



MEMORANDUM

To: Nick Warnecke and Nic Crowder, AIC; Nida Khan, CAMI Energy; Seth Craigo-Snell, SCS Analytics; and Elizabeth Horne, ICC Staff

From: The Opinion Dynamics Evaluation Team

Date: September 25, 2024

Re: AIC 2023 Business Standard Initiative – Participant Free Ridership Research

INTRODUCTION AND KEY FINDINGS

As part of the 2023 evaluation of the Ameren Illinois Company (AIC) Standard Initiative, Opinion Dynamics conducted free-ridership (FR) research with participating end-use customers to inform the development of updated net-to-gross ratio (NTGR) recommendations for the Initiative for the 2025 program year. The FR calculations are based on the protocols prescribed in version 12.0 of the Illinois Technical Reference Manual (IL-TRM V12.0) Attachment A (Illinois Statewide Net-to-Gross Methodologies). Specifically, we used the IL-TRM’s Core Non-Residential Free-Ridership Protocol¹. This memo presents FR estimates for electric and gas savings resulting from that research effort. The evaluation team limited the scope of this research to only FR because we characterized the spillover (SO) rates associated with the Initiative through a previous research effort with participating trade allies.² The NTGRs presented throughout this memo reflect only the FR estimates developed through this research and do not include any SO estimates. The results of this research will be combined with the results from the trade ally spillover research to inform the NTGRs we recommend for application in 2025. Based on the results of this research, the evaluation team plans to recommend updates to the NTGRs applied for each of the Standard Initiative channels in 2025, with the exception of the Specialty Equipment (SE) and Green Nozzle (GN) channels. For both channels, we plan to maintain the same NTGR recommendations from prior years due to the minimal (or lack of) savings coverage achieved through this research for these channels. Notably, the FR results estimated for the SE channel through this research are relatively consistent with the FR rates reflected in the NTGR recommendation for the channel in previous years.

SUMMARY OF FREE RIDERSHIP RESULTS

The resulting channel-level FR scores and NTGRs for electric energy and gas savings for the Standard Initiative are summarized in Table 1.

¹ IL-TRM V12.0 Attachment A: Illinois Statewide Net-to-Gross Methodologies, Section 3.1.1: Core Non-Residential Free Ridership Protocol.

² <https://www.ilsag.info/wp-content/uploads/AIC-Standard-Initiative-Trade-Ally-Spillover-Memo-FINAL-2023-09-21.pdf>

Table 1. Standard Initiative Electric and Gas Savings FR Results by Channel

Channel	kWh		Therms	
	FR	NTGR	FR	NTGR
Standard Lighting for Business (SLB)	0.341	0.659	N/A	N/A
Heating, Ventilation, and Air Conditioning (HVAC)	0.216	0.784	0.240	0.760
Specialty Equipment (SE)	0.088	0.912	0.156	0.844
Variable Frequency Drives (VFD)	0.132	0.868	N/A	N/A
Steam Trap Repair/Replacement (STRR)	N/A	N/A	0.113	0.887

Note: The NTGRs presented in this table reflect only the FR estimates developed through this research and do not include any SO.

DATA COLLECTION AND SAMPLING METHODOLOGY

The evaluation team fielded a web survey with participating customers from May through June 2024. Of the 395 unique end-use customers who participated in the Standard Initiative between May 2022 and December 2023, 86 participants were associated with facilities eligible under the NTG Ratio for Disadvantaged Areas policy defined in section 7.4 of the Illinois Policy Manual³, and are therefore excluded from the population for the purposes of this research. Of the remaining 309 participants, 299 had savings associated with their project and a valid email address available. The evaluation team attempted a census sampling approach and reached out to all participating customers with a valid email address.

The Standard Initiative includes several channels, including Standard Lighting for Business; Heating, Ventilation, and Air Conditioning; Specialty Equipment; Variable Frequency Drives; Steam Trap Repair/Replacement; and Green Nozzles. The evaluation team attempted to estimate FR results for each of the channels through this research. Participants who completed multiple projects through the Initiative between May 2022 and December 2023 were surveyed about only one of their projects. The evaluation team combined results across respondents within the same channel to develop channel-level FR scores. In cases where respondents completed multiple projects through different channels, the evaluation team prioritized the rarer channel to account for small sample sizes.

Outreach started in early May 2024 and continued through June 2024. Participants received an initial survey invitation email and three follow-up emails. As presented in Table 2, we received 49 valid responses to the survey (i.e., participants passed screening and equipment verification questions and are not associated with facilities eligible for the NTG Ratio for Disadvantaged Areas policy), for a response rate of 16.4%.⁴ Of those 49 responses, 39 were associated with projects that produced electric savings, and 16 were associated with projects that produced gas savings. Respondents accounted for 8.6% of the total electric energy savings and 12.0% of the total gas savings of the population.

³ <https://www.icc.illinois.gov/docket/P2023-0761/documents/344226/files/601129.pdf>

⁴ We received 66 total responses to the survey, but 2 respondents did not pass the screening criteria to complete the survey and 15 were located in a qualifying disadvantaged area.

