sampling margin error (±)*	FR rate	90% FR margin error (±)	Participant like SO rate	90% PSO margin error (±)	Nonparticipant like SO rate	NTG rate
(Upstream) Food service	9	236	246,916	246,916	1.3%	55.3%	3.8%	11.2%	1.9%	0.0%	55.9%
(Upstream) HVAC	2	24	27,244	25,596	Census	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(Upstream) Water heating	5	192	156,276	156,276	2.2%	58.7%	6.6%	10.0%	1.5%	0.0%	51.3%
Controls	2	16	39,925	33,535	Census	92.1%	31.3%	0.0%	0.0%	0.0%	7.9%
HVAC	2	13	42,271	12,706	Census	50.0%	0.0%	0.0%	0.0%	0.0%	50.0%
HVAC—Distribution	6	15	141,557	141,557	Census	68.5%	8.7%	17.5%	3.5%	0.0%	49.0%
Insulation	14	83	26,077	25,523	Census	15.5%	1.8%	10.7%	1.2%	0.0%	95.2%
Other	5	47	406,103	393,432	Census	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Water heating	3	12	102,046	101,999	Census	0.0%	0.0%	10.0%	1.2%	0.0%	110.0%
(Upstream) Other	0	4	1,609	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
HVAC—Plant	0	2	16,937	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
HVAC—Thermostat	0	2	5,874	N/A	Census	N/A	N/A	N/A	N/A	N/A	N/A
Overall	**48**	**646**	**1,212,835**	**1,137,541**	**4.8%**	**34.4%**	**3.8%**	**7.1%**	**1.2%**	**0.0%**	**72.7%**

FR = free-ridership; SO = spillover; PSO = participant spillover

*When sampling margin error is "census," we reached out to all customers; therefore, the sampling margin of error is zero.

a. *Unlike* Spillover Observations

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

Two respondents reported that they had installed other types of energy-efficient equipment outside of a Rhode Island Energy program and that Rhode Island Energy's programs were influential in the installation. Below is the list of the different kinds of equipment identified and any additional information provided about the equipment.

- One respondent indicated they did *boiler* and *lighting* work but did not provide any additional detail.

One respondent installed four gas-fired boiler units and steam heat with 15 mini-splits that were 36,000 to 48,000.

APPENDIX B: PARTICIPANT SAMPLING PLAN

To:	Nicole Buccitelli, Guidehouse
Cc:	Brett Feldman, Rhode Island Energy Jeremy Newberger, Guidehouse
From:	Carrie Koenig and Kendra Mueller, Tetra Tech
Date:	June 30, 2023
Subject:	Rhode Island Energy Free-ridership and Spillover Study Sample Plan - Revised

This memorandum presents our sample plan for Rhode Island Energy's 2022 free-ridership (FR) and spillover (SO) study. The 2022 free-ridership study includes gas and electric customers receiving incentives through prescriptive rebates, custom measures, and upstream offerings.

In this document, we discuss the steps used in the:

- 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.

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

The current sample plan estimates 322 (79 gas and 243 electric) measure category-level completed surveys.

Background

Tetra Tech will be conducting the FR and SO study for the following programs: Design 2000, Energy Initiative, Large Commercial New Construction, Large Commercial Retrofit, Small Business Solutions, and the Upstream Gas programs for the 2022 program year. The tracking data files transferred to us by Guidehouse provide information for Rhode Island Energy participants and include measures installed between January 1, 2022, and December 31, 2022.[17] From the files that were provided, we dropped the following measure[18]:

- 1 Large Commercial Retrofit measure with a *measure_descr* of "Building Operator Certification Gas," which had no customer address and a customer name of "NG Internal."

[17] Files used for sampling include the following: Electric Workpackage Applications_v3.csv, ElectricApps_v2.csv, Gas Workpackage Applications_v3.csv, GasApps_v3.csv, SBS Gas_v2.csv, SBSApps_v2.csv, and UpstreamLighting_2022.xlsx .

[18] A measure is a line item within the tracking data files.

After dropping this measure, a total of 12,128 measures remained in the data files. Each measure in the data represents a measure type installed through a program for an account number. A single account may have installed multiple different measure types. Therefore, it is necessary to take steps to collapse – or aggregate – the data through the sampling process, while retaining all the measure-specific information for each account[19].

Preparation of the Data File and Aggregation of the Participant Data

We took the following steps to prepare the tracking data for sampling:

1) **Identify program and measure category participation**. The study estimates free-ridership at the measure category level as well as free-ridership at the program level. The first step in sample preparation is to assign measures to a measure category. Using the information provided in the data files[20], we identify the measure categories within the following programs:

    a. The Design 2000 program consists of electric measure categories: compressed air, HVAC (general, distribution, plant, and upstream), lighting (downstream and upstream[21]), and upstream water heating.

    b. The Energy Initiative program consists of the electric measure categories: HVAC (general, distribution, and plant), lighting (downstream and upstream), upstream food service, and upstream other.

    c. The Small Business program consists of electric measure categories: custom, HVAC (thermostat), lighting, and water heating. Gas measure categories consist of insulation, other, and water heating.

    d. The Commercial New Construction program consists of the gas measure categories: controls, HVAC (general, plant, and upstream), and other.

    e. The Large Commercial Retrofit program consists of the gas measure categories: controls, HVAC (general, distribution, plant, thermostat, and upstream), insulation, other, and water heating.

    f. The Upstream Gas program consists of the upstream gas measure categories: food service, other, and water heating.

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

[19] An account is defined as a unique account number (*bill_acct_no*, *ba_no*, *prim_bill_acct_no,* and *account number*) and program is defined by *program* and *subprogram*.

[20] The fields used to identify measure categories varied between programs: *measure_desc, measure_description,* and *product description*.

[21] Upstream lighting measures are further subdivided into LED retrofit kits, TLEDs, fixture, fixture with controls, and screw-ins.

savings[22], the number of measures[23], so that the values are represented at an account level[24]. The detailed measure descriptions are retained. These descriptions are used when describing to customers what equipment is included in a measure category.

Selection of the Sample

In general, we always want to pull a census of measure categories with less than or equal to 100 accounts associated with them within a program. For this study, we will pull a census of all accounts for each program (where there are less than or equal to 100 accounts per measure category). Exceptions include upstream HVAC for Design 2000; lighting, upstream lighting, upstream food service, and upstream other for Energy Initiative; custom and lighting for Small Business electric measures; and upstream food service and upstream other for Upstream Gas. For measures where we are not taking a census, we will select the top 1-10 percent of records, and then randomly select the remainder.

To limit respondent burden, we discuss no more than two measure categories for each account and program the account participated in. Several accounts had measures installed in more than two measure types across the different programs. In these instances, we will apply a set of rules to select which measure types we want to include in the study:

1) Select measure types in the top 10th or 1st 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.

Preparation of Sample for Data Collection

The next step is to restructure the sample file so that each 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 for 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 therm/kWh savings and detailed descriptions are represented in associated columns (e.g., therms1, therms2, kWh1, kWh2).

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

[22] For the gas programs, we used *gross_annual_gas_therms* to identify the total therm savings associated with that measure. For the electric programs, we used *total_gross_kWh,* and for the upstream lighting measures, we used *total gross annual kWh*.

[23] Number of measures are the total line items of measures for a given account tracked within the program's tracking data.

[24] For measures which did not have a tracked account number, or had an erroneous account number (e.g., 9999999999), dummy account numbers were created for each unique address.

Review of Sample to Identify Companies with Multiple Sampled Accounts

Before 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:

- account number,
- customer name,
- contact name,
- telephone number, and
- 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. Interviewers are specially trained on how to deal with these multiples. After a few days into the calling, our 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.

Characterization of the Proposed Sample Plan and Sample

Tables 22 and 23 outline the sampling plan for Rhode Island Energy's 2022 study, gas, and electric programs. This sample plan also includes the structure of how results will be reported; including free-ridership results at the program and measure category levels.

Table 22. Rhode Island Energy Proposed Sample Plan – Gas Programs

Program	Measure Category	Record Count*	Population of Measures	Number of Records Sampled	Population Therms Savings	Sampled Therms Savings	Percent of Therms Savings Sampled**	Expected Completed Records from Survey ***
Large Commercial New Construction	Controls	1	3	1	6,390	6,390	100%	1
	HVAC	6	8	6	12,706	12,706	100%	2
	HVAC - Plant	1	1	1	514	514	100%	1
	Other	5	10	5	12,671	12,671	100%	1
	(Upstream) HVAC****	15	16	15	25,596	25,596	100%	1
	Total	**28**	**38**	**28**	**57,877**	**57,877**	**100%**	**6**
Large Commercial Retrofit	Controls	9	13	9	33,535	33,535	100%	2
	HVAC	4	5	4	29,565	29,565	100%	1
	HVAC - Distribution	15	15	15	141,557	141,557	100%	3
	HVAC - Plant	1	1	1	16,423	16,423	100%	1
	HVAC - Thermostat	2	2	2	5,874	5,874	100%	1
	Insulation	1	1	1	554	554	100%	1
	Other	21	31	21	389,374	389,374	100%	5
	Water Heating	11	11	11	101,999	101,999	100%	3
	(Upstream) HVAC****	6	8	6	1,648	1,648	100%	1
	Total	**70**	**87**	**70**	**720,529**	**720,529**	**100%**	**18**
Small Business	Insulation	36	82	36	25,523	25,523	100%	8
	Other	6	6	6	4,058	4,058	100%	2
	Water Heating	1	1	1	47	47	100%	1
	Total	**43**	**89**	**43**	**29,628**	**29,628**	**100%**	**11**
Upstream Gas	(Upstream) Food Service****	206	236	100	246,916	139,501	56%	5
	(Upstream) Other****	4	4	4	1,609	1,609	100%	1
	(Upstream) Water Heating****	153	192	100	156,276	121,144	78%	5
	Total	**363**	**432**	**204**	**404,801**	**266,385**	**66%**	**11**
Total Gas		**504**	**646**	**345**	**1,212,835**	**927,779**	**76%**	**46**

* A record is a unique account number within the measure category.
** The top percentile "priority" sampling for measure categories without a census of measures should ensure the minimum sampled therms savings are met.
*** Assumes a 20 percent response rate of sampled measures. We will strive for a higher response rate.
**** The majority of this strata does not have contact names, emails, or phone numbers. The number of assumed completes a 5 percent response rate.

Table 23. Rhode Island Energy Proposed Sample Plan – Electric Programs

Program	Measure Category	Record Count*	Population of Measures	Number of Records Sampled	Population kWh Savings	Sampled kWh Savings	Percent of kWh Savings Sampled**	Expected Completed Records from Survey ***
Design 2000	Compressed Air	15	19	15	585,928	585,928	100%	3
	HVAC	1	3	1	20,636	20,636	100%	1
	HVAC - Distribution	2	2	2	15,983	15,983	100%	1
	HVAC - Plant	3	3	3	312,089	312,089	100%	1
	Lighting	2	2	2	63,727	63,727	100%	1
	(Upstream) HVAC****	108	178	108	2,267,561	2,267,561	100%	5
	(Upstream) Water Heating****	75	98	75	237,682	237,682	100%	5
	Total	**206**	**305**	**206**	**5,023,108**	**5,023,108**	**100%**	**17**
Energy Initiative	HVAC	25	63	25	3,304,538	3,304,538	100%	5
	HVAC - Distribution	14	23	14	1,262,047	1,262,047	100%	3
	HVAC - Plant	6	6	6	22,422	22,422	100%	2
	Lighting	217	2,175	100	25,879,605	11,926,085	46%	20
	(Upstream) Food Service****	279	377	100	784,394	281,145	36%	5
	(Upstream) Lighting – LED retrofit kits	322	547	100	2,525,722	784,386	31%	20
	(Upstream) Lighting – TLEDs	225	395	100	1,609,624	715,388	44%	20
	(Upstream) Lighting – fixture	2,078	4,214	100	12,391,443	596,316	5%	20
	(Upstream) Lighting – fixture with controls	413	613	100	6,064,597	1,468,425	24%	20
	(Upstream) Lighting – screw-ins	242	435	100	3,393,880	1,402,430	41%	20
	(Upstream) Other****	8	11	8	74,581	74,581	100%	1
	Total	**3,829**	**8,859**	**753**	**57,312,853**	**11,270,979**	**20%**	**136**
Small Business	Custom	116	185	100	1,494,453	1,288,322	86%	20
	HVAC - Thermostat	28	30	28	20,583	20,583	100%	6
	Lighting	259	2,102	100	3,482,147	1,344,458	39%	20
	Water Heating	1	1	1	387	387	100%	1
	Total	**404**	**2,318**	**229**	**4,997,570**	**2,832,781**	**57%**	**47**
Total Electric		**4,439**	**11,482**	**1,188**	**65,814,028**	**17,613,667**	**27%**	**200**

* A record is a unique account number within the measure category.
** The top percentile "priority" sampling for measure categories without a census of measures should ensure the minimum sampled kWh savings are met.
*** Assumes a 20 percent response rate of sampled measures. We will strive for a higher response rate.
**** The majority of this strata does not have contact names, emails, or phone numbers. The number of assumed completes a 5 percent response rate.

APPENDIX C: 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.[25] Priority cases were sampled at 100 percent. Including this stratification in the weighting scheme ensured the premises sampled at 100 percent were not overrepresented, and the sampled premises (sampled at less than 100 percent) 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 24. 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 account surveyed. The data are then analyzed taking into account the kWh (or therm) savings.

[25] 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.