Table 2. Representation of Savings in the Sample and Survey Completes

Population			Sample			Completed Surveys		
n	Total kWh Savings	Total Therm Savings	n	% kWh Savings*	% Therm Savings*	n	% kWh Savings*	% Therm Savings*
309	21,195,097	1,505,041	299	99.9%	100.0%	49	8.6%	12.0%

*Percentage of energy savings associated with the one project captured in the sample and survey responses, relative to the total energy savings for the population.

Table 3 and Table 4 include details on the breakdown of responses and savings coverage for each channel.⁵ We did not receive any responses to the survey from Green Nozzle participants and, therefore, do not present results for this channel in the body of the memo. The SLB and VFD channels only produce electric savings, so they are excluded from Table 4. Additionally, all electric savings associated with the STRR channel are secondary savings, so that channel is excluded from the electric savings FR analysis and, therefore, excluded from Table 3.

Table 3. Responses and Savings Coverage by Channel (kWh)

Channel	Number of Completes	% of Participants Covered in Survey*	% of kWh Savings Covered in Survey*
Standard Lighting for Business (SLB)	22	13%	5%
Heating, Ventilation, and Air Conditioning (HVAC)	12	32%	49%
Specialty Equipment (SE)	1	6%	<1%
Variable Frequency Drives (VFD)	4	18%	15%
Green Nozzles (GN)	0	0%	0%

*Relative to the population.

Table 4. Responses and Savings Coverage by Channel (Therms)

Channel	Number of Completes	% of Participants Covered in Survey*	% of Therms Savings Covered in Survey*
Heating, Ventilation, and Air Conditioning (HVAC)	11	21%	14%
Specialty Equipment (SE)	1	8%	4%
Steam Trap Repair/Replacement (STRR)	4	27%	22%
Green Nozzles (GN)	0	0%	0%

*Relative to the population.

CORE NON-RESIDENTIAL FREE RIDERSHIP PROTOCOL

The evaluation team estimated FR using the methodology prescribed in the IL-TRM V12.0, Attachment A. In this methodology, FR is defined as the average of two FR sub-scores: the Program Influence (PI) FR Score and the Counterfactual (CF) FR Score, which can be further modified by applying a quantity and timing adjustment if applicable. These two FR sub-scores are calculated based on responses to an overall program influence question and a

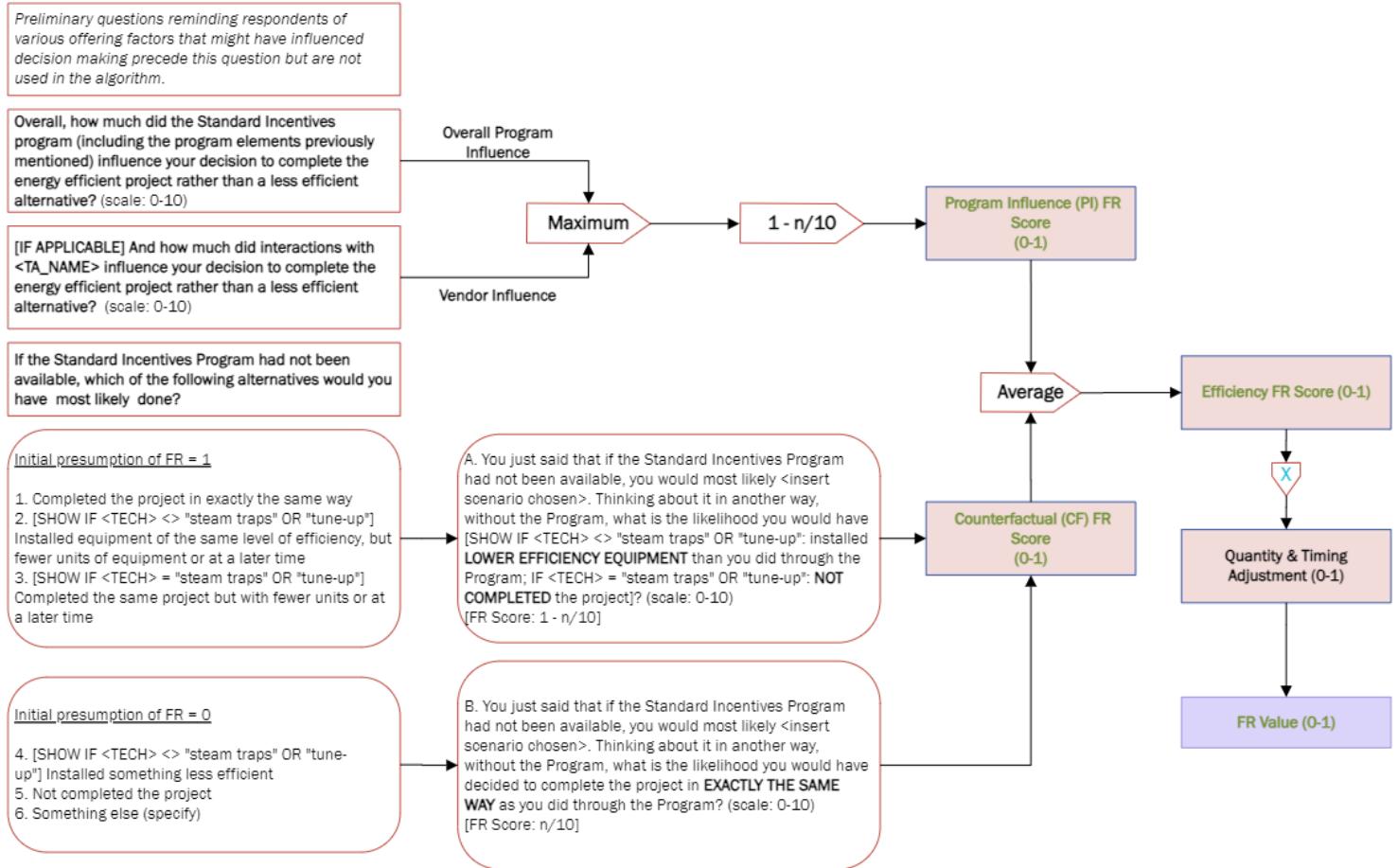
⁵ Seven SLB respondents were eligible for the NTG Ratio for Disadvantaged Areas policy and were, therefore, dropped from the analysis; five HVAC respondents, two SE respondents, and one STRR respondent were also dropped. The number of completes reflected in Table 3 and Table 4 reflect the exclusion of these respondents.

percentage-based counterfactual question, respectively. When vendor recommendations are considered a program factor, the respondent is asked to rate the influence of their interactions with the vendor on their decision to complete the high efficiency project, in addition to the overall program influence question. In these cases, the evaluation team used the maximum influence score across the vendor influence and the overall program influence questions (or equivalently, the minimum FR scores from those questions) to calculate the Efficiency FR Score, in accordance with IL-TRM guidance. These questions gauged the relative influence of the Initiative, the influence of the vendor recommendations when applicable, and the likelihood of comparable outcomes in the absence of the initiative. Additional details on the three sub-scores, how they are calculated, and any applicable adjustments are provided in Appendix A.

The participant FR algorithm is graphically depicted in Figure 1 below. For the estimation of participant FR, the evaluation team asked participants FR-related questions about a single project they completed. Per the algorithm, the evaluation team calculated an Efficiency FR score by averaging the PI FR Score—which could come from the overall program influence question or the vendor influence question, if applicable—and the CF FR Score. We then multiplied this Efficiency FR Score by a Quantity and Timing (Q&T) Adjustment value, which we calculated based on participant responses to questions related to the quantity and timing of measures installed in the absence of the initiative, to produce the final FR value on a scale of 0 to 1, where 0 means the participant is a non-free rider and 1 means the participant is a full free rider.⁶

⁶ Additional detail on the Q&T Adjustment value, and how it is calculated is provided in Appendix A.

Figure 1. Participant Free Ridership Algorithm



The evaluation team calculated the channel-level FR scores as the average of participants' individual FR scores for that particular channel, weighed by the energy savings associated with the applicable project.

FREE-RIDERSHIP RESULTS BY CHANNEL

The resulting channel-level FR scores and NTGRs for electric energy and gas savings for the Standard Initiative are summarized in Table 5 and

Table 6, respectively.

Table 5. Standard Initiative Electric Savings FR Results by Channel

Channel	Number of Completes	% of Participants Covered in Survey*	% of kWh Savings Covered in Survey*	kWh	
				FR	NTGR
Standard Lighting for Business (SLB)	22	13%	5%	0.341	0.659
Heating, Ventilation, and Air Conditioning (HVAC)	12	32%	49%	0.216	0.784
Specialty Equipment (SE)	1	6%	<1%	0.088	0.912
Variable Frequency Drives (VFD)	4	18%	15%	0.132	0.868
Green Nozzles (GN)	0	0%	0%	-	-

*Relative to the population.

Note: The NTGRs presented in this table reflect only the FR estimates developed through this research and do not include any SO.

Table 6. Standard Initiative Gas Savings FR Results by Channel

Channel	Number of Completes	% of Participants Covered in Survey*	% of Therms Savings Covered in Survey*	Therms	
				FR	NTGR
Heating, Ventilation, and Air Conditioning (HVAC)	11	21%	14%	0.240	0.760
Specialty Equipment (SE)	1	8%	4%	0.156	0.844
Steam Trap Repair/Replacement (STRR)	4	27%	22%	0.113	0.887
Green Nozzles (GN)	0	0%	0%	-	-

*Relative to the population.

Note: The NTGRs presented in this table reflect only the FR estimates developed through this research and do not include any SO.

Across channels with associated electric savings, Standard Lighting for Business had the highest number of responses with 22 participants, accounting for 5% of channel electric energy savings. Heating, Ventilation, and Air Conditioning followed with 12 respondents, covering 49% of channel electric energy savings. Across channels with associated gas savings, Heating, Ventilation, and Air Conditioning had the highest number of responses with 11 participants, accounting for 14% of channel gas savings relative to the population. Specialty Equipment was the channel with the lowest number of responses across both analyses: one respondent accounting for 0.3% of channel electric energy savings and 4% of channel gas savings relative to the population. There were no responses from participants in the Green Nozzles channel.

APPENDIX A. PARTICIPANT FREE RIDERSHIP DETAILED ANALYSES

FREE RIDERSHIP SUB-SCORES

The following section details how the web survey captured participant FR sub-scores (including extracts from the survey instrument) and any adjustments made to sub-scores due to inconsistencies in responses.