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 therms (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 the 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 energy units associated with that measure and account, for example:

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 D: SURVEY INSTRUMENTS

D.1 CUSTOMER FREE-RIDERSHIP AND SPILLOVER SURVEY

Variable List

<CONTACT_NAME> Customer Contact Name

<COMPANY_NAME>Customer/Facility Name

<CITY> Customer City

<DATE1, DATE2> Date of participation for up to two projects

<YEAR> Year of participation

<PA> Program Administrator
1 Rhode Island Energy (previously National Grid)

<PA CONTACT INFORMATION> Utility Contact Name and Phone Number

<FUEL1, FUEL2> Type of fuel (electric or natural gas) for up to two projects

<ADDRESS>, <CITY>, <STATE>, <ZIP> Service address where measure was installed

<SMALL>
0 Not small business
1 Small business

<DualFuelProj > Flag if customer received both electric and gas rebate

<MultFlag> Indicator if the case is part of a multiple (instances where a contact may be responsible for multiple locations)
<MultID>, <MultQty>, <MultPriority>, <PrimaryCase>

<PROGRAM_TXT1, PROGRAM_TXT2>

<PROGRAM1, PROGRAM2> Program participated in
1 Large Commercial New Construction program
2 Large Commercial Retrofit program
3 Small Business program
4 Design 2000 program
5 Energy Initiative program
6 Upstream Gas program

<PROGRAMTYPE1, PROGRAMTYPE2>

<TOTMEAS> Number of measure categories (meascat) sampled for (customers will be sampled for up to 2 measures)

<MEASCAT_TXT1, MEASCAT_TXT2>

<MEASCAT1, MEASCAT2> End-use Category

1 Compressed Air
2 Controls
3 Custom
4 HVAC
5 HVAC - Distribution
6 HVAC - Plant
7 HVAC - Thermostat
8 Insulation
9 Lighting
10 Other
11 Water Heating
12 (Upstream) Food Service
13 (Upstream) HVAC
14 (Upstream) Lighting – fixture
15 (Upstream) Lighting – fixture with controls
16 (Upstream) Lighting – LED retrofit kits
17 (Upstream) Lighting – screw-ins
18 (Upstream) Lighting – TLEDs
19 (Upstream) Other
20 (Upstream) Water Heating

<UPSTREAM1, UPSTREAM2> A flag whether the MEASCAT is upstream. [SET TO 1 if MEASCAT=12,13,14,15,16,17,18,19,20]

0 MEASCAT is not upstream
1 MEASCAT is upstream

<QTYFLAG1, QTYFLAG2>

0 quantity is not applicable for this measure category (measure count = 1 or quantity is not relevant as in delamping)
1 quantity greater than 1

INTEFF1, INTEFF2 Flag for whether intermediate efficiencies applies

1 Yes there is intermediate efficiency
2 No intermediate efficiencies available

<EFF1, EFF2>

0 efficiency is not applicable for this measure category (e.g., insulation, VFD, delamping, occupancy sensors)
1 efficiency is applicable

<EQUIP1, EQUIP2>

0 if installed measure is not equipment that is operational (e.g., insulation)
1 if installed measure is operational

<MEASDESC1, MEASDESC2> detailed measure descriptions

<STUDY1, STUDY2> Flag for received a study

0 did not receive technical assessment
1 received technical assessment
2 unknown if customer received a technical assessment

<INC1, INC2> Utility incentive for specific measure categories

<CST1, CST2> Total cost of project for specific measure categories

<ASSIST> Description of all technical assistance, financing, MOU, and rebates for measures installed through program

<ApplNo1>

<ALTCOMPANY> <ALTCONTACTN> <ALTPHONE_NUM>

<MAIL_ADDRESS> <MAIL_CITY> <MAIL_STATE> <MAIL_ZIP> Mailing address

<KWH1, KWH2> Electric savings for each meas category

<THERM1, THERM2> Gas savings for each meas category

Introduction

INTRO Hello, my name is _____ and I'm calling on behalf of <PA>. I am calling to speak to the person most knowledgeable about the <MEASCAT1> project [IF TOTMEAS=2 SHOW "and <MEASCAT2> project"] that your company installed through an energy savings solutions program back in <DATE1>.

May I speak with <C_CNAMEFILLD>someone who would be knowledgeable about that <MEASCAT1> project [IF TOTMEAS=2 SHOW "and <MEASCAT2> project"]

IF NEEDED:
[We are following up with customers who participated in a <PA> energy savings offering called <PROGRAM1> around <DATE1> <and DATE2> to learn about their experiences. You or someone at your facility may have received a letter from <PA> letting you know to expect this call.]

[According to our records around <DATE1> <and DATE2> your business implemented <MEASCAT1 and MEASCAT2> project at <ADDRESS>.]

[The company name we have on file is <COMPANY_NAME>.]

[According to our records, the <MEASCAT1> project consisted of upgrades to: <MEASDESC1>.
[IF TOTMEAS=2 SHOW "And the <MEASCAT2> project consisted of upgrades to: <MEASDESC2>.]

[When the survey refers to the term "program" we are describing energy efficiency solutions or energy saving offerings received through <PA>'s <PROGRAM1>.]

01	Yes / Continue
02	No [ATTEMPT TO CONVERT. MENTION ADVANCE LETTER THEY SHOULD HAVE RECEIVED REGARDING THE CALL.]
03	Dispo case

PREAMBLE I'm with Tetra Tech, an independent research firm.

[IF NEEDED: On behalf of <PA>, we are following up with customers who participated in an energy efficiency solution or energy saving offering in <YEAR> to learn about their experiences.]

I'm not selling anything; I'd just like to ask about the energy efficiency project you implemented at <ADDRESS> in <CITY>.

Your individual responses will be kept confidential by Tetra Tech and <PA>.

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

01 Continue
02 Continue but address/date is off [SPECIFY but continue with survey]

MULTCHK [ASK IF MultFlag=1]
[INTERVIEWER QUESTION: Is this the first case of a multiple?]

01 Yes, First case
02 No; Subsequent case [SKIP TO DM2R1]

IN2 Are you the person who was most involved in making the decision to get equipment from <PA> at <ADDRESS> in <CITY>?

01 Yes [SKIP TO IN4]
02 No [SKIP TO OTHER_R]
03 No, I don't recall participating / Didn't do those projects [THANK AND TERMINATE 82]
88 Don't know [SKIP TO OTHER_R]
99 Refused [THANK AND TERMINATE]

IN4 Are you employed by <COMPANY_NAME> or are you a contractor who provides design and/or installation services for <COMPANY_NAME>?

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

01 Work directly for company / Employee / Volunteer
02 Vendor / Contractor

IN5 [ASK IF IN4=02] Do you have the contact information of the person you worked with at <COMPANY_NAME>?

01	Yes [RECORD CONTACT INFO; ATTEMPT NEW R]	[TERMINATE 87]
02	No	[TERMINATE 87]

DM2R1 Just to confirm, our records indicate the [EFFICIENCY IS APPLICABLE (IF EFF1 = 1): energy efficient] <MEASCAT1> project around <DATE1> you implemented at <ADDRESS> with <PA>'s assistance included:
<MEASDESC1>.

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

01	Yes
02	No
88	Don't know
99	Refused

DM2R2 [ASK IF TOTMEAS=2] Additionally, the [EFFICIENCY IS APPLICABLE (IF EFF2 = 1): energy efficient] <MEASCAT2> project you implemented at <ADDRESS> with <PA>'s assistance included:
<MEASDESC2>.

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

01	Yes
02	No
88	Don't know
99	Refused

C_DM2_SKIP [IF (DM2R1=1 OR DM2R2=1) SKIP TO NEXT SECTION (BG3) OTHERWISE SKIP TO OTHER_R]

OTHER_R Who was primarily responsible for making the decision to get <ASSIST> through <PA>?

[RECORD NAME AND DISPOSITION]

01	There's somebody else [RECORD CONTACT INFORMATION FOR CALL NOTES]	
02	Nobody else	[THANK AND TERMINATE 81]
03	Didn't participate	[THANK AND TERMINATE 82]
04	Participated but installed ALL different measures than what we have on record [SPECIFY]	[THANK AND TERMINATE 86]
88	Don't know / Nobody to talk to	[THANK AND TERMINATE 81]
99	Refused	[THANK AND TERMINATE 91]

AVAILABLE_R May I please speak with that person?

01	Yes, currently available	[SKIP TO INT01]
02	Yes, but R is not currently available	[SET UP CALLBACK]
03	No	[THANK AND TERMINATE 91]
88	Don't know	[THANK AND TERMINATE 81]
99	Refused	[THANK AND TERMINATE 91]

Background

FAQ READ THE 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 <PA>. Your responses will be kept confidential by our firm and <PA>. If you would like to talk with someone from <PA>, you can call Ann Clarke at 516-513-4439.)

(Who is doing this study: <PA>has hired our firm to evaluate these offerings. As part of the evaluation, we're talking with customers who received assistance from <PA> to better understand their experiences.)

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

(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.)

BG3 [SKIP TO NEXT SECTION IF MULTCHK=2] Does your company have any formal requirements or informal guidelines for the purchase, replacement or maintenance of energy-using equipment?

01	Yes	
02	No	[SKIP TO DM15c]
88	Don't know	[SKIP TO DM15c]
99	Refused	[SKIP TO DM15c]

BG4 Which of the following best describes these requirements or guidelines? [READ LIST; SELECT ONE]

01	Purchase energy efficient equipment regardless of cost
02	Purchase energy efficient equipment if it meets payback or return on investment criteria
03	Purchase standard efficiency equipment that meets code
04	Or something else [SPECIFY]
88	Don't know
99	Refused

DM15c Do you have a memo of understanding, or MOU with <PA>? [IF NEEDED: A MOU where <PA> works with you to encourage, support and financially incentivize energy saving improvements typically with a three-year commitment?]

01	Yes	
02	No	[SKIP TO BG6]
88	Don't know	[SKIP TO BG6]

DM15d How would you describe your involvement with the MOU development? [READ LIST]

01	Aware but not at all involved in meetings where improvements are discussed
02	Aware and sometimes participated in meetings
03	Primarily responsible for meeting MOU requirements with <PA>
04	Something else [SPECIFY]
88	Don't know
99	Refused

DM15ER1 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 MOU have on your decision to implement the [IF EFFICIENCY IS APPLICABLE; IF EFF1= 1: high efficiency] <MEASCAT1> project?

00 no influence
01
02
03
04
05
06
07
08
09
10 great deal of influence
88 Don't know
99 Refused

DM15ER2 [ASK IF TOTMEAS=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 MOU have on your decision to implement the [IF EFFICIENCY IS APPLICABLE; IF EFF2= 1: high efficiency] <MEASCAT2> project?

00 no influence
01
02
03
04
05
06
07
08
09
10 great deal of influence
88 Don't know
99 Refused

BG6 Does your organization have a dedicated account representative at <PA>? [SELECT ONE]

01 Yes
02 No
88 Don't know

BG7 [ASK IF BG6=1] Did your account representative assist you with the <MEASCAT1> (or <MEASCAT2>) project that you implemented?

This could have included identifying potential energy saving opportunities, specifying program-qualifying equipment, or providing assistance during project implementation. [SELECT ONE]

01 Yes
02 No
88 Don't know
99 Refused

Decision Making

START ROSTER [ASK DM1 THROUGH SP13 FOR MEASCAT1 AND THEN MEASCAT2 IF TOTMEAS=2]

*R1 Use DM2R1, MEASCAT1, MEASDESC1, UPSTREAM1, PROGRAM1, EQUIP1, FUEL1, STUDY1, EFF1, QTYFLAG1, CST1, INC1

*R2 Use DM2R2, MEASCAT2, MEASDESC2, UPSTREAM2, PROGRAM2, EQUIP2, FUEL2, STUDY2, EFF2, QTYFLAG2, CST2, INC2

DM1 [SKIP IF MULKCHK=2 AND 1st LOOP] Next, I'd like to focus on the <MEASCAT> project you implemented through the <PA> offering. This would have included: <MEASDESC>.

01 Continue

DM3 Is the <MEASCAT> [if EQUIP=1, show "equipment"] installed with <PA>'s assistance still at least partially installed [IF INSTALLED MEASURE IS OPERATIONAL; (IF EQUIP=1 SHOW "and operating"] at this facility?

01 Yes
02 No
88 Don't know [SKIP TO NEXT MEASURE]
99 Refused [SKIP TO NEXT MEASURE]

DM4 [ASK IF DM3=2] Why is the <MEASCAT> [if EQUIP=1, show "equipment"] no longer installed [IF INSTALLED MEASURE IS OPERATIONAL; [IF EQUIP=1 SHOW "or no longer operating"] at this facility?

01 Equipment failed (no longer working)[SKIP TO NEXT MEASURE]
02 Equipment not working as intended (lights not bright enough, etc.) [SKIP TO NEXT MEASURE]
03 Other [SPECIFY] [SKIP TO NEXT MEASURE]
88 Don't know [SKIP TO NEXT MEASURE]

C_DM2_SKIP1 [ASK NTG sections only of decision makers. SKIP TO NEXT MEASURE IF DM2<>1]

DM8 [ASK IF STUDY =0 or 2] Did your company receive a technical assessment from <PA> as part of your participation in <PA>'s program?

01 Yes
02 No
88 Don't know
99 Refused

DM10 [ASK IF STUDY=1 OR DM8=1] If <PA> had not paid a portion of the cost the technical assessment you received; would your company have paid to have a similar assessment done at that same time?

01 Yes
02 No
88 Don't know
99 Refused

DM11 [ASK IF DM10 = 02] 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 technical assessment have on your decision to implement the [IF EFFICIENCY IS APPLICABLE; IF EFF=1: high efficiency] <MEASCAT> project?

00 no influence
01
02
03
04
05
06
07
08
09
10 great deal of influence
88 Don't know
99 Refused

DM14 Did you receive any financing or repayment assistance from <PA> that allowed you to pay for your portion of the <MEASCAT> project cost over time?

01 Yes
02 No
88 Don't know

Event Type Categorization

ET1 Was the high efficiency <MEASCAT> installed as part of a new construction or major renovation project? (SELECT ONE)

[IF NEEDED: a major renovation is a project that renovated more than 50% of the square footage of the building.]

01	Yes	(new construction) [SKIP TO CALCULATIONS]
02	No	
88	Don't know	
99	Refused	

ET2 Did the high efficiency <MEASCAT> you installed replace any existing equipment or was it a new type of equipment that you did not have in your organization before? (select one)

01	Replaced existing equipment	
02	New equipment	(new equipment) [SKIP TO CALCULATIONS]
88	Don't know	
99	Refused	

ET3 Which of the following best describes the condition of your old equipment? The old equipment was… (READ LIST)

01	working with no need of repair	
02	working with need of minor repair	
03	working with need of major repair	(rof) [SKIP TO CALCULATIONS]
04	no longer working	(rof) [SKIP TO CALCULATIONS]
88	Don't know	
99	Refused	

ET4 Do you think your old equipment would have lasted another [IF SMALL=1 SHOW "two years" ELSE SHOW "four years"]? (SELECT ONE)

01	Yes	(er)
02	No	(rof)
88	Don't know	(rof)
99	Refused	(rof)

ET5 [ASK IF ET4 = 02, 88, 99] There are a variety of reasons why businesses replace their existing systems. For your business, how important was the fact that the <MEASCAT> equipment might be reaching the end of life and might fail in the near future?

Please use a scale of 0 to 10 where 0 is "not at all important " and 10 is "very important".

00 not at all important
01
02
03
04
05
06
07
08
09
10 very important
88 Don't know
99 Refused

CALCULATIONS [SET TO 1]

ROF Computing replace on failure (ROF) flag to use as skips later on and in the influential vendor survey.
[IF (ET3=3,4) OR (ET4=2,88,99) OR (ET5 = 10) SET ROF=1 ELSE ROF=0]

NC Computing new construction (NC) flag to use as skips later on and in the influential vendor survey.
[IF ET1=1 OR ET2=2 SET NC=1 ELSE NC=0]

NE Computing new equipment (NE) flag to use as skips later on and in the influential vendor survey
[IF (ET2=2) SET NE=1 ELSE NE=0]

ER Computing early replacement (ER) flag [IF ET4=1 SET ER=1 ELSE ER=0]

Awareness (for Upstream Measures)

UP1 [ASK IF UPSTREAM=1] Were you aware the <MEASCAT> you purchased received a price discount sponsored by <PA>? (SELECT ONE)

01 Yes
02 No
88 Don't know
99 Refused

UP2 [ASK IF UP1=1] Where did you learn about the price discount?
(DO NOT READ; SELECT ONE)

01 Contractor or equipment vendor
02 <PA> (my utility provider)
03 Internet other than the utility provider
04 Colleagues within organization
05 Colleagues outside organization
06 Other (SPECIFY–be as specific as possible, include the organization)
88 Don't know
99 Refused

UP2O [ASK IF UP2=6] Other ways specified.

Free-Ridership if not aware of upstream Incentive (not aware of UP1 <> 1)

MEASCHK [ASK IF MULTCHK=2 ELSE SKIP TO FR41] [INTERVIEWER QUESTION: Is this case's measure category of <MEASCAT> the same as a previous case's measure category of this multiple?]

01 Yes; Duplicate measure
02 No; New measure [SKIP TO FR41]

DECISIONCHK [ASK IF MEASCHK=1] Now, thinking about the <MEASCAT> project at <ADDRESS> in <CITY>, was the decision-making process **the same or different** from the previous <MEASCAT> project we discussed?

01 SAME decision-making process [SPECIFY RECORD NUMBER OF ORIGINAL CASE] [SKIP TO NEXT MEASURE]
02 DIFFERENT decision-making process [SKIP TO FR41]

C_LAMP_EQUIP [SET TO 1 if MEASCAT=9,14,15,16,17,18 ELSE SET TO 0]
1 lamp
0 equipment

C_LIGH_EQUIP [SET TO 1 if MEASCAT=9,14,15,16,17,18 ELSE SET TO 0]
1 lighting
0 equipment

FR41 [ASK IF UP1=2,88,99 ELSE SKIP TO NEXT SECTION]
According to our information, the distributor or retailer you bought the <MEASCAT> <C_LAMP_EQUIP> from received a discount [IF INC>0 SHOW "of $<INC>"] from <PA> 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 organization would have implemented the same [IF QTYFLAG=1 SHOW "quantity"] [IF EFFICIENCY IS APPLICABLE (IF EFF=1) SHOW "and efficiency of"] <MEASCAT> at that same time if they had cost [IF INC>0 SHOW "$<INC>"] more?

00 not at all likely
01
02
03
04
05
06
07
08
09
10 very likely
88 Don't know
99 Refused

FR42 If the <MEASCAT> <C_LAMP_EQUIP> had cost [IF INC>0 SHOW "$<INC>"] more, would your organization have installed **any** <C_LIGH_EQUIP> at all at the same time?

[IF MEASCAT=9,14,15,16,17,18 SHOW "[IF NEEDED: And by any lighting, I mean <MEASCAT> or any other kind of lamps.]" ELSE SHOW
"[IF NEEDED: And by any equipment, I mean <MEASCAT> or any other kind of equipment.]"]

01 Yes
02 No
88 Don't know
99 Refused

FR43 [ASK IF QTYFLAG=1] If the <MEASCAT> had cost [IF INC>0 SHOW "$<INC>"] more, would your organization have implemented the exact same **quantity** of <C_LIGH_EQUIP> discounted from <PA>?

01 Yes
02 No
88 Don’t know
99 Refused

FR44 If the <MEASCAT> had cost [IF INC>0 SHOW "$<INC>"] more, would your organization have implemented the exact same high efficiency [IF MEASCAT=9,14,15,16,17,18 SHOW "lighting"] equipment?

01 Yes
02 No
88 Don't know
99 Refused

FR45 [ASK IF FR42 = 02, 88, 99 ELSE SKIP TO FR47] Would you have installed the <C_LIGH_EQUIP> earlier than you did, at a later date, or never if the <C_LIGH_EQUIP> had cost [IF INC >0 SHOW "$<INC>"] more?

01 Earlier
02 Same time [NOTE: This choice will skip back to FR42 for correction] [skip back to FR42 to update to 01]
03 Later
04 Never
88 Don't know
99 Refused

FR46 [ASK IF FR45 = 01, 03] How much [earlier/later] would you have installed the <C_LIGH_EQUIP>?

FR46Y __ Years [0-60]
FR46M __ Months [0-12]
88 Don't know

C_FR46_CALC [SET EQUAL TO FR46Y*12 + FR46M]

FR47 [ASK IF FR43 = 02, 88, 99] Compared to the amount of <MEASCAT> that you installed, what percent of the <C_LIGH_EQUIP>do you think your organization would have installed on its own if they had cost [IF INC>0 SHOW "$<INC>"] more?

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

___ (ENTER PERCENTAGE: 0-500%)
888 Don't know [SKIP TO C43]
999 Refused [SKIP TO C43]

FR48 [ASK IF QTYFLAG=1 AND IF FR44=02,88,99 ELSE SKIP TO FR50] You said your organization would have installed
[IF FR43=1-Yes SHOW "all";
IF FR43= 2-No SHOW <FR47> %; IF FR47=888,999 SHOW "some";
IF FR43=88,99 SHOW "some"]
of the equipment on its own if the <UTILITY> program had not been available.

What percent of this equipment would have been standard efficiency or minimum code?

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

___ (ENTER PERCENTAGE: 0-100%)
777 Not applicable
888 Don't know

FR49 [ASK IF INTEFF=1] What percent would have been between standard efficiency and what you installed through the program?

___ [ENTER PERCENTAGE: 0-100%]
777 Not applicable
888 Don’t know

FR50 [ASK IF QTYFLAG=0 AND IF FR44=02,88,99 AND INTEFF=1] Thinking about the [IF MEASCAT=9,14,15,16,17,18 SHOW “lighting” ELSE <MEASCAT>] project you would have implemented on your own if they had cost [IF INC >0 SHOW "$<INC>"] more, would it have been standard efficiency or minimum code **or** between standard efficiency and what you installed through the program?

01 Standard efficiency or minimum code
02 Between standard efficiency and what you installed through the program
77 Not applicable
88 Don’t know
99 Refused

FR51 [ASK IF FR50=01,02 OR (FR48 AND FR49 >0 AND ≠0 AND ≠777 AND ≠888] What specific efficiency level(s) or equipment were you considering?

[RECORD RESPONSE VERBATIM]

C43 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 discounted price have on your decision to install the <MEASCAT>?

00 no influence
01
02
03
04
05
06
07
08
09
10 great deal of influence
88 Don't know
99 Refused

Free-Ridership

C_FR1_SKIP1 [IF UP1 = 2, 88, or 99, SKIP TO CC8a]

FR1 [ASK ONCE] Please think back to the time when you were considering implementing the specific <MEASCAT1> project [IF TOTMEAS=2 SHOW “and <MEASCAT2> project”] around <DATE1> [IF TOTMEAS=2 SHOW “and <DATE2>”].

What factors motivated your business to consider implementing new <MEASCAT1> [IF TOTMEAS=2 SHOW “and <MEASCAT2> equipment through <PA>’s program?

[PROBE: What other factors motivated you?]

[DO NOT READ LIST. SELECT ALL THAT APPLY]

01 Old equipment failed
02 Old equipment working poorly
03 Old equipment scheduled for replacement
04 Wanted to reduce maintenance costs
05 The incentive being offered through the program
06 The technical assistance offered through the program
07 Wanted to reduce energy bills
08 Wanted to save energy
09 Recommendation of third party contractor / engineer / design professional
10 Recommendation of utility program staff
11 Recommendation of internal staff
12 Past experience with the program
13 Other [SPECIFY]
88 Don’t know
99 Refused

FR2 [ASK IF FIRST LOOP] Now, I'd like to ask you about your decision to implement the <MEASCAT1> project around <DATE1> through <PA>'s program.
[IF THERE IS ALSO A SECOND MEASURE: Then, I'll repeat these questions for the <MEASCAT2> project that was implemented around <DATE2>].

Continue

FR3 [ASK IF SECOND LOOP] Now I'd like to review your decision to implement the <MEASCAT2> project around <DATE2>.

01 Continue

FR4 Did your company have any funds allocated to implement the <MEASCAT> project BEFORE you talked with anyone about the program?

01	Yes	
02	No	[SKIP TO FR7]
88	Don't know	[SKIP TO FR7]
99	Refused	[SKIP TO FR7]

FR5 Was it necessary to change the timing of the implementation, [IF QUANTITY IS GREATER THAN 1 (IF QTYFLAG=1) SHOW "the quantity"] [IF EFFICIENCY IS APPLICABLE (IF EFF=1) SHOW "the efficiency level"] of the <MEASCAT> equipment in order to qualify for the program?

01	Yes	
02	No	[SKIP TO FR7]
88	Don't know	[SKIP TO FR7]
99	Refused	[SKIP TO FR7]

FR6 What changes were necessary?
[DO NOT READ. SELECT ALL THAT APPLY (max 5 choices)]

01 Installation occurred SOONER than planned
02 Installation occurred LATER than planned
03 Installed MORE equipment than planned
04 Installed LESS equipment than planned
05 Equipment was MORE efficient than planned
06 Equipment was LESS efficient than planned
07 Removed MORE equipment than planned
08 Removed LESS equipment than planned
09 Other [SPECIFY]
88 Don't know
99 Refused

FR7 Who was **MOST** responsible for actually recommending or specifying the [IF EFFICIENCY IS APPLICABLE (IF EFF=1) SHOW "high efficiency"] <MEASCAT> project that was implemented through the program?
[DO NOT READ LIST. RECORD ONLY ONE]

01 Respondent
02 Someone else in company [SPECIFY AND PROBE TO SEE IF SHOULD BE SPEAKING WITH THIS R]
03 <PA> account manager
04 <PA> representative
05 Third-party design professional or architect
06 Third-party engineer
07 Contractor
08 Vendor / Manufacturer's representative
09 Auditor
10 Someone else OUTSIDE the company [SPECIFY]
88 Don't know
99 Refused

FR8 [ASK IF FR7= THIRD-PARTY DESIGN PROFESSIONAL, THIRD-PARTY ENGINEER, CONTRACTOR MANUFACTURER'S REPRESENTATIVE, OR UTILITY ACCOUNT MANAGER (ASK IF FR7=03,04,05,06,07,08,09,10)]

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) [FR7 response] have on your company's decision to implement the [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "high efficiency"] <MEASCAT> project so that it would qualify for the program?

00 no influence
01
02
03
04
05
06
07
08
09
10 great deal of influence
88 Don't know
99 Refused

FR25 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 SHOW "roughly $<INC>" ELSE SHOW "incentive"] you received from <PA> have on your decision to implement the [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "high efficiency"] <MEASCAT> project?

00 no influence
01
02
03
04
05
06
07
08
09
10 great deal of influence
88 Don't know
99 Refused

FR10 I'd like to go over all the program assistance you received from <PA>.

According to our records:

[IF (DualFuelProj=1)] You received rebates for both gas and electric equipment around the same time through <PA>.

(IF CST>0 AND INC>0) The total cost for the project implemented at your facility around <DATE> through the program was about $<CST>. <PA> paid about $<INC> of the total cost of the [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "energy efficient"] <MEASCAT> project implemented through the program.

(IF CST=0 OR INC<1=0) <PA> paid a portion of the total cost of the [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "energy efficient"] <MEASCAT> project implemented through the program.

[IF STUDY=1 OR DM8=1: In addition, as I previously mentioned, <PA> paid a portion of the cost for the <STUDYTYPE1, STUDYTYPE2>.]

[IF DM14 = 1] <PA> also provided financing or repayment assistance for your portion of the project costs.

01 Continue

FR11 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 QTYFLAG=1) SHOW "quantity of"] [IF EFFICIENCY IS APPLICABLE (IF EFF=1) SHOW "efficiency of"] <MEASCAT> equipment at that same time if <PA> had not provided all of this program assistance?

00 not at all likely
01
02
03
04
05
06
07
08
09
10 very likely
88 Don't know
99 Refused

FR12_intro [SKIP IF (QTYFLAG=0 AND EFF=0) Now, I would like you to think about what you would have done if this same program assistance had not been available.

Continue

FR12 [SKIP IF ROF=1 OR NC=1] Would your business have implemented <u>any</u> <u>type</u> of <MEASCAT> project <u>at the same time</u> without the assistance from <PA>?

01 Yes
02 No
88 Don't know
99 Refused

FR13 [ASK IF QTYFLAG=1] Would your business have implemented the <u>exact same quantity</u> or size of <MEASCAT> project without the assistance from <PA>?

01 Yes
02 No
88 Don't know
99 Refused

FR14 [ASK IF EFF=1 (if efficiency applies)] Would your business have implemented the exact same high efficiency <MEASECAT> equipment as what was installed through the program without the assistance from <PA>?

01 Yes
02 No
88 Don't know
99 Refused

Timing

FR15 [ASK IF FR12 = 02, 88, 99 ELSE SKIP TO NEXT SECTION (FR17)] Would you have implemented the <MEASCAT> project earlier than you did, at a later date, or never without the assistance from <PA>?

01 Earlier
02 Same time [SKIP BACK TO FR12 to change to 01]
03 Later
04 Never [SKIP TO CONSISTENCY CHECK PROMPTS SECTION (C_CC_SKIP1)]
88 Don't know
99 Refused

FR16 [ASK IF FR15 = 01, 03] How much [earlier/later] would you have implemented the <MEASCAT> project?

FR16Y __ YEARS [0-60]
FR16M __ MONTHS [0-12]
88 Don't know

C_FR16_CALC [SET EQUAL TO FR16Y*12 + FR16M]

Quantity

[IF QUANTITY IS NOT APPLICABLE FOR THIS MEASURE CATEGORY (IF QTYFLAG=0), SKIP TO NEXT SECTION (FR18)]

FR17 [ASK IF FR13 = 02, 88, 99] Compared to the amount of <MEASCAT> equipment that you implemented through the <PA>program, what percent of the project do you think your business would have purchased on its own without the assistance from <PA>?

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

___ [ENTER PERCENTAGE: 0-500%]
888 Don't know
999 Refused

Efficiency

[IF EFFICIENCY IS NOT APPLICABLE FOR THIS MEASURE CATEGORY (IF EFF= 0 OR FR17=0), SKIP TO NEXT SECTION (FR21)]

FR18 [ASK IF QTYFLAG=1 AND IF FR14=02,88,99 ELSE SKIP TO C_EF_SKIP1]
You said your business would have installed
[IF FR13=1-Yes SHOW "all";
IF FR13= 2-No SHOW <FR17> %; IF FR17=888,999 SHOW "some";
IF FR13=88,99 SHOW "some"]
of the equipment on its own if the assistance from <PA> had not been available.

What percent of this equipment would have been **standard efficiency or minimum code**?

[PROBE: For example, "Would about one-fourth (25%), one-half (50%), three-fourths (75%)?"]

___ [ENTER PERCENTAGE: 0-100%]
777 Not applicable
888 Don't know

FR19 [ASK IF INTEFF=1] What percent would have been between standard efficiency and what you installed through the program?

___ [ENTER PERCENTAGE: 0-100%]
777 Not applicable
888 Don't know

C_EF_SKIP1 [IF (QTYFLAG=1 AND IF (FR14 = 2, 88, 99) AND (FR18 AND FR19 >=0 AND <>777 AND <>888)) OR FR14=1 CALCULATE Efb, Efc, Efa ELSE SKIP TO FR20]

Efb (between percent) IF FR14=1 Efb=0 ELSE SET EQUAL TO FR19
Efc (standard efficiency percent) IF FR14=1 Efc=0 ELSE SET EQUAL TO FR18
Efa (high efficiency percent) IF FR14=1 Efa = 100 ELSE Efa = (100-Efb-Efc)

FR20 [ASK IF QTYFLAG=0 AND IF FR14=02,88,99 AND INTEFF=1] Thinking about the <MEASCAT> project you would have implemented on your own if the <PA> assistance had not been available, would it have been standard efficiency or minimum code **or** between standard efficiency and what you installed through the program?