PROGRAM INFLUENCE FR SCORE

The first section of the survey reminded respondents of the measures/equipment included in the energy-efficiency project they completed through the Standard Initiative at a given facility. Next, respondents were prompted to think about the reasons why their business decided to complete the energy-efficient project, whether they consulted with a contractor or vendor regarding the selection of the equipment, and who the most influential actor was in identifying and recommending this energy-efficient project. Participants were also asked some additional questions regarding the circumstances surrounding their participation in the Standard Initiative: whether they were aware of the Initiative when finalizing the details of the project, whether they learned about the Initiative before or after finalizing the details of the project, and whether they had received incentives from an Ameren Illinois program prior to completing the project in question. These questions were meant to remind participants of the context around their project prior to answering the FR-related questions, as well as to provide the evaluation team with more information about the factors that went into the participants' decision-making process.

Q1. The next few questions focus on the <TECH> project you completed through the Standard Incentives Program at <ADDRESS>. Based on our records, the <TECH> project included:

- <MEAS_A>
- <MEAS_B>
- <MEAS_C>
- <MEAS_D>
- <MEAS_E>

[SHOW IF MEAS_COUNT>5] ...as well as other <TECH> equipment.

Your company might have installed other equipment through the program, but our questions will focus on the <TECH> project described above.

SELECTION OF THE EQUIPMENT

[SHOW IF <TECH> <> “steam traps” OR “tune-up”] Please think about the efficiency level of your <TECH> project and what motivated you to select this equipment rather than a less energy efficient alternative.

[SHOW IF <TECH> = “steam traps” OR “tune-up”] Please think about what motivated you to complete your <TECH> project.

Q2. Please briefly describe why your company [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “selected this energy efficient equipment for your facility.”; IF <TECH> = “steam traps” OR “tune-up”: “completed the <TECH> project at your facility.”] [OPEN END]

Q3. Did you consult with [DISPLAY IF TA=0: “a contractor or vendor”; IF TA=1: “<TA_NAME>”] regarding [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “the selection of this equipment?”; IF <TECH> = “steam traps” OR “tune-up”: “the implementation of this project?”]

1. Yes
2. No
98. Unsure

Q4. Who was most influential in identifying and recommending [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “this equipment”; IF <TECH> = “steam traps” OR “tune-up”: “the <TECH> project”] for which you received the Ameren Illinois incentive?

1. Me
2. Someone else at my company
3. [SHOW IF Q3=1] [DISPLAY IF TA=0: “My contractor or vendor”; IF TA=1: “<TA_NAME>”]
4. Ameren Illinois representative
5. Other, specify: [OPEN END]
98. Unsure

[ASK IF <TECH> = “steam traps”]

Q7. Does <COMPANY> regularly repair or replace steam traps as part of its routine maintenance activities?

1. Yes
2. No
98. Unsure

[ASK IF <TECH> = “steam traps”]

Q8. Were you aware of the issues with your steam trap system prior to participating in the Standard Incentives Program?

1. Yes
2. No
98. Unsure

Q5. Did you learn about the Standard Incentives Program **before** or **after** [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “finalizing the details of your <TECH> project, including the efficiency level and number of units installed?”; IF <TECH> = “steam traps” OR “tune-up”: “you decided to carry out the <TECH> project?”]

1. Before
2. After
98. Unsure

- Q6. Had <COMPANY> received incentives from an Ameren Illinois program for any energy efficient projects before the one you completed in <INSTALLDATE>?
1. Yes
 2. No
 98. Unsure

Next, participants were asked to review a list of elements of the Standard Initiative that may or may not have influenced their decision to complete the energy-efficient project. This list identified key elements of the Initiative designed to influence participants directly. This list was used to prime participants to think about the various elements of their participation that may have influenced their decision to complete the high-efficiency project and prepared them for the mention of such influence in subsequent questions.

The next few questions ask about the role the Standard Incentives Program played in your decision to complete the energy efficient <TECH> project. When thinking about the Standard Incentives Programs, please consider all of the following program elements:

1. The program incentive,
2. [SHOW IF <TA> = 1 & Q3 = 1] Interactions with <TA_NAME>, a vendor or contractor associated with the Standard Incentives Program,
3. Interactions with an Ameren Illinois representative,
4. [SHOW IF Q7= 2, 98 OR Q8= 2, 98] The steam traps survey conducted through the Standard Incentives Program,
5. [SHOW IF Q6=1] Previous experience with an Ameren Illinois program,
6. Information from the Standard Incentives Program materials and application.

The PI FR Score was assessed by asking respondents about the influence of all the applicable initiative elements on their decision to complete the energy-efficient project.

[DISPLAY THE LIST OF PROGRAM ELEMENTS ABOVE AND FR1 ON THE SAME SCREEN]

FR1. Overall, how much did the Standard Incentives Program (including the program elements previously mentioned) influence your decision to complete the energy efficient <TECH> project [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “rather than a less efficient alternative”]?

VENDOR INFLUENCE

In accordance with the IL-TRM, the evaluation team determined that the Standard Initiative has a qualifying trade ally network which includes pre-approved, registered trade allies, who are an integral component of program delivery, and who receive program-sponsored training. As such, vendor recommendations are considered a program factor in the cases where the participant interacted with a registered trade ally for the project in question.