01 Standard efficiency or minimum code
02 Between standard efficiency and what you installed through the program
77 Not applicable
88 Don't know
99 Refused

FR31 [ASK IF (FR20=01,02) OR (FR18 AND FR19 >0 AND ≠0 AND ≠777AND ≠888)] What specific efficiency level(s) or equipment were you considering?

[RECORD RESPONSE VERBATIM]

FR32a [ASK IF (FR18>0 AND ≠777 AND ≠888) OR FR20=1] When you talk about **<u>standard</u>** <MEASCAT> equipment, which of the following best describes what you mean? (READ LIST, Select one)

01 Whatever most customers install
02 Whatever was standard or least expensive
03 Whatever was readily available
04 Whatever the contractor recommended
05 Whatever is required by code
06 Or something else? [SPECIFY]
88 Don't know
99 Refused

FR32b [ASK IF (FR19>0 AND ≠777 AND ≠888) OR FR20=2] When you talk about **mid-level efficiency** <MEASCAT > equipment, which of the following best describes what you mean? (READ LIST, Select one)

01 Whatever most customers install
02 Whatever was mid-level or less expensive than the high-efficiency option
03 Whatever was readily available
04 Whatever the contractor recommended
05 Whatever is required by code
06 Or something else? [SPECIFY]
88 Don't know
99 Refused

Insulation

FR21 [ASK IF MEASCAT=8-Insulation] Thinking about the energy saving improvements you would have implemented on your own if the <PA> assistance had not been available; would you have done the same improvements as you did?

01 Yes [SKIP TO NEXT SECTION]
02 No
88 Don't know
99 Refused

FR22 [ASK IF MEASCAT=8-Insulation] Compared to what you installed through the <PA> program, how much would you have done? For example, would it have been 50% as much as what was done with the <PA>assistance?

___ [ENTER PERCENTAGE: 0-99%]
0 I wouldn't have done the improvement
888 Don't know
999 Refused

Consistency Check Prompts

100% Free ridership consistency check

C_CC_SKIP1 [IF WOULD HAVE PURCHASED AT THE SAME TIME, IN THE SAME QUANTITY, AND OF THE SAME EFFICIENCY LEVEL;
ASK IF FR12=1 AND (FR13=1 OR FR17>=100) AND (FR14=1 or Efa=100%), ASK CC1-CC5, ELSE SKIP TO CC6]

CC1 [ASK IF FR25 =8,9,10 ELSE SKIP TO CC6] You said that you would have installed the same quantity and efficiency equipment at that same time, but you also just said that the <PA> incentive was influential in your decision to implement the <MEASCAT> project. Which of these is more accurate?

01 Installed same quantity & efficiency at same time [SKIP TO CC6]
02 Confirmed incentive was influential in decision
03 Something else [SPECIFY]

CC2 How would your project have changed if <PA> had not contributed to the cost of the <MEASCAT> project? [SELECT ALL THAT APPLY. DO NOT READ]

01 Would not have changed [SKIP TO CC6]
02 Would have postponed the project
03 Would have cancelled the project altogether
04 Would have repaired existing equipment
05 Kept using existing equipment
06 Purchased less efficient equipment
07 Purchased fewer quantity
08 Installed DIFFERENT type of equipment than planned [SPECIFY: What type of equipment?]
09 Other [SPECIFY]
88 Don't know
99 Refused

CC2a [ASK IF CC2=2] Approximately how many months would you have postponed the project?

__ SPECIFY NUMBER OF MONTHS [1 – 75]
88 Don't know
99 Refused

CC3 [ASK IF CC2=PURCHASED FEWER QUANTITY; (ASK IF CC2=7)] Compared to the amount of <MEASCAT> equipment that you implemented through the <PA> program, what percent do you think your business would have purchased on its own at that same time without the assistance from <PA>?

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

___ [ENTER PERCENTAGE: 1-99%]
888 Don't know
999 Refused

CC4 [ASK IF CC2=PURCHASED LESS EFFICIENT EQUIPMENT; (ASK IF CC2=6 ELSE SKIP TO CC6)] Thinking about the equipment you would have implemented on your own, what percent of this equipment would have been **standard efficiency or minimum code**?

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

___ [ENTER PERCENTAGE: 0-100%]
777 Not applicable
888 Don't know

CC5 [ASK IF CC2=06 AND INTEFF=1] and what percent would have been between standard efficiency and what you installed through the program?

___ ENTER PERCENTAGE: 0-100%]
777 Not applicable
888 Don't know

C_CEF_SKIP [SKIP TO CC6 IF CC4=888 OR CC5=888 OR CC4=777 OR CC5=777]

cEFb (between percent) SET EQUAL TO CC5
cEFc (standard efficiency percent) SET EQUAL TO CC4
cEFa (high efficiency percent) SET EQUAL TO (100-cEFb-cEFc)

0% Free ridership Consistency Check

CC6 (IF SMALL BUSINESS – ASK IF AT LEAST SOMEWHAT LIKELY TO HAVE INSTALLED THE MEASURE WITHOUT THE PROGRAM BUT LATER STATES WOULD HAVE WAITED AT LEAST TWO YEARS)

[ASK IF
SMALL=1 AND
FR11 = 4,5,6,7,8,9,10 AND
((FR16>24 MONTHS AND NOT =88 AND FR12<>1) OR FR15=4)]

Earlier in the interview, you said there was a <FR11 SCORE> in 10 likelihood that you would have implemented the same quantity and efficiency of <MEASCAT> equipment at that same time in the absence of the <PA> program assistance. But you also said you would not have implemented the <MEASCAT> project within 2 years of when you did. Which of these is more accurate? [READ LIST, SELECT ONE]

01 The likelihood of installing this without the program assistance was (FR11 SCORE)
02 Would not have installed anything within 2 years
03 Something else [SPECIFY]
88 Don't know
99 Refused

CC7 (IF MED/LARGE C&I – ASK IF AT LEAST SOMEWHAT LIKELY TO HAVE INSTALLED THE MEASURE WITHOUT THE PROGRAM BUT LATER STATES WOULD HAVE WAITED AT LEAST FOUR YEARS)

[ASK IF
SMALL=0 AND
FR11 = 4,5,6,7,8,9,10 AND
((FR16>48 MONTHS AND NOT =88 AND FR12<>1) OR FR15=4)

Earlier in the interview, you said there was a <FR11 SCORE> in 10 likelihood that you would have implemented the same quantity and efficiency of <MEASCAT>equipment at that same time in the absence of the <PA> program assistance. But you also said you would not have implemented the <MEASCAT> project within 4 years of when you did. Which of these is more accurate? [READ LIST, SELECT ONE]

01 The likelihood of installing this without the program assistance was (FR11 SCORE)
02 Would not have installed anything within 4 years
03 Something else [SPECIFY]
88 Don't know
99 Refused

Additional Consistency Check

CC8a [ASK IF 100% FREE-RIDER;
IF FR12=1 AND FR13=1 AND (FR14 = 1 or Efa = 100) AND CC1 = 1 AND (DM11=07,08,09,10 OR FR25=07,08,09,10)]

Previously you stated that you would have installed the exact same equipment at the same time without the <PA> assistance. But, you also stated that the …
(IF DM11 > 6 FILL: program-sponsored study was)
(IF FR25 > 6 FILL: program incentive and financing options were)
(IF DM11 > 6 & FR25 > 6 FILL: program-sponsored study, incentive, and financing options were)
… influential in your decision.

01 Continue to CC8

CC8b [ASK IF 0% FREE-RIDER:
IF (FR15 = 4-NEVER OR 88-DK) AND (DM11=00,01,02,03,04 OR FR25=00,01,02,03,04]

Previously you stated that you would not have installed any equipment without the <PA>assistance. You also stated that the …
(IF DM11 < 5 FILL: program-sponsored study was)
(IF FR25 < 5 FILL: program incentive and financing options were)
(IF DM11 < 5 AND FR25 < 5 FILL: program-sponsored study, incentive, and financing options were)
… not influential in your decision.

01 Continue to CC8

CC8 (ASK OF ALL) Please think about all the assistance you received through the <PA> program. In your own words, please describe what impact, if any, that assistance had on your decision to install the amount of energy efficient <MEASCAT> equipment at the time you did?

[RECORD RESPONSE VERBATIM]

Like Spillover

[IF MEASCHK=1 SKIP TO Next Measure/Section]

SP1 Now I'd like you to think of the time since you participated in the <PA> program around <DATE>.

Has your company implemented any <MEASCAT> projects for this or other facilities in Rhode Island **on your own,** that is, without a rebate from <PA>?

01	Yes	
02	No	[SKIP TO Next Measure/Section]
88	Don't know	[SKIP TO Next Measure/Section]

SP2 [IF EFFICIENCY IS NOT APPLICABLE; IF EFF = 0, SKIP TO SP4]
Was this equipment of **the same efficiency level or a higher level of efficiency** as the equipment you installed through the program?

01	Yes	[SKIP TO SP4]
02	No	
88	Don't know	

SP3 Was this equipment more energy efficient than standard efficiency or code equipment?

01	Yes	
02	No	[SKIP TO Next Measure/Section]
88	Don't know	[SKIP TO Next Measure/Section]

SP4 Thinking of the <MEASCAT> equipment that you installed on your own, was this more, less or the same amount of <MEASCAT> equipment as what you installed through the program?

01	More	
02	Less	
03	Same	[SKIP TO SP8]
88	Don't know	[SKIP TO SP8]

SP5 [ASK IF SP4=01] Compared to the amount of <MEASCAT> equipment that you installed through the program at <ADDRESS> in <CITY>, 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%]
8888	Don't know

SP6 [ASK IF SP4=02] Compared to the amount of <MEASCAT> equipment that you installed through the program at <ADDRESS> in <CITY>, 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%]
8888	Don't know

SP7 [SKIP IF SP5 = 8888 or SP6 = 8888] So the additional energy efficient equipment you bought on your own was <percentage from SP5 or SP6> as much as you got through the program?

01	Yes	
02	No	[SKIP BACK TO SP4 TO CORRECT]

SP8 Did a recommendation by the contractor, engineer, or designer who you worked with under the <PA> program influence your decision to implement some or all of this [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "efficient"] <MEASCAT> equipment on your own?

01 Yes
02 No
77 Not applicable
88 Don't know
99 Refused

SP9 Did your experience with the energy efficient projects implemented through the <PA> program influence your decision to implement some or all of this [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "efficient"] <MEASCAT> equipment on your own?

01 Yes
02 No
88 Don't know
99 Refused

SP10 Did your participation in any past program offered by <PA> influence your decision to implement some or all of this [IF EFFICIENCY IS APPLICABLE; IF EFF=1 SHOW "efficient"] <MEASCAT> equipment on your own?

01 Yes
02 No
88 Don't know
99 Refused

SP11 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 <PA> program have on your decision to install this equipment without an incentive?

00 no influence
01
02
03
04
05
06
07
08
09
10 great deal of influence
88 Don't know
99 Refused

SP12 Why didn't you implement this <MEASCAT> project through a <PA> program?

[DO NOT READ; SELECT ALL THAT APPLY]

01 Too much paperwork
02 Cost savings not worth the effort of applying
03 Takes too long for approval
04 The equipment would not qualify
05 Vendor does not participate in program
06 Outside <PA>'s service territory
07 No time — needed equipment immediately
08 Thought the program ended
09 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]
88 Don't know
99 Refused

SP13 [ASK IF SP12 = THE EQUIPMENT WOULD NOT QUALIFY; ASK IF SP12=4) Why wouldn't the equipment qualify?

[RECORD RESPONSE VERBATIM]

[END MEASURE LOOP;
IF TOTMEAS=2 SKIP BACK TO DM1 AND ASK QUESTIONS ABOUT MEASCAT2
OTHERWISE CONTINUE TO UNLIKE SPILLOVER]

Unlike Spillover

C_MULT_SKIP [IF MULTCHK=2 SKIP TO NEXT SECTION]

US1 Since participating in <PA> program, has your company purchased, installed, or implemented any **other** type of energy efficient equipment **on your own,** that is, without a rebate from <PA>.

01 Yes
02 No [SKIP TO NEXT SECTION]
88 Don't know [SKIP TO NEXT SECTION]

US2 What type of energy efficient equipment did you install on your own?

[RECORD RESPONSE VERBATIM]
88 Don't know

US3 What quantity of energy efficient equipment did you install?

[RECORD RESPONSE VERBATIM]
88 Don't know

US4 What size or capacity of energy efficient equipment did you install?

[RECORD RESPONSE VERBATIM]
88 Don't know

US5 Would this project have qualified for an incentive through a <PA> program?

[IF YES: "Did you implement this project through a <PA> program?"]

01	Yes, Did not implement through a program	
02	Yes, Implemented through a program	[SKIP TO NEXT SECTION]
03	No	[SKIP TO NEXT SECTION]
88	Don’t know	[SKIP TO NEXT SECTION]

US6 Did a recommendation by the contractor, engineer, or designer who you worked with under a <PA> program influence your decision to implement some or all of this equipment on your own?

01 Yes
02 No
77 Not applicable
88 Don’t know
99 Refused

US7 Did your experience with the energy efficient project implemented through a <PA> program influence your decision to implement some or all of this equipment on your own?

01 Yes
02 No
88 Don’t know
99 Refused

US8 Did your participation in any past program offered by <PA> influence your decision to implement some or all of this equipment on your own?

01 Yes
02 No
88 Don’t know
99 Refused

US9 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 a <PA> program have on your decision to install this equipment without an incentive?

00 no influence
01
02
03
04
05
06
07
08
09
10 great deal of influence
88 Don’t know

US10 Why didn't you implement this project through a <PA> program?

[DO NOT READ; SELECT ALL THAT APPLY]

01 Too much paperwork
02 Cost savings not worth the effort of applying
03 Takes too long for approval
04 The equipment would not qualify
05 Vendor does not participate in program
06 Outside <PA>’s service territory
07 No time - needed equipment immediately
08 Thought the program ended
09 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]
88 Don’t know
99 Refused

US11 [IF US10= EQUIPMENT WOULD NOT QUALIFY (ASK IF US10=4)] Why wouldn't the project qualify?

[RECORD RESPONSE VERBATIM]
88 Don’t know

Wrap-up

WU1 What is the main business activity at <ADDRESS> in <CITY>?

01 Office / Professional
02 Warehouse or distribution center
03 Food sales
04 Food service
05 Retail (other than mall)
06 Mercantile (enclosed or strip malls)
07 Education
08 Religious worship
09 Public assembly
10 Health care
11 Lodging
12 Public order and safety
13 Industrial/manufacturing [SPECIFY]
14 Agricultural [SPECIFY]
15 Vacant (majority of floor space is unused)
16 Other [SPECIFY]
88 Don't know

WU3 Does your organization rent or own the facility at this location?

01 Rent or lease
02 Own
03 Own some and rent/lease some
88 Don’t know
99 Refused

C_MULT_SKIP3 [SKIP TO A4 IF MULTCHK=02]

WU2 Are your company’s budget decisions made locally, regionally, nationally, worldwide, or some other way?

01 Locally
02 Regionally
03 Nationally
04 Worldwide
05 Some other way [SPECIFY]
88 [DO NOT READ] Don't know

A4R1 [ASK IF FR7R1=5,6,7,8,9 AND FR8R1=7,8,9,10] We would like to talk to the person who was most influential in recommending or specifying the efficient <MEASCAT1> equipment to install through the program. Earlier you mentioned that this was the <FR7R1 RESPONSE>. Could you give me the name and telephone number of this person?

01 Yes [Record contact information]
02 No, no outside advisor involved
88 Don't know / Doesn't have
99 No, REFUSED to give this information

For A4_company, A4_name, A4_phone: [ASK IF A4R1=1]
[RECORD RESPONSE VERBATIM]
88 Don't know

A4_COMPANYR1
A4_NAMER1
A4_PHONER1

A4R2 [ASK IF TOTMEAS=2 AND FR7R2=5,6,7,8,9 AND FR8R2=7,8,9,10] We would like to talk to the person who was most influential in recommending or specifying the efficient <MEASCAT2> equipment to install through the program. Earlier you mentioned that this was the <FR7R2 RESPONSE>. Could you give me the name and telephone number of this person?

01 Yes [Record contact information]
02 No, no outside advisor involved
03 Same contact info as previous measure
88 Don't know / Doesn't have
99 No, REFUSED to give this information

For A4_company, A4_name, A4_phone: [ASK IF A4R2=1]
[RECORD RESPONSE VERBATIM]
88 Don't know

A4_COMPANYR2
A4_NAMER2
A4_PHONER2

INT99 [SKIP IF MULTCHK=02] Those are all the questions I have for you. I'd like to thank you for your time with this important evaluation

CP Completed [END]

INT98 Those are all the questions I have for you. I'd like to thank you for your time with this important evaluation

CM Completed – subsequent case [END]

D.2 INFLUENTIAL VENDOR FREE-RIDERSHIP AND VENDOR NONPARTICIPANT SURVEY

Variable List

VCASEID Vendor case identification number

VEND_CONTACT Vendor Name

VEND_PHONE

VEND_ADDR, VEND_CITY, VEND_STATE, VEND_ZIP Vendor Address

VEND_COMPANY Vendor company name

VEND_EMAIL Vendor email

MULTFLAG case is part of a multiple
- 0 Not a multiple
- 1 Multiple

UTILITY **Rhode Island Energy**

MULTID

PRIMARY Primary case for multiples, also flagged for all single records
- 0 Not a primary case
- 1 Primary case

VENDORTYPE Influ/Nonp

INF_VEND1 Flag if vendor was identified as an influential vendor for first measure (from the customer survey)
- 0 not an influential vendor
- 1 influential vendor

INF_VEND2 Flag if vendor was identified as an influential vendor for second measure (from the customer survey)
- 0 not an influential vendor
- 1 influential vendor

ME1-ME20 Types of equipment specified/sold as part of spillover questions (showed in NonPart section)

0 Not sold
1 Sold

ME01 Compressed Air
ME02 Controls
ME03 Custom
ME04 HVAC
ME05 HVAC - Distribution
ME06 HVAC - Plant
ME07 HVAC - Thermostat
ME08 Insulation
ME09 Lighting
ME10 Other
ME11 Water Heating
ME12 (Upstream) Food Service
ME13 (Upstream) HVAC
ME14 (Upstream) Lighting – fixture
ME15 (Upstream) Lighting – fixture with controls
ME16 (Upstream) Lighting – LED retrofit kits
ME17 (Upstream) Lighting – screw-ins
ME18 (Upstream) Lighting – TLEDs
ME19 (Upstream) Other
ME20 (Upstream) Water Heating

C_MEX_SUM Computed variable to see if any MEx flags are checked

GAS01 – GAS20 Gas savings associated with nonparticipant vendors

ELEC01 – ELEC20 Electric savings associated with nonparticipant vendors

PROG1 – PROG6

TOP10 gas

TOP10elec

Customer Variables

CUST_CASEID Customer case identification number

CUST_NAME Customer Contact First Name

CUST_COMPANY Customer/Facility Name

PREMISE_ADDR, PREMISE_CITY, PREMISE_ST, PREMISE_ZIP
Service address where equipment was installed

UTILITY Program administrator
1 Rhode Island Energy (previously National Grid)

PROGRAM_TXT1, PROGRAM_TXT2 (STRING) Utility/sponsor programs the vendor has been involved with

<PROGRAM1, PROGRAM2> Program participated in
1 Large Commercial New Construction program
2 Large Commercial Retrofit program
3 Small Business program
4 Design 2000 program
5 Energy Initiative program
6 Upstream Gas program

ProgramType1, ProgramType2 Type of program
Prescriptive
Custom

PROGRAMCODE1, PROGRAMCODE2 Utility/sponsor programs the vendor has been involved with
1 Large Commercial New Construction
2 Large Commercial Retrofit
3 Small Business
4 Design 2000
5 Energy Initiative
6 Upstream Gas

STUDY Flag if customer received a technical assessment
0 did not receive technical assessment
1 received technical assessment
2 Unknown if customer received a technical assessment

ROF [computed in participant survey] Flag if customer indicated the equipment was replaced on failure
0 Not replaced on failure
1 Replaced on failure

NC [computed in participant survey] Flag if customer indicated the equipment was part of a new construction project
0 Not new construction
1 New construction

TOTMEAS Total number of measures customer said influential for (1 or 2)

MEASCAT1, MEASCAT2 Customer-specific end-use category (i.e. lighting)

1 compressed air
2 controls
3 custom
4 HVAC
5 HVAC - distribution
6 HVAC - plant
7 HVAC - Thermostat
8 Insulation
9 Lighting
10 Other
11 Water Heating
12 (Upstream) Food Service
13 (Upstream) HVAC
14 (Upstream) Lighting – fixture
15 (Upstream) Lighting – fixture with controls
16 (Upstream) Lighting – LED retrofit kits
17 (Upstream) Lighting – screw-ins
18 (Upstream) Lighting – TLEDs
19 (Upstream) Other
20 (Upstream) Water Heating

MEASDESC1, MEASDESC2 [from participant survey sample] Measure descriptions

INC1, INC2 Utility/sponsor incentive for Measure categories

QTY1, QTY2

QTYFLAG1, QTYFLAG2 Flag for quantity greater than 1

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

INTEFF1, INTEFF2 [from participant survey sample] Flag as to whether intermediate efficiencies applies

1 Yes there is intermediate efficiency
2 No intermediate efficiencies available

EFF1, EFF2 [from participant survey sample] Flag for if efficiency applies

0 efficiency is not applicable for this measure category (e.g., insulation, VFD, delamping, occupancy sensors)
1 efficiency is applicable

EQUIP1, EQUIP2 Flag for if rebated equipment is operational

0 if installed measure is not equipment that is operational (e.g., insulation)
1 if installed measure is operational

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

REP Replicate (will be released as needed to manage response rate)

Introduction

INT01 Hello, my name is _____, and I am calling on behalf of **<UTILITY>**. We are talking with some of the design professionals and contractors who were involved with energy efficiency programs offered by **<UTILITY>** in 2022.
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 these programs in 2022.

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

[IF NEEDED: May I speak with **<VEND_CONTACT>** or the person who specified or sold equipment through a **<UTILITY>** program?]

FAQ [Read if needed:
(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 **<UTILITY>**. If you would like to talk with someone from there, you can call Ann Clarke at 516-513-4439.)

MULTCHK [ASK IF MULTFLAG=1]
[INTERVIEWER: Is the first case of a multiple?]

1 Yes, first case of a multiple
2 No, subsequent case of a multiple

Confirmation

C_VNP_SKIP1 [IF INF_VEND1 = 0, SKIP TO C_VNP_SKIP2]

VR_INTRO I'd like to review the <**MEASCAT1>** [IF TOTMEAS=2 SHOW: "and **<MEASCAT2>**"] project(s) you recommended or specified through the program for **<UTILITY>**.

01 Continue

VR1_1 Do you recall recommending the <**MEASCAT1**> project for **<CUST_COMPANY>** at **<PREMISE_ADDR>** in **<PREMISE_CITY>** through the <**PROGRAM1**> in 2022?

01	Yes, does recall	[SKIP TO V1a_1]
02	No, does not recall	[OTHER_R_1]
03	This equipment was never installed	[SKIP TO C_KNOWLEDG_1]
88	Don't know	[OTHER_R_1]
99	Refused	[OTHER_R_1]

OTHER_R_1 Is there someone else at your firm who would be more familiar with this project?

01	Yes	[RECORD CONTACT INFO FOR CALL NOTES]
02	No	[SKIP TO C_KNOWLEDG_1]
88	Don't know	[SKIP TO C_KNOWLEDG_1]
99	Refused	[INT91 – REFUSAL]

AVAIL_R_1 May I please speak with that person?

01	Yes, currently available	[SKIP TO INT01]
02	Yes, but R is not currently available	[INT15 – CALLBACK]
03	No	[INT91 – REFUSAL]
88	Don’t know	[INT81 – INELIGIBLE]
99	Refused	[INT91 – REFUSAL]

V1a_1 Were you involved in the decision-making process at the design stage when the <**MEASCAT1**> project was specified and agreed upon for this facility?

01	Yes	[SKIP TO C_KNOWLEDG_1]
02	No	
88	Don't know	

V1b_1 At what point in the process did you become involved?

[RECORD RESPONSE VERBATIM]
88 Don’t know
99 Refused

V1c_1 What was your role?

[RECORD RESPONSE VERBATIM]
88 Don’t know
99 Refused

C_KNOWLEDG_1 [SET TO 0 IF VR1_1 = 3 OR OTHER_R_1 = 2, -8 OR V1a_1=2,88 OTHERWISE SET TO 1]

0 Respondent is not valid for Free-ridership section
1 Respondent is valid for Free-ridership section

C_VNP_SKIP2 [IF Inf_Vend2 = 0, SKIP TO NEXT SECTION]

VR1_2 [SKIP TO NEXT SECTION IF TOTMEAS<>2] Do you recall recommending the <**MEASCAT2**> project for **<CUST_COMPANY>** at **<PREMISE_ADDR>** in **<PREMISE_CITY>** through the program in 2022?

01	Yes	[SKIP TO V1a_2]
02	No	
03	This equipment was never installed	[SKIP TO C_KNOWLEDG_2
88	Don't know	
99	Refused	

OTHER_R_2 Is there someone else at your firm who would be more familiar with this project?

01	Yes – Continue	[RECORD CONTACT INFO FOR CALL NOTES]]
02	No	[SKIP TO C_KNOWLEDG_2]
88	Don't know	[SKIP TO C_KNOWLEDG_2]
99	Refused	[INT91 – REFUSAL]

AVAIL_R_2 May I please speak with that person?

01	Yes, currently available	[SKIP TO INT01]
02	Yes, but R is not currently available	[INT15 – CALLBACK]
03	No	[INT91 – REFUSAL]
88	Don’t know	[INT81 – INELIGIBLE]
99	Refused	[INT91 – REFUSAL]

V1a_2 Were you involved in the decision-making process at the design stage when the <**MEASCAT2**> project was specified and agreed upon for this facility?

01	Yes	[SKIP TO C_KNOWLEDGE_2]
02	No	
88	Don't know	

V1b_2 At what point in the process did you become involved?

[RECORD RESPONSE VERBATIM]
88 Don't know
99 Refused

V1c_2 What was your role?

[RECORD RESPONSE VERBATIM]
88 Don't know
99 Refused

C_KNOWLEDG_2 [SET TO 0 IF VR1_2 = 3 OR OTHER_R_2 = 2, -8 OR V1a_2=2,88 OTHERWISE SET TO 1]

0 Respondent is not valid for Free ridership section
1 Respondent is valid for Free ridership section

Free-Ridership – Influential Vendors

[START OF FREE-RIDERSHIP LOOP. ASK VP0a THROUGH VF9 FOR EACH MEASURE CATEGORY (MEASCAT) RECALLED (UP TO TWO MEASURES).]
*R1 for MEASCAT1, EFF1, INTEFF1, QTYFLAG1, INC1, C_KNOWLEDG_1

*R2 for MEASCAT2, EFF2, INTEFF2, QTYFLAG2, INC2, C_KNOWLEDG_2

C_FR_SKIP0 [SKIP TO NEXT MEASURE IF C_KNOWLEDG =0]

VP0a [IF STUDY<>1 SKIP TO VR9] According to our records, **<UTILITY>** paid a portion of the cost to conduct a technical assessment for **<CUST_COMPANY>** to determine the cost-effectiveness of installing the **<MEASCAT>** equipment.

If **<UTILITY>** had not paid a portion of the cost, do you think **<CUST_COMPANY>** would have paid that portion of the cost to have a similar [IF STUDY=1 SHOW "technical assessment"] done at the same time?

01 Yes
02 No
88 Don't know

VC2 [ASK IF VP0a = 2,88] 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 technical assessment have on your decision to recommend the [IF EFF = 1 SHOW "high efficiency"] **<MEASCAT>** project?

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

VR9 To the best of your knowledge, did **<CUST_COMPANY>** receive interest-free financing or repayment assistance from **<UTILITY>** which allowed them to pay for their portion of the project cost over time?

01 Yes
02 No
88 Don't know

FR_INTRO3a [READ IF 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.]

01 Continue

FR_INTRO3b [READ IF SECOND MEASURE]
Now I'd like to review the **<MEASCAT2>** project you recommended.

01 Continue

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 **<MEASCAT>** project so that it would qualify for **<UTILITY>** assistance?

__ (0-10) [IF VA1 = 0,1,2,3,4,5,6 SKIP TO NEXT MEASURE/SECTION]
88 Don't know [SKIP TO NEXT MEASURE/SECTION]

FR_INTRO The next set of questions ask about **<CUST_COMPANY>**'s planning and installation decisions through the program in 2022.

01 Continue

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

01	Yes	
02	Yes, but don't remember specifics	[SKIP TO VF1]
03	No	[SKIP TO VF1]
88	Don't know	[SKIP TO VF1]
99	Refused	[SKIP TO VF1]

VP1b What equipment was **<CUST_COMPANY>** planning to install with the allocated funds?