When the participant interacted with a contractor or vendor associated with the Standard Initiative, the respondent was asked how much the interaction with that specific contractor or vendor influenced their decision to complete the energy-efficient project.

[ASK IF TA=1]

FR2. And how much did interactions with <TA_NAME> influence your decision to complete the energy efficient <TECH> project [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “rather than a less efficient alternative”]?

The Program Influence FR Score was then computed for each participant as: PI FR Score = 1 - (FR1/10). The Vendor Influence FR Score, when applicable, was then computed for each participant as: VI FR Score = 1 - (FR2/10). As outlined in the IL-TRM, when vendor recommendations are considered a program factor, the maximum influence score across the two questions—FR1 and FR2—or, equivalently, the minimum FR score between the PI FR Score and the VI FR Score should be used to calculate the Efficiency FR Score.

COUNTERFACTUAL FR SCORE

The CF FR Score was assessed by asking participants to consider how their decision to install high-efficiency equipment/complete their project would have differed if the Initiative was not available. The survey asked participants to consider what alternative actions they would have taken if the Initiative had not been available.

- CF1. If the Standard Incentives Program had not been available, which of the following alternatives would you have most likely done?
1. I would have completed the <TECH> project in exactly the same way
 2. [SHOW IF <TECH> <>"steam traps" OR "tune-up"] I would have installed equipment of the same level of efficiency, but fewer units of equipment or at a later time
 3. [SHOW IF <TECH> ="steam traps" OR "tune-up"] I would have completed the same <TECH> project, but with fewer units or at a later time
 4. [SHOW IF <TECH> <>"steam traps" OR "tune-up"] I would have installed something less efficient (e.g., standard efficiency equipment or whatever was required by code)
 5. I would not have completed the <TECH> project (i.e. kept existing equipment as is)
 6. I would have done something else: [OPEN END]

Depending on respondents' answers to CF1, the survey prompted respondents to clarify the likelihood of two different actions in the absence of the initiative:

- If the survey respondent answered that they would have done exactly the same thing as they did through the Initiative, that they would have installed equipment of the same level of efficiency but fewer units or at a later time, or in the case of those who did HVAC tune-ups or steam traps repair/replacement, that they would have completed the same project but with fewer units or at a later time, the survey prompted the respondent to indicate the likelihood they would have installed lower efficiency equipment or not completed the project in the absence of the initiative;
- If the survey respondent answered that they would have installed lower efficiency equipment, not completed the project (i.e., kept existing equipment as is), or done something else, the survey prompted respondents to indicate the likelihood they would have decided to complete the project in exactly the same way as they did through the Initiative.

[ASK IF CF1=1,2,3]

CF2. You just said that if the Standard Incentives Program had not been available, you would most likely <CF1_RESP>. Thinking about it in another way, without the program, what is the likelihood you would have [DISPLAY IF <TECH> <> "steam traps" OR "tune-up": installed LOWER EFFICIENCY EQUIPMENT than you did through the program?"; IF <TECH> = "steam traps" OR "tune-up": "NOT COMPLETED the <TECH> project?"]

[ASK IF CF1=4,5,6]

CF3. You just said that if the Standard Incentives Program had not been available, you would most likely <CF1_RESP>. Thinking about it in another way, without the program, what is the likelihood you would have decided to complete the <TECH> project in EXACTLY THE SAME WAY as you did through the program?

The Counterfactual FR Score was then computed for each participant as:

If CF1 = 1 OR 2 OR 3; CF SCORE = 1 - (CF2/10);

If CF1 = 4 OR 5 OR 6; CF SCORE = CF3/10.

CONSISTENCY CHECKS

Respondents were asked to answer consistency check questions if their PI FR Score or VI FR Score contradicted with their CF FR Score. In alignment with the IL-TRM, this contradiction was defined as: (1) a PI FR Score or VI FR Score greater than 0.6 (suggesting high FR) and CF FR Score less than 0.4 (suggesting low FR), or (2) a PI FR Score or VI FR Score less than 0.4 (suggesting low FR) and CF FR Score greater than 0.6 (suggesting high FR)⁷.

Respondents were also asked a timing consistency check question if they reported finalizing the details of their project before learning about the Initiative, and then provided free-ridership scores (PI FR Score, VI FR score, or CF FR score) that contradicted this statement. This contradiction was defined as: (1) the respondent learning about the Initiative after finalizing the details of the project and a PI FR Score less than 0.4, (2) the respondent learning about the Initiative after finalizing the details of the project and a VI FR Score less than 0.4 (only asked in cases where the VI FR Score was lower than the PI FR Score, and therefore, would be later used in the efficiency score calculations), or (3) the respondent learning about the Initiative after finalizing the details of the project and a CF FR Score less than 0.4.

PROGRAM INFLUENCE CONSISTENCY CHECK

If the PI consistency check was triggered, respondents were asked one of two questions, depending on the direction of the inconsistency, to gather more context on the influence of the Initiative on the participant's decision to install high-efficiency equipment/complete the project:

[ASK IF PI_SCORE<0.4 AND CF_SCORE>0.6]

CC1. When asked how influential the Standard Incentives Program was on your decision to complete the <TECH> project, you provided a response of <FR1 RESPONSE>, suggesting that the program **was highly influential**. However, your responses to the questions regarding what would have happened if the program had not been available, suggest that you would have [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “installed equipment of the same level of efficiency”; IF <TECH> = “steam traps” OR “tune-up”: “completed the <TECH> project in exactly the same way”] as you did through the program.

In your own words, can you describe how the program did or did not influence your decision to complete the energy efficiency <TECH> project? [OPEN-ENDED RESPONSE]

[ASK IF PI_SCORE>0.6 AND CF_SCORE<0.4]

CC2. When asked how influential the Standard Incentives Program was on your decision to complete the <TECH> project, you provided a response of <FR2 RESPONSE>, suggesting that the program **was not influential**. However, your responses to the questions regarding what would have happened if the program had not been available, suggest that you would [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “have installed equipment with lower efficiency.”; IF <TECH> = “steam traps” OR “tune-up”: “not have completed the <TECH> project.”].

In your own words, can you describe how the program did or did not influence your decision to complete the energy efficiency <TECH> project? [OPEN-ENDED RESPONSE]

To add additional clarification, respondents were asked a straightforward, binary question about whether the Initiative did or did not positively influence the participant's decision to install high-efficiency equipment/complete the project.

[ASK IF (PI_SCORE<0.4 AND CF_SCORE>0.6) OR (PI_SCORE>0.6 AND CF_SCORE<0.4)]

CC3. Overall, did the Ameren Illinois Standard Incentives Program positively influence [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “the level of efficiency of the equipment you installed?”; IF <TECH> = “steam traps” OR “tune-up”: “your decision to complete the <TECH> project?”]

1. Yes
2. No

⁷ The IL-TRM suggests the use of 0.3 and 0.7 as the threshold to trigger consistency check questions. However, the evaluation team implemented a wider range to trigger these questions (0.4 and 0.6) to allow for additional context from respondents whose scores were right on the initial limits. Obtaining this additional information from respondents open ends, would allow us to adjust their scores accordingly, so they more accurately represent what they describe in their consistency check responses.

The evaluation team used the responses to the PI consistency check questions to contextualize participants' responses and determine if either the PI FR Score or CF FR Score needed to be modified or dropped.

VENDOR INFLUENCE CONSISTENCY CHECK

If the VI consistency check was triggered, respondents were asked one of two questions, depending on the direction of the inconsistency, to gather more context on the influence of the vendor on the participant's decision to install high-efficiency equipment/complete the project:

[ASK IF PI_TA_SCORE<0.4 AND CF_SCORE>0.6 AND FR2 > FR1]

CC4. When asked how influential your interactions with <TA_NAME>, a vendor or contractor associated with the Standard Incentives Program, were on your decision to complete the <TECH> project, you provided a response of <FR2 RESPONSE>, suggesting that your interactions with <TA_NAME> **were highly influential**. However, your responses to the questions regarding what would have happened if the program (including your interactions with <TA_NAME>) had not been available, suggest that you would have [DISPLAY IF <TECH> <> **"steam traps" OR "tune-up": "installed equipment of the same level of efficiency"; IF <TECH> = "steam traps" OR "tune-up": "completed the <TECH> project in exactly the same way"] as you did through the program.**

In your own words, can you describe how your interactions with <TA_NAME> did or did not influence your decision to complete the energy efficiency <TECH> project? [OPEN-ENDED RESPONSE]

[ASK IF PI_TA_SCORE>0.6 AND CF_SCORE<0.4 AND FR2 > FR1]

CC5. When asked how influential your interactions with <TA_NAME>, a vendor or contractor associated with the Standard Incentives Program, were on your decision to complete the energy efficiency <TECH> project, you provided a response of <FR2 RESPONSE>, suggesting that your interactions with <TA_NAME> **were not influential**. However, your responses to the questions regarding what would have happened if the program (including your interactions with <TA_NAME>) had not been available, suggest that you would [DISPLAY IF <TECH> <> **"steam traps" OR "tune-up": "have installed equipment with lower efficiency."; IF <TECH> = "steam traps" OR "tune-up": "not have completed the <TECH> project."].**

In your own words, can you describe how your interactions with <TA_NAME> did or did not influence your decision to complete the energy efficiency <TECH> project? [OPEN-ENDED RESPONSE]

To add additional clarification, respondents were asked a straightforward, binary question as to whether the vendor did or did not positively influence the participant's decision to install high-efficiency equipment/complete the project.

[ASK IF (PI_TA_SCORE<0.4 AND CF_SCORE>0.6 & FR2 > FR1) OR (PI_TA_SCORE>0.6 AND CF_SCORE<0.4 & FR2 > FR1)]

CC6. Overall, did your interactions with <TA_NAME>, a vendor or contractor associated with the Standard Incentives Program, positively influence [DISPLAY IF <TECH> <> **"steam traps" OR "tune-up": "the level of efficiency of the equipment you installed?"; IF <TECH> = "steam traps" OR "tune-up": "your decision to complete the <TECH> project?"]**

1. Yes
2. No

The evaluation team used the responses to the VI consistency check questions to contextualize participants' responses and determine if either the VI FR Score or CF FR Score needed to be modified or dropped.