[RECORD RESPONSE VERBATIM]

88	Don’t know
99	Refused

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

01	Yes	
02	Yes, but don't remember specifics	[SKIP TO VF1]
03	No	[SKIP TO VF1]
88	Don't know	[SKIP TO VF1]
99	Refused	[SKIP TO VF1]

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

01	Installation occurred SOONER than planned
02	Installation occurred LATER than planned
03	Installed MORE equipment than planned
04	Installed LESS equipment than planned
05	Equipment was MORE efficient than planned
06	Equipment was LESS efficient than planned
07	Other [SPECIFY]
88	Don't know
99	Refused

VF1 [SKIP IF customer indicated equipment was for a newly constructed building or replace on failure; SKIP IF ROF = 1 or NC = 1]
[IF INC > 0 SHOW "**<UTILITY>** paid about $<**INC**> of the total cost of the <MEASCAT> project." ELSE IF INC=0 SHOW "**<UTILITY>** paid a portion of the total cost of the <MEASCAT> project."
<CUST_COMPANY> may have also received some technical assistance from **<UTILITY>** or a contribution toward the cost of a technical assessment study.

If **<UTILITY>** had not paid a portion of the project cost, would your company have recommended or specified any type of **<MEASCAT>** equipment to **<CUST_COMPANY>** at the same time?

01 Yes
02 No
88 Don't know

VF2a [ASK IF QTYFLAG1, QTYFLAG2=1]
Without the program incentive, technical assistance, or education, would your company have recommended or specified the exact same quantity of **<MEASCAT>** for **<CUST_COMPANY>** at the same time?

01 Yes
02 No
88 Don't know

VF2ab [ASK IF efficiency applies EFF= 1] Without the program incentive, technical assistance, or education, would your company have recommended or specified the exact same efficiency of **<MEASCAT>** for **<CUST_COMPANY>** at the same time?

01 Yes
02 No
88 Don’t know

VF2b [ASK IF QTYFLAG=1 and if VF2a <> 1] Compared to the amount that you recommended through the program, what percentage of the overall quantity of **<MEASCAT>** project do you think your company would have recommended or specified without assistance from **<UTILITY>**?

(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%)
888 Don't know
[IF 0 SKIP TO VC3]

C_FR_SKIP2 [IF EFF = 0, SKIP TO VRVL1]

C_FR_SKIP3 [IF VF2ab =1, SKIP TO C_FR_SKIP4]

VF3c [ASK IF EFF=1 and if VF2ab <> 1] You said you would have recommended or specified [IF VF2a=1 SHOW "all the" ELSE SHOW "at least some"] **<MEASCAT>** for **<CUST_COMPANY>** if the assistance from **<UTILITY>** had not been available.

What percent of the equipment that you would have recommended would have been standard efficiency or minimum code?

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

___ (ENTER PERCENTAGE: 0-100%)
888 Don't know
777 Not applicable

VF3b [SKIP IF INTEFF= 0]
and what percent would have been between standard efficiency and what was installed through the program?

___ (ENTER PERCENTAGE: 0-100%)
888 Don't know
777 Not applicable

C_VEF_SKIP1 [SKIP TO C_FR_SKIP4 IF VF3c OR VF3b = 777 OR 888]

vEFb (between percent) IF VF2ab=1 vEFb=0 ELSE SET EQUAL TO VF3b
vEFc (standard eff percent) IF VF2ab=1 vEFc=0 ELSE SET EQUAL TO VF3c
vEFa (high eff percent) IF VF2ab=1 vEFb=100 ELSE SET EQUAL TO vEFa = 100-vEFb-vEFc]

C_FR_SKIP4 [IF QTYFLAG = 1, SKIP TO VC3]

VF3bc [ASK IF (VF3b <> 0 AND <>888 AND <>777) OR (VF3c <> 0 AND <>888 AND <>777)]
What specific efficiency levels would you have recommended?

[RECORD RESPONSE VERBATIM]
88 Don't know
99 Refused

VF3d [IF EFF = 0, SKIP TO VRVL1]
[IF VF2ab =1, SKIP TO VRVL1]
[IF IntEff = 0, SKIP TO VRVL1]
Thinking about the **<MEASCAT>** equipment you would have recommended if the **<UTILITY>** assistance had not been available, would it have been of standard efficiency or minimum code; or between standard efficiency and what you installed through the program?

01 Standard efficiency or minimum code
02 Between standard efficiency and what was installed through the program
77 Not applicable
88 Don't know
99 Refused

VF3d2 [ASK IF (VF3d = 1 or 2) OR IF (VF3b <> 0 AND <>777, 888 or VF3c <> 0 and <>777, 888)] What specific efficiency levels would you have recommended?

[RECORD RESPONSE VERBATIM]
88 Don't know
99 Refused

VRVL1 [IF EFF=0 SKIP TO VC3] Thinking about the energy saving project you would have recommended if the **<UTILITY>** assistance had not been available, would you have recommended the same improvements as what was done through the program?

01 Yes [SKIP TO VC3]
02 No
88 Don't know
99 Refused

VRVL2 Compared to what you recommended through the program, how much of the energy saving project would you have recommended?
(PROBE: "Would about one-fourth (25%), one-half (50%), three-fourths (75%) been of equal efficiency?")

___ [1-99%]
888 Don't know
999 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 SHOW “rebate that” ELSE SHOW $<INC>] **<CUST_COMPANY>** received from **<UTILITY>** have on your decision to recommend the [IF **EFF** = 1 SHOW "high efficiency"] **<MEASCAT>** project?

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

VF4 [ASK VF4-VF7 IF (VF1=1 OR ROF=1 OR NC=1) AND (VF2a=1 OR VF2b=100%) AND (VEFA=100% OR VF2AB=1), ELSE SKIP TO VF8]
Now I want to focus on what it would have cost **<CUST_COMPANY>** to install this equipment on its own without the assistance from **<UTILTY>**. 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 SHOW “cost”, ELSE $<INC>] on top of the cost they already paid, to implement the same quantity and efficiency of **<MEASCAT>** equipment at that same time?

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

VF5 [IF VF4 =8,9,10 SKIP TO VF8] How would their project have changed if the program had not contributed to the cost of the **<MEASCAT>**?
(SELECT ALL THAT APPLY) (DO NOT READ)

01 Would not have changed [SKIP TO VF8]
02 Would have postponed the project
03 Would have cancelled the project altogether
04 Would have repaired existing equipment
05 Kept using existing equipment
06 Purchased less efficient equipment
07 Purchased fewer quantity
08 Installed DIFFERENT type of equipment than planned (SPECIFY)
09 Other (SPECIFY)
88 Don't know
99 Refused

VF5C02O [ASK IF VF5=2] How many months would you have postponed the project?

__ Record months 0-75
88 Don't know
99 Refused

VF5C08O [ASK IF VF5=8] Please specify the different type of equipment installed.

VF5C09O [ASK IF VF5=9] Other project change specified.

VF6 [ASK IF VF5=7] Compared to the amount of **<MEASCAT>** that **<CUST_COMPANY>** 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%)
0 [SKIP TO VF8]
888 Don't know
999 Refused

C_FR_SKIP5 [IF QTYFLAG = 0 SKIP TO VF8]

VF7c [ASK IF VF5=6 ELSE SKIP TO VF8] Thinking about the equipment **<CUST_COMPANY>** would have implemented on their own, what percent of this equipment would have been standard efficiency or minimum code?

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

___ (ENTER PERCENTAGE: 0-100%)
888 Don’t know
777 Not applicable

VF7b [IF IntEff = 0, SKIP TO VF8]
and what percent would have been between standard efficiency and what was installed through the program?

___ (ENTER PERCENTAGE: 0-100%)
888 Don’t know
777 Not applicable

C_CVEF_SKIP1 [SKIP TO VF8 IF VF7c OR VF7b = 777 OR 888]

cvEFb (between percent) SET EQUAL TO VF7b
cvEFc (standard eff percent) SET EQUAL TO VF7c
cvEFa (high eff percent) SET EQUAL TO 100-cvEFb-cvEFc]

VF7bc [ASK IF VF7b <>0,777,888 OR VF7c <>0,777,888] What specific efficiency levels would they have likely installed?

[RECORD RESPONSE VERBATIM]
88 Don't know
99 Refused

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 **<UTILITY>** program when making the decision to recommend or install the **<MEASCAT>** project for this customer?

__ Record importance [0-10]
77 NA – No previous program experience
88 Don't know
99 Refused

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

(IF VF1 = 2 OR -8 AND VC3 = 4,3,2,1,0 SHOW: "Previously you stated that **<CUST_COMPANY>** would not have installed any equipment without the assistance from **<UTILITY>**. You also stated that the **<UTILITY>** incentive was not influential in their decision.")

I'd like to better understand **<CUST_COMPANY>**'s purchase decision. Please describe what impact, if any, the **<UTILITY>** assistance had on **<CUST_COMPANY>**'s decision to install the energy efficient **<MEASCAT>** equipment at the time they did?

[RECORD RESPONSE VERBATIM]
88 Don't know
99 Refused

[END FREE-RIDERSHIP LOOP]

Vendor Nonparticipant Questions

C_MULT_SKIP [SKIP TO END IF MULTCHK=2]

[SKIP TO NEXT SECTION IF NONE OF THE MEx VARIABLES =1]

VNP_INTRO This first set of questions ask about all the types of equipment that your firm recommended, sold, or installed through **<UTILITY>**'s commercial programs in 2022.

01 Continue

[START OF NONPARTICIPANT LOOP. ASK VNP1a THROUGH VNP8 FOR EACH MEASURE SOLD (ME01, ME02, ME03… UP TO ME23 OR 20 MEASURES).]

MEx [SET TO LOOP NUMBER]

1 compressed air equipment
2 energy efficiency controls
3 custom projects
4 energy efficient heating or cooling equipment
5 energy efficient heating or cooling equipment (Distribution units)
6 energy efficient heating or cooling equipment (Plant units)
7 energy efficiency controls (HVAC – Thermostat)
8 high efficiency rated insulation
9 energy efficient lighting equipment
10 custom projects (Other)
11 water heating equipment
12 energy efficient food service equipment (Upstream - Food Service)
13 energy efficient heating or cooling equipment (Upstream – HVAC)
14 energy efficient lighting (Upstream – fixture)
15 energy efficient lighting (Upstream – fixture with controls)
16 energy efficient lighting (Upstream - LED retrofit kits)
17 energy efficient lighting (Upstream - screw-ins)
18 energy efficient lighting (Upstream – TLEDs)
19 custom projects (Upstream) Other
20 energy efficient water heating equipment (Upstream - Water Heating)

VNP1a Our records show that your firm specified, sold, and/or installed <**MEx**> to commercial and industrial customers in 2022 through the <**UTILITY**> offerings.

Is that correct?

01	Yes	
02	No	[SKIP TO NEXT CATEGORY]
88	Don't know	[SKIP TO NEXT CATEGORY]
99	Refused	[SKIP TO NEXT CATEGORY]

VNP1b Prior to participating in the **<UTILITY>** program, in what percentage of your commercial projects did you install <**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 <**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 **<UTILITY>** customers in 2022.

Did you specify, sell and/or install any of this program-eligible <**MEx**> to customers of **<UTILITY>** without the customer receiving assistance from **<UTILITY>**?

[PROBE: by program-eligible, we are referring to any <MEx> that would be eligible to receive a rebate from <UTILITY> offering.]

01 Yes
02 No [SKIP TO NEXT CATEGORY]
88 Don't know [SKIP TO NEXT CATEGORY]
99 Refused [SKIP TO NEXT CATEGORY]

VNP3 Again, thinking about all the program-eligible <**MEx**> you specified, sold, and/or installed for **<UTILITY>** customers in 2022, what percentage did not receive an incentive through **<UTILITY>**?

___ [ENTER PERCENTAGE 0-100]
0 [SKIP TO NEXT CATEGORY]
888 Don't know [SKIP TO NEXT CATEGORY]
999 Refused [SKIP TO NEXT CATEGORY]

VNP4 In 2022, you mentioned that about <VNP3> of the <**MEx**> you specified and/or installed would have been eligible for an incentive through **<UTILITY>**, but did not receive an incentive.

What are the main reasons why your firm or the customer did not request a customer incentive for this energy saving equipment you specified/installed?
(DO NOT READ—SELECT ALL THAT APPLY; PROBE, WHAT ELSE?)

01 Not worth the paperwork for our firm to help the customer apply for the incentive
02 Customer did not want the hassle of applying for the incentive
03 Takes too long for approval
04 Reached the maximum amount I could install through the program
05 The equipment would not qualify
06 Vendor does not participate in program
07 Outside <UTILITY> service territory
08 No time – needed equipment immediately
09 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)
88 Don't know
99 Refused

VNP4C05O [ASK IF VNP4C05=1] Why did the equipment not qualify?

[RECORD RESPONSE VERBATIM]

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 and offerings 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 offerings, and what we learned through working with **<UTILITY>**."

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 offerings, and what we learned through working with **<UTILITY>**."

0 Agree
1 Disagree

VNP8 Please describe what impact, if any, the <**UTILTY**> offerings had on your decision to specify or install <**MEx**> outside of the <**UTILITY**> programs and offerings.

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

[RECORD RESPONSE VERBATIM]

[END OF NONPARTICIPANT LOOP]

Closing

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

[RECORD RESPONSE VERBATIM]
99 Refused

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

01 Yes [SPECIFY]
02 No

COMO [ASK IF COM=1] Respondent comments.

INT99 [SKIP IF MULTCHK=2] Those are all the questions I have for you. I'd like to thank you for your time with this important evaluation.

CP Completed

INT98 Those are all the questions I have for you. I'd like to thank you for your time with this important evaluation.

CM Completed

D.3 UPSTREAM DISTRIBUTOR SURVEY

Distributor Name: <Final_Vendor_Name>
Distributor Phone: <Final_Vendor_Phone>

I1 Hi, my name is _____ and I am calling from Tetra Tech on behalf of Rhode Island Energy regarding their upstream initiatives. These initiatives provide buydowns to distributors for <LED lamps and fixtures, including retrofit kits, HVAC, food service, and kitchen equipment>.

According to our records, your company has been selling equipment/lighting products as part of upstream initiatives. **[If needed, name some recent projects that used the program discounts].** We would like to ask you some questions about your participation in these initiatives. 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 initiative impacts the types of equipment/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 Ann Clarke of Rhode Island Energy at 516-513-4439.

Caseid: <V_ID> **Distributor Name**: <Final_Vendor_Name>

Customer: <CustomerName>
<CustomerContact>
<SVC_Street> <SVC_City>, <SVC_State> <SVC_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 <equipment/lighting products> that were discounted by Rhode Island Energy's Upstream Initiatives to <CustomerName> in 2022. 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 products to <CustomerName> in 2022. **[READ LIST]**

Customer-Specific Quantity Table

TYPE	Quantity from Tracking Data A.	Revisions to quantities? B.

PI2 Do these sales quantities sound about right to you?

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

Caseid: <V_ID> **Distributor Name**: <Final_Vendor_Name>

PI3 According to our records you sold <TYPE> 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 <TYPE> to this customer in 2022?

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

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

P14B **[IF LOWER]** By what percentage do you estimate your sales of these <TYPE> to <CustomerName> to be lower in absence of the discount?