Of the 49 respondents, 15 participants triggered the PI consistency check questions, and 2 participants triggered the VI consistency check questions. The evaluation team weighted the PI FR Score and CF FR score, and/or the VI FR Score and CF FR Score, based on respondents' answers to CC1, CC2, and CC3 or CC4, CC5, and CC6. After weighing these respondents' scores accordingly, the evaluation team determined which combination of weighted scores—the weighted PI FR Score and its corresponding weighted CF FR Score, or the weighted VI FR Score and its corresponding weighted CF FR Score—would result in the lower Efficiency FR Score. Only calculating the minimum between the PI FR Score and the VI FR Score, now that these scores were weighted relative to their corresponding CF FR Score, would not always result in the most accurate reflection of program influence. The evaluation team used that combination of weighted scores and calculated the Efficiency FR Score as the sum of (1) the weighted PI FR Score or weighted VI FR Score and (2) the corresponding weighted CF FR Score.

TIMING CONSISTENCY CHECK

If the timing consistency check was triggered, respondents were asked one of two questions to gather more context on the timing of their learning about the Initiative and finalizing the details of their project, and the influence of the program or of the vendor on the participant's decision to install high-efficiency equipment/complete the project:

[ASK IF (PI_SCORE<= PI_TA_SCORE OR TA=0) AND Q5= 2 AND (PI_SCORE <0.4 OR CF_SCORE <0.4)]

CC7. [DISPLAY IF PI_SCORE <0.4] When asked how influential the Standard Incentives Program was on your decision to complete the energy efficiency <TECH> project, you provided a response of <FR1 RESPONSE>, suggesting that the program **was highly influential**. However, your responses to the questions regarding when you learned about the program indicate **project specifications were finalized before you learned about the program**.

[DISPLAY IF CF_SCORE<0.4] When asked what would have happened if the program had not been available you indicated that you would [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “have installed equipment with lower efficiency”; “IF <TECH> = “steam traps” OR “tune-up”: “not have completed the <TECH> project”], suggesting that the program **was highly influential**. However, your responses to the questions regarding when you learned about the program indicate **project specifications were finalized before you learned about the program**.

In your own words, can you describe how the program did or did not influence your decision to complete the energy efficiency <TECH> project? [OPEN-ENDED RESPONSE]

[ASK IF PI_SCORE> PI_TA_SCORE AND Q5= 2 AND (PI_TA_SCORE <0.4 OR CF_SCORE <0.4)]

CC8. [DISPLAY IF PI_TA_SCORE <0.4] When asked how influential your interactions with <TA_NAME>, a vendor or contractor associated with the Standard Incentives Program, was on your decision to complete the energy efficiency <TECH> project, you provided a response of <FR2 RESPONSE>, suggesting that the program (including your interactions with <TA_NAME>) **was highly influential**. However, your responses to the questions regarding when you learned about the program indicate **project specifications were finalized before you learned about the program**.

[DISPLAY IF CF_SCORE<0.4] When asked what would have happened if the program (including your interactions with <TA_NAME>) had not been available you indicated that you would [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “have installed equipment with lower efficiency”; “IF <TECH> = “steam traps” OR “tune-up”: “not have completed the <TECH> project”], suggesting that the program (including your interactions with <TA_NAME>) **was highly influential**. However, your responses to the questions regarding when you learned about the program indicate **project specifications were finalized before you learned about the program**.

In your own words, can you describe how your interactions with <TA_NAME> did or did not influence your decision to complete the energy efficiency <TECH> project? [OPEN-ENDED RESPONSE]

The evaluation team used the responses to the timing consistency check questions to contextualize participants' responses, determine whether they had finalized project details prior to learning about the Initiative, and decide if either the PI FR Score, VI FR Score, or CF FR Score needed to be modified or dropped.

Of the 49 respondents, 1 participant triggered the timing consistency check questions. Based on their answers, the evaluation team concluded that the respondent had not finalized all details of their project before learning about the Initiative; therefore, their previous FR scores remained unchanged.

QUANTITY AND TIMING ADJUSTMENT

In the Quantity and Timing (Q&T) section of the survey, participants whose total number of units installed/upgraded across all measures included in their energy-efficient project exceeded one, were asked to consider if they would have installed, repaired/replaced, or tuned up the same quantity or fewer units at the same time that they did (i.e. on the same date they participated in the Initiative) in the absence of the Initiative. If participants said they would have installed, repaired/replaced, or tuned up fewer units, they were asked what percentage of high-efficiency equipment they would have installed, repaired/replaced, or tuned up at the same time that they did (i.e., on the same date they participated in the Initiative). Then, participants were asked if they would have installed, repaired/replaced, or tuned up

the remaining percentage of high-efficiency equipment at a later time, and if so, what date range was appropriate for when they would have installed, replaced/repared, or tuned up that remaining percentage of units.

Participants who installed, repaired/replaced, or tuned up one unit were asked if they would have completed the project at the same time or at a later date in the absence of the Initiative. If they said they would have completed the project at a later time, they were asked the estimated date range in which they would have completed the project in the absence of the Initiative.