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

Customer-Specific Discount Table

TYPE	Retail Price per ($) A.	Promo Price per ($) 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

APPENDIX E: RESPONSE RATE AND PROGRAM SAVINGS COVERAGE

E.1 DETAILED RESPONSE RATES

Table 25. Response Rate by Program

	Design 2000	Energy Initiative	Large Commercial New Construction	Large Commercial Retrofit	Small Business	Upstream Gas	Overall
Sample	**203**	**1,474**	**23**	**54**	**257**	**204**	**2,215**
Business/Residential line	0	0	0	0	0	0	0
Not a utility customer	0	0	0	0	0	0	0
Affiliated with utility	0	0	0	0	0	0	0
Eligible sample	**203**	**1,474**	**23**	**54**	**257**	**204**	**2,215**
Does not recall participating	41	95	0	2	22	40	200
Ineligible-referred to landlord	1	6	0	0	4	0	11
Ineligible-vendor/contractor	1	73	1	1	1	0	77
Refusal	10	66	0	1	38	17	132
Incompletes (partial surveys)	2	2	0	0	2	1	7
Language barrier	2	12	0	0	4	6	24
Bad number	58	67	5	3	11	46	190
Attempted but not completed	80	1,067	13	36	100	80	1,376
Completed surveys	8	86	4	11	75	14	198
Completed measures	*8*	*106*	*4*	*14*	*110*	*15*	*257*
Response Rate							
Response Rate (Completed surveys/eligible sample)	**3.9%**	**5.8%**	**17.4%**	**20.4%**	**29.2%**	**6.9%**	**8.9%**

Table 26. Response Rate by Program Type

	Electric		Gas		
	Custom	Prescriptive	Custom	Prescriptive	Total
Sample	**90**	**1,801**	**97**	**227**	**2,215**
Business/Residential line	0	0	0	0	0
Not a utility customer	0	0	0	0	0
Affiliated with utility	0	0	0	0	0
Eligible sample	**90**	**1,801**	**97**	**227**	**2,215**
Does not recall participating	8	149	2	41	200
Ineligible - referred to landlord	2	8	1	0	11
Ineligible - vendor/contractor	0	75	2	0	77
Refusal	15	95	5	17	132
Incompletes (partial surveys)	0	5	1	1	7
Language barrier	0	18	0	6	24
Bad Number	5	130	3	52	190
Attempted but not completed	49	1,179	53	95	1,376
Completed surveys	11	142	29	16	198
Response Rate					
Response Rate (Completed surveys/eligible sample)	12.2%	7.9%	29.9%	7.0%	8.9%

Table 27. Response Rate by Delivery Type

	Electric		Gas		Total		
	Downstream	Upstream	Downstream	Upstream	Downstream	Upstream	Total
Sample	**412**	**1,479**	**100**	**224**	**512**	**1,703**	**2,727**
Business/Residential line	0	0	0	0	0	0	0
Not a utility customer	0	0	0	0	0	0	0
Affiliated with utility	0	0	0	0	0	0	0
Eligible sample	**412**	**1,479**	**100**	**224**	**512**	**1,703**	**2,215**
Does not recall participating	42	115	2	41	44	156	200
Ineligible - referred to landlord	5	5	1	0	6	5	11
Ineligible - vendor/contractor	1	74	2	0	3	74	77
Refusal	44	66	5	17	49	83	132
Incompletes (partial surveys)	2	3	1	1	3	4	7
Language barrier	4	14	0	6	4	20	24
Bad Number	21	114	3	52	24	166	190
Attempted but not completed	210	1,018	56	92	266	1,110	1,376
Completed surveys	82	71	29	16	111	87	198
Response Rate							
Response Rate (Completed surveys/eligible sample)	19.9%	4.8%	29.0%	7.1%	21.7%	5.1%	8.9%

E.2 DETAILED SAVINGS COVERAGE

Table 28. Detailed Savings Coverage by Program – Electric

Program	Measure Category	Population of Measures	Population kWh Savings	Sampled Measures	Sampled kWh Savings	Percent of kWh Savings Sampled**	Completes	kWh from completes
Design 2000	Compressed Air	19	585,928	15	585,928	100%	3	41,493
	HVAC	3	20,636	1	20,636	100%	0	0
	HVAC - Distribution	2	15,983	2	15,983	100%	0	0
	HVAC - Plant	3	312,089	3	312,089	100%	1	10,004
	Lighting	2	63,727	2	63,727	100%	0	0
	(Upstream) HVAC****	178	2,267,561	108	2,267,561	100%	4	28,348
	(Upstream) Water Heating****	98	237,682	75	237,682	100%	0	0
	Total	**305**	**5,023,108**	**206**	**5,023,108**	**100%**	**8**	**79,844**
Energy Initiative	HVAC	63	3,304,538	25	3,304,538	100%	4	255,509
	HVAC - Distribution	23	1,262,047	14	1,262,047	100%	2	154,696
	HVAC - Plant	6	22,422	6	22,422	100%	0	0
	Lighting	2,175	25,879,605	100	11,926,085	46%	16	1,023,005
	(Upstream) Food Service****	377	784,394	100	281,145	36%	8	9,663
	(Upstream) Lighting – LED retrofit kits	547	2,525,722	100	784,386	31%	7	29,896
	(Upstream) Lighting – TLEDs	395	1,609,624	100	715,388	44%	13	95,861
	(Upstream) Lighting – fixture	4,214	12,391,443	100	596,316	5%	32	515,876
	(Upstream) Lighting – fixture with controls	613	6,064,597	100	1,468,425	24%	17	551,103
	(Upstream) Lighting – screw-ins	435	3,393,880	100	1,402,430	41%	7	36,180
	(Upstream) Other****	11	74,581	8	74,581	100%	0	0

Program	Measure Category	Population of Measures	Population kWh Savings	Sampled Measures	Sampled kWh Savings	Percent of kWh Savings Sampled**	Completes	kWh from completes
	Total	**8,859**	**57,312,853**	**753**	**11,270,979**	**20%**	**106**	**2,671,789**
Small Business	Custom	185	1,494,453	100	1,288,322	86%	22	256,354
	HVAC - Thermostat	30	20,583	28	20,583	100%	12	9,398
	Lighting	2,102	3,482,147	100	1,344,458	39%	59	914,950
	Water Heating	1	387	1	387	100%	1	387
	Total	**2,318**	**4,997,570**	**229**	**2,832,781**	**57%**	**94**	**1,181,089**
Total Electric		**11,482**	**65,814,028**	**1,188**	**17,613,667**	**27%**	**208**	**3,932,723**

* A record is a unique account number within the measure category.
** The top percentile "priority" sampling for measure categories without a census of measures should ensure the minimum sampled kWh savings is met.
*** Assumes a 20 percent response rate of sampled measures. We will strive for a higher response rate.
**** The majority of this strata does not have contact names, emails, or phone numbers. The number of assumed completes a 5 percent response rate.

Table 29. Detailed Savings Coverage by Program - Gas

Program	Measure Category	Population of Measures	Population Therms Savings	Sampled Measures	Sampled Therms Savings	Percent of Therms Savings Sampled**	Completes	Therms from completes
Large Commercial New Construction	Controls	3	6,390	1	6,390	100%	0	0
	HVAC	8	12,706	6	12,706	100%	2	2,451
	HVAC - Plant	1	514	1	514	100%	0	0
	Other	10	12,671	5	12,671	100%	0	0
	(Upstream) HVAC****	16	25,596	15	25,596	100%	2	5,130
	Total	**38**	**57,877**	**28**	**57,877**	**100%**	**4**	**7,581**
Large Commercial Retrofit	Controls	13	33,535	9	33,535	100%	2	10,443
	HVAC	5	29,565	4	29,565	100%	0	0

Program	Measure Category	Population of Measures	Population Therms Savings	Sampled Measures	Sampled Therms Savings	Percent of Therms Savings Sampled**	Completes	Therms from completes
	HVAC - Distribution	15	141,557	15	141,557	100%	6	52,991
	HVAC - Plant	1	16,423	1	16,423	100%	0	0
	HVAC - Thermostat	2	5,874	2	5,874	100%	0	0
	Insulation	1	554	1	554	100%	0	0
	Other	31	389,374	21	389,374	100%	3	94,525
	Water Heating	11	101,999	11	101,999	100%	3	26,677
	(Upstream) HVAC****	8	1,648	6	1,648	100%	0	0
	Total	**87**	**720,529**	**70**	**720,529**	**100%**	**14**	**184,636**
Small Business	Insulation	82	25,523	36	25,523	100%	14	6,609
	Other	6	4,058	6	4,058	100%	2	462
	Water Heating	1	47	1	47	100%	0	0
	Total	**89**	**29,628**	**43**	**29,628**	**100%**	**16**	**7,071**
Upstream Gas	(Upstream) Food Service ****	236	246,916	100	139,501	56%	9	11,033
	(Upstream) Other****	4	1,609	4	1,609	100%	1	512
	(Upstream) Water Heating****	192	156,276	100	121,144	78%	5	30,390
	Total	**432**	**404,801**	**204**	**266,385**	**66%**	**15**	**41,934**
Total Gas		**646**	**1,212,835**	**345**	**927,779**	**76%**	**49**	**241,222**

* A record is a unique account number within the measure category.
** The top percentile “priority” sampling for measure categories without a census of measures should ensure the minimum sampled therms savings are met.
*** Assumes a 20 percent response rate of sampled measures. We will strive for a higher response rate.
**** The majority of this strata does not have contact names, emails, or phone numbers. The number of assumed completes a 5 percent response rate.

APPENDIX F: 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 30. Vendor 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 vendor nonparticipant spillover savings = B * A/(1—A)

= 1,000 kWh *0.25/(1–0.25)