[ASK IF TOT_QUANTITY>1]

- QT1. If the Standard Incentives Program had not been available, would you have [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “installed”; IF <TECH> = “steam traps”: “repaired/replaced”; IF <TECH> = “tune-up”: “tuned up”] the same quantity of units in <INSTALLDATE> (i.e., on the same date), or would you have [DISPLAY IF <TECH> <> “steam traps”: “installed”; IF <TECH> = “steam traps”: “repaired/replaced”; IF <TECH> = “tune-up”: “tuned up”] less?
1. Same quantity [SKIP TO SAT1]
 2. Less
 98. Don't know [SKIP TO SAT1]

[ASK IF QT1=2]

- QT2. Thinking about the total number of incentivized equipment included in your <TECH> project in <INSTALLDATE>, what percentage of those units would you have [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “installed”; IF <TECH> = “steam traps”: “repaired/replaced”; IF <TECH> = “tune-up”: “tuned up”] at the same time that you did (i.e., on the same date) without the Standard Incentives Program? [0-100 NUMERIC RESPONSE]

[ASK IF QT2<100]

- QT3. If the Standard Incentives Program had not been available, would you have [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”: “installed the remaining <100-QT2 RESPONSE>% of the high efficiency equipment at a later time”; IF <TECH> = “steam traps”: “completed the remaining <100-QT2 RESPONSE>% of the steam trap replacement/repairs at a later time”; IF <TECH> = “tune-up”: “tuned up the remaining <100-QT2 RESPONSE>% of the units at a later time”]?
1. Yes
 2. No
 98. Don't know

[ASK IF TOT_QUANTITY = 1]

- QT4. If the Standard Incentives Program had not been available, would you have completed the <TECH> project at the same time or at a later time?
1. Same time
 2. Later
 98. Don't know

[ASK IF QT3=1 OR QT4=2]

- QT5. [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”] Which date range represents your best estimate of when you would have installed [DISPLAY IF QT3=1: “the remaining <100- QT2 RESPONSE>% of”] the high efficiency equipment if the Standard Incentives Program had not been available? *Please answer relative to the date that you **actually** installed the equipment.*

[DISPLAY IF <TECH> = “steam traps”] Which date range represents your best estimate of when you would have [DISPLAY IF QT3=1: “completed the remaining <100-QT2 RESPONSE>% of the steam trap replacement/repairs”; IF QT4=2: “completed the <TECH> project”] if the Standard Incentives Program had not been available? *Please answer relative to the date that you **actually** completed the project.*

[DISPLAY IF <TECH> = “tune-up”] Which date range represents your best estimate of when you would have [DISPLAY IF QT3=1: “tuned up the remaining <100-QT2 RESPONSE>% of the equipment”; IF QT4=2: “completed the <TECH> project”] if the Standard Incentives Program had not been available? *Please answer relative to the date that you **actually** completed the project.*

1. Within 6 months
2. Between 6 months–1 year
3. Between 1–2 years
4. Between 2–3 years
5. Over 3 years
6. I would not have [DISPLAY IF <TECH> <> “steam traps” OR “tune-up”]: “installed the high efficiency equipment”; [DISPLAY IF <TECH> = “steam traps” OR “tune-up”: “completed the <TECH> project”] at all
98. Don't know

The Q&T Adjustment value could range from 0 to 1 and could only reduce FR. The Timing Adjustment was calculated using a midpoint of the date range selected by the respondent, also known as the “number of months expedited.” The midpoint was estimated within a time frame between six months and three years, consistent with IL-TRM guidance, and was calculated using the following formula:

$$\text{3-year Time Horizon Timing Adjustment} = 1 - (\text{Number of Months Expedited} - 6)/30$$

Table 7 provides details on the Timing Adjustment values corresponding to the date ranges respondents could choose from.

Table 7. Timing Adjustments

Participant Survey Response	Timing Adjustment
Within 6 months	1.0
Between 6 months-1 year	0.90
Between 1-2 years	0.60
Between 2-3 years	0.20
Over 3 years	0
I would not have installed the high efficiency equipment/completed the project at all	0
Don't know	Average number of months expedited

Nine participants responded “Don’t know” when asked whether, in the absence of the Initiative, they would have installed, repaired/replaced or tuned up the remaining percentage of high efficiency equipment at a later time. For those nine respondents who selected “Don’t know”, the evaluation team applied the average number of months expedited across respondents of the corresponding fuel type (23.14 months for electric energy savings and 24.00 months for gas savings).

The Q&T Adjustment value for each participant was calculated using the following formula:

$$\text{Q\&T Adjustment} = (\% \text{ Not Installed at Same Time} * \text{Timing Adjustment}) + \% \text{ Installed at Same Time}$$

Respondents who reported that, in the absence of the Initiative, they would have installed, repaired/replaced, or tuned up the same quantity of units at the same time they did through the Initiative, received a Q&T Adjustment of 1. This means that their FR score remained the same (i.e., was not reduced). Respondents who indicated that they would not have installed, repaired/replaced, or tuned-up the remaining the high-efficiency equipment at a later time, received a Q&T Adjustment of 0, meaning that their FR score would then also be 0. There were two respondents who did not qualify for the Q&T Adjustment based on their responses to QT1; however, in their open-ended response to the consistency check question, they indicated an influence of the Initiative on the scope and timing of the project. Therefore, the evaluation team decided to apply an average Q&T Adjustment value for these respondents.