= 333 kWh

Vendor nonparticipant spillover savings = potential savings * C

= 333 * 0.5

= 167 kWh

APPENDIX G: SCORING FLOWCHARTS

Figure 2. Event Type Identification Algorithm

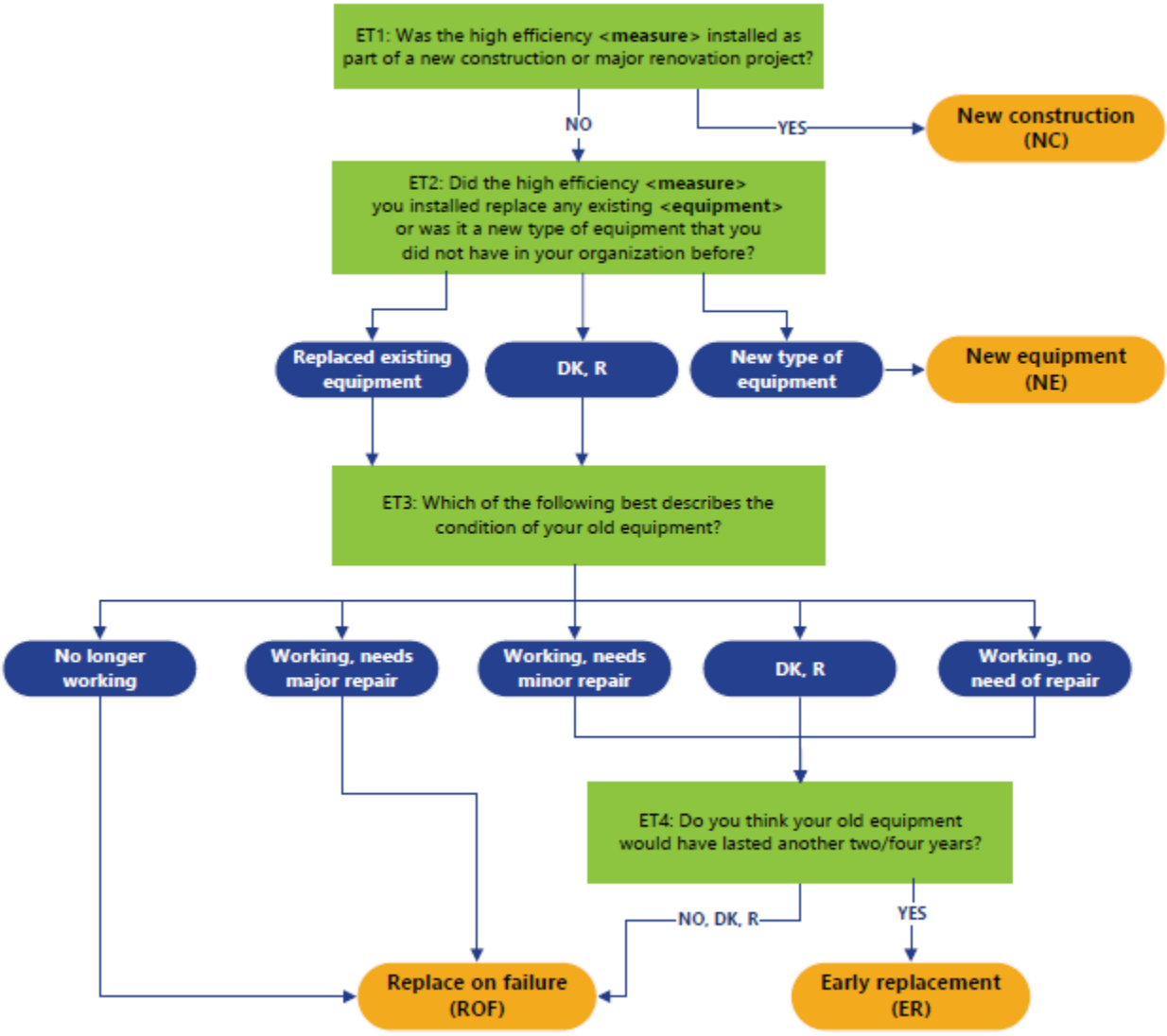

Figure 3. Customer Free-Ridership Scoring Algorithm

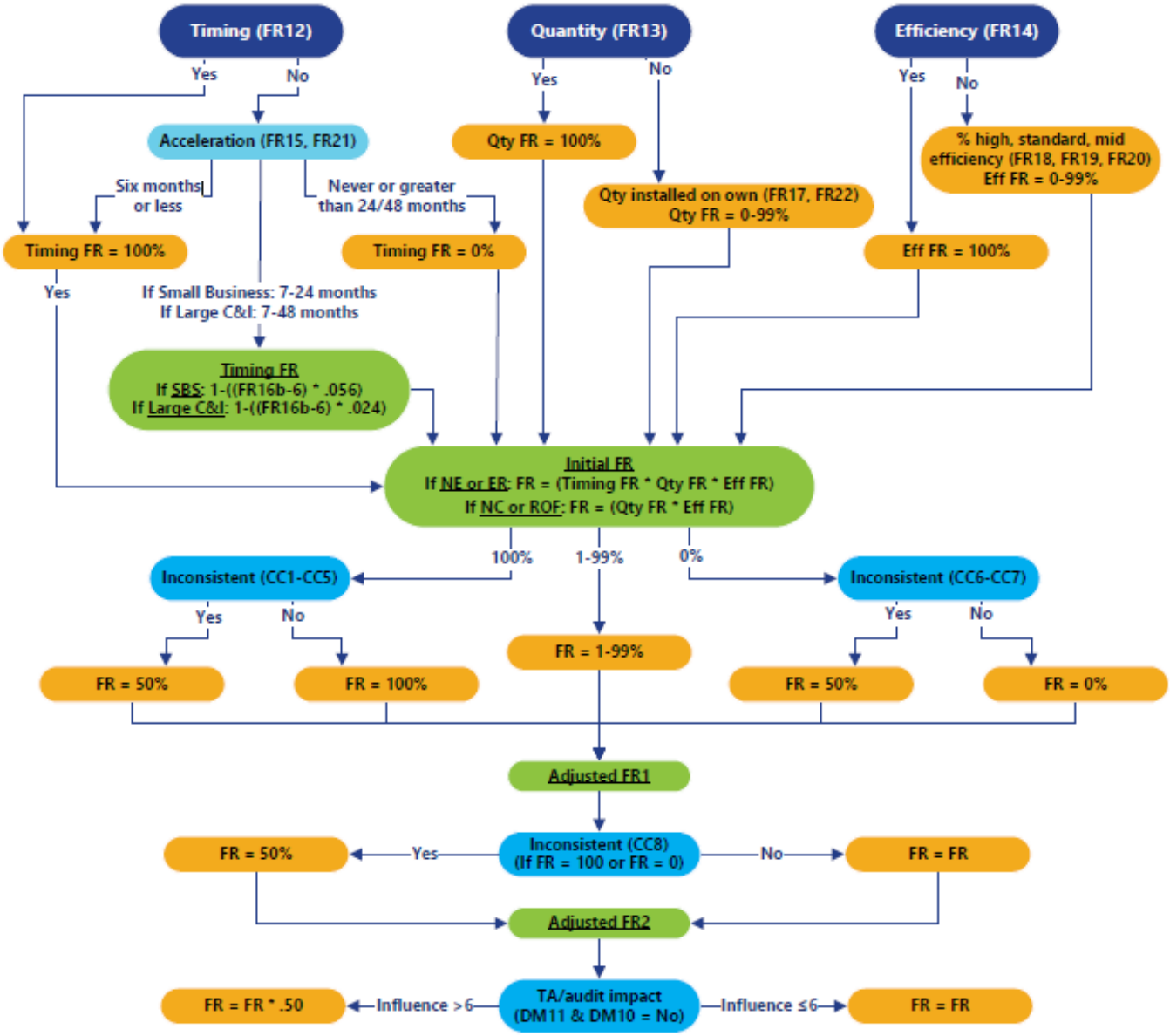

Figure 4. Customer Free-Ridership Consistency Checks

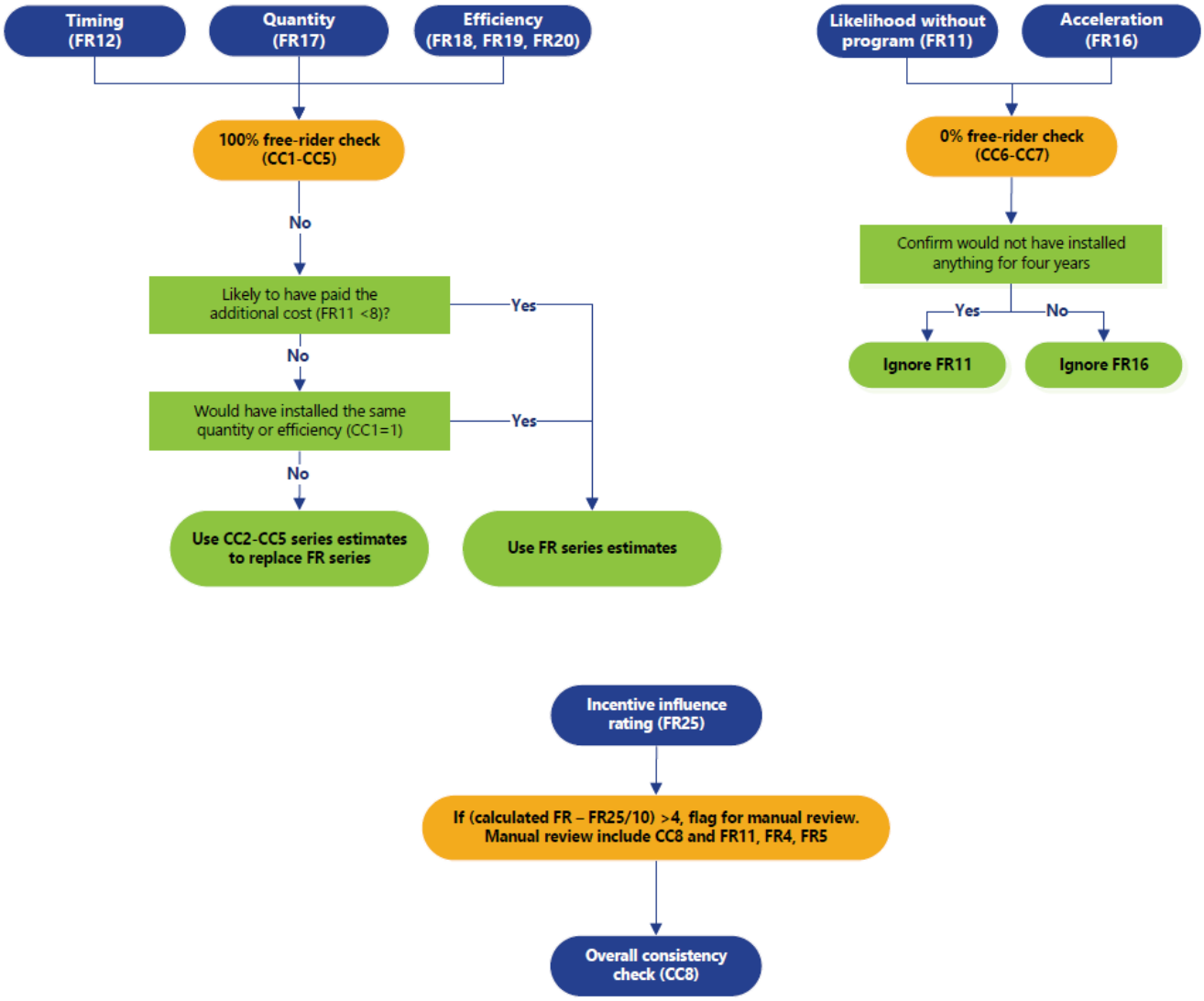

Figure 5. Vendor Trigger for Free-Ridership Survey

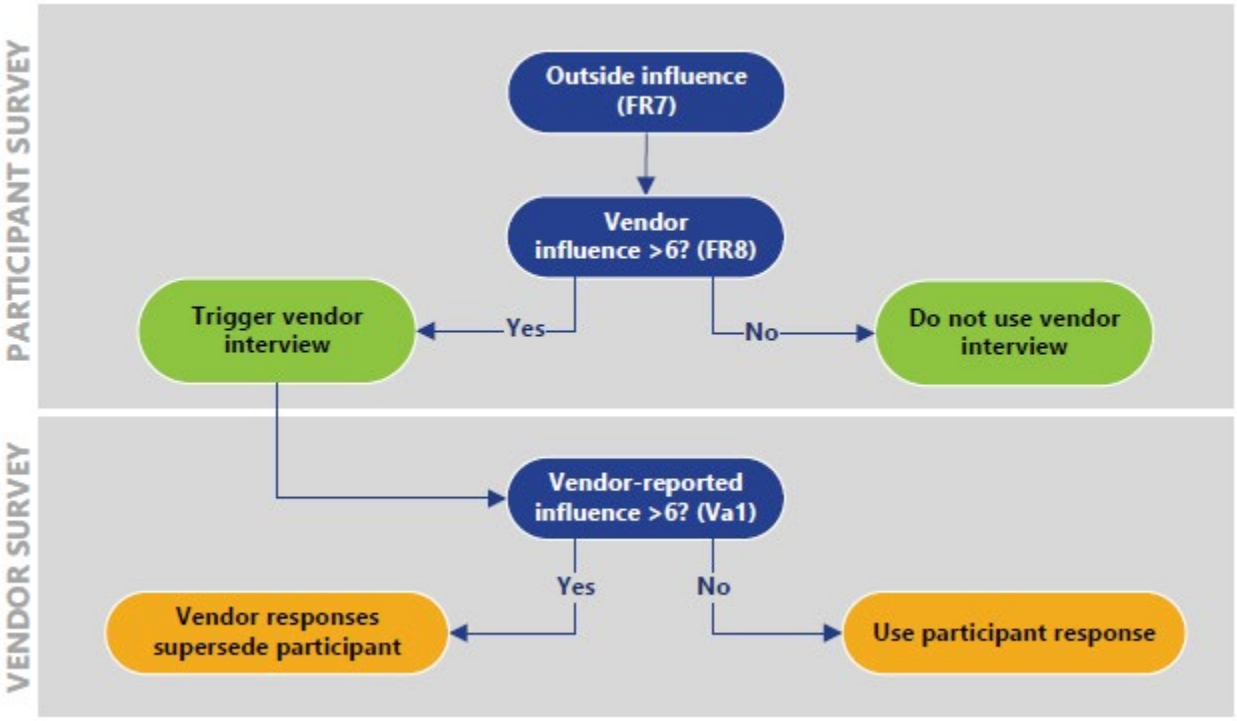

Figure 6. Distributor Free-Ridership Scoring Algorithm

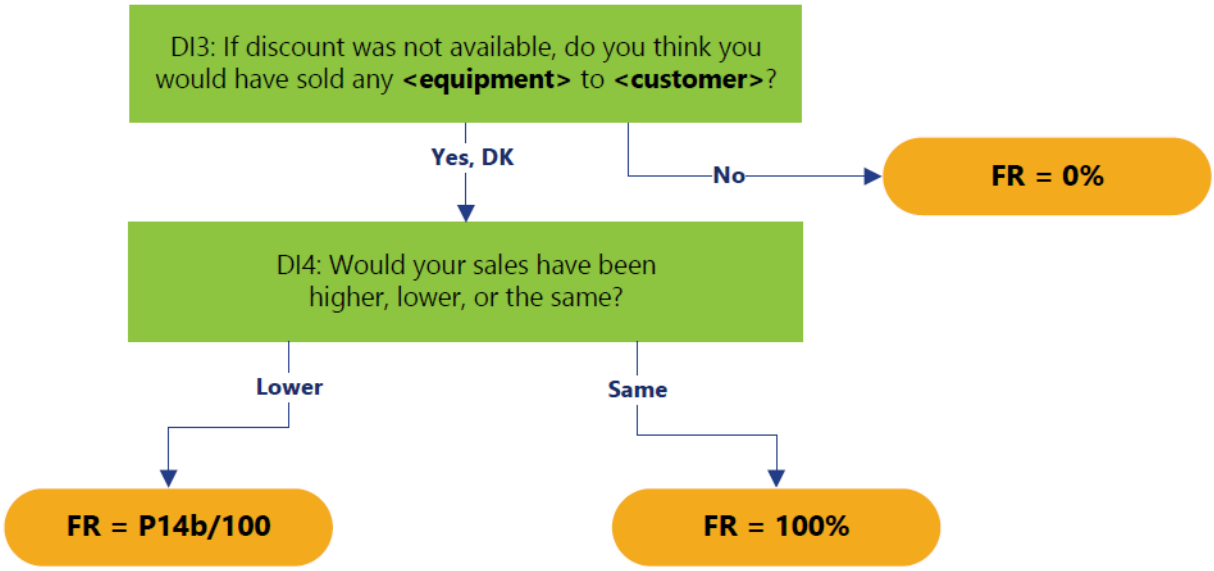

Figure 7. Participant Spillover Scoring

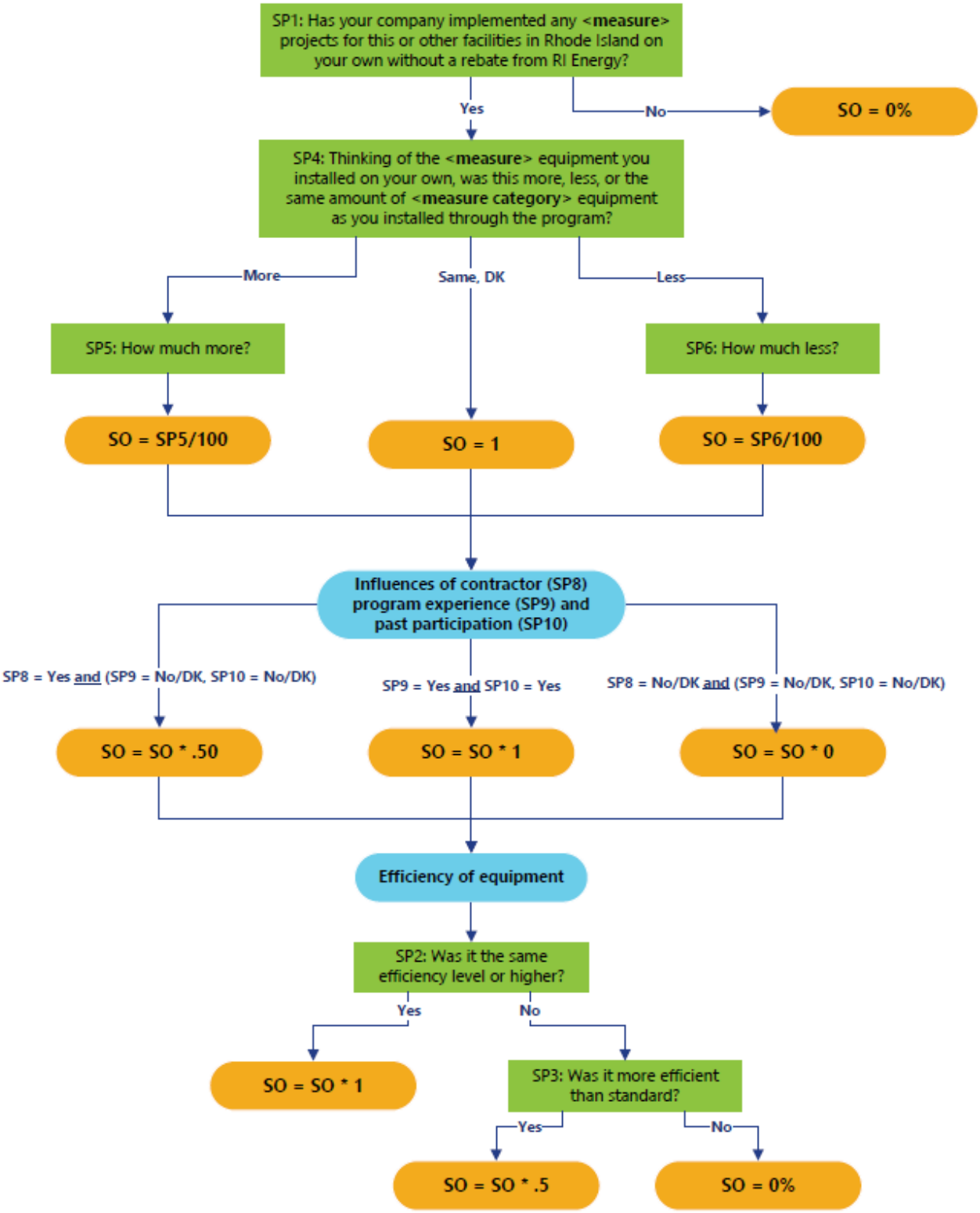

Figure 8. Vendor Nonparticipant Spillover Scoring