

To: Illinois SAG

From: Sharon Mullen, Cher Seruto, Laura Agapay-Read, Guidehouse

CC: ComEd, Nicor Gas, Peoples Gas, North Shore Gas, Opinion Dynamics, Guidehouse

Date: May 10, 2023

Re: Deviation to Residential Free Rider Algorithms for Reporting in 2023

Guidehouse proposes a deviation from the TRM residential free ridership algorithms to test improvements to them. This memo adheres to the deviation process detailed in TRM Ver. 11, Appendix 4, Section 1.4, Attachment A.ⁱ The deviation will apply to the following residential program free ridership research which we will report in summer 2023:

- Nicor Gas
 - Home Energy Savings (direct install measures and advanced thermostats)
 - Home Energy Efficiency Rebates (advanced thermostats)
- Peoples Gas/North Shore Gas (PGL/NSG)
 - Home Energy Jumpstart (direct install measures and advanced thermostats)
 - Home Energy Rebates (advanced thermostats)

Our surveys will ask questions for our proposed algorithm and for the TRM algorithm.

Our proposed algorithm uses one program influence question for the overall program and one counterfactual scenario question with a likelihood follow-up question. The algorithms are depicted below. Figure 1 shows the TRM Ver 11 algorithm for *free* measures, and Figure 2 shows our proposed deviation. We propose researching a similar deviation to the algorithm for *discounted* measures: Figure 3 the TRM Ver 11 algorithm; Figure 4 shows our proposed deviation.

These deviations are informed by updates to the non-residential core free ridership algorithm made by the Net-to-Gross (NTG) Working Group (WG). (The WG has reached consensus on parallel updates to the non-residential core algorithm, with one over-all program influence question and one counterfactual scenario question with a follow-up inverse likelihood questionⁱⁱ.) From our residential surveys, we will analyze and present results of each algorithm with the goal of discussing any identified improvements with the NTG working group in the fall of 2023, when discussion of updates to version 13 of the TRM take place.

As background, Guidehouse tested the WG Residential Direct Install (DI) algorithm last year for the Nicor Gas Energy Saving Kits (ESK) programⁱⁱⁱ. The WG results proved closer to verbatim responses and reduced respondent burden due to the simplified questions. Based on this analysis, Guidehouse recommends collecting additional data to support a revision to version 13 of the TRM.

Guidehouse will test both algorithms to determine which better represents free ridership. This involves first calculating respondent free ridership values for each methodology. Then, using a representative sample, two Guidehouse evaluators will independently compare each FR value to the respondent's verbatim response to the question, "Please describe in your own words any impact that the [program and factor(s) appropriate to specific offer] had on you installing the <Measure>?" to determine which value is

closer to the verbatim response. Then we will recommend the FR result of the algorithm that more often better reflects the verbatim response.

Figure 1. TRM Ver. 11 Residential Free Ridership Algorithm for Free Measures

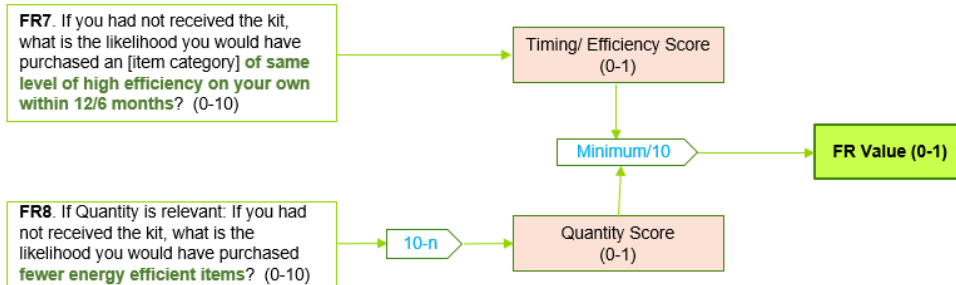


Figure 2. Proposed Residential Free Ridership Algorithm for Free Measures

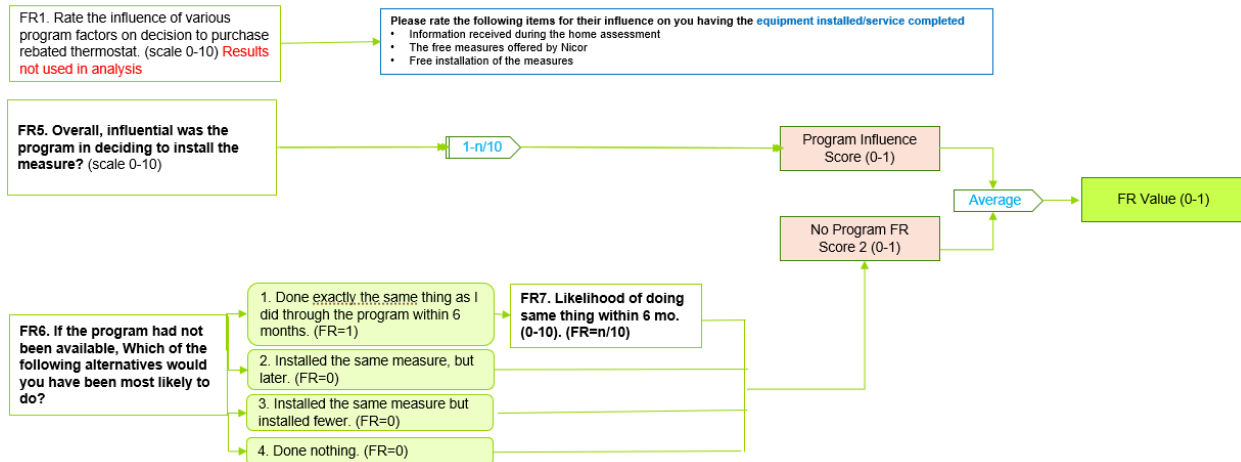


Figure 3. TRM Ver. 11 Residential Free Ridership Algorithm for Discounted Measures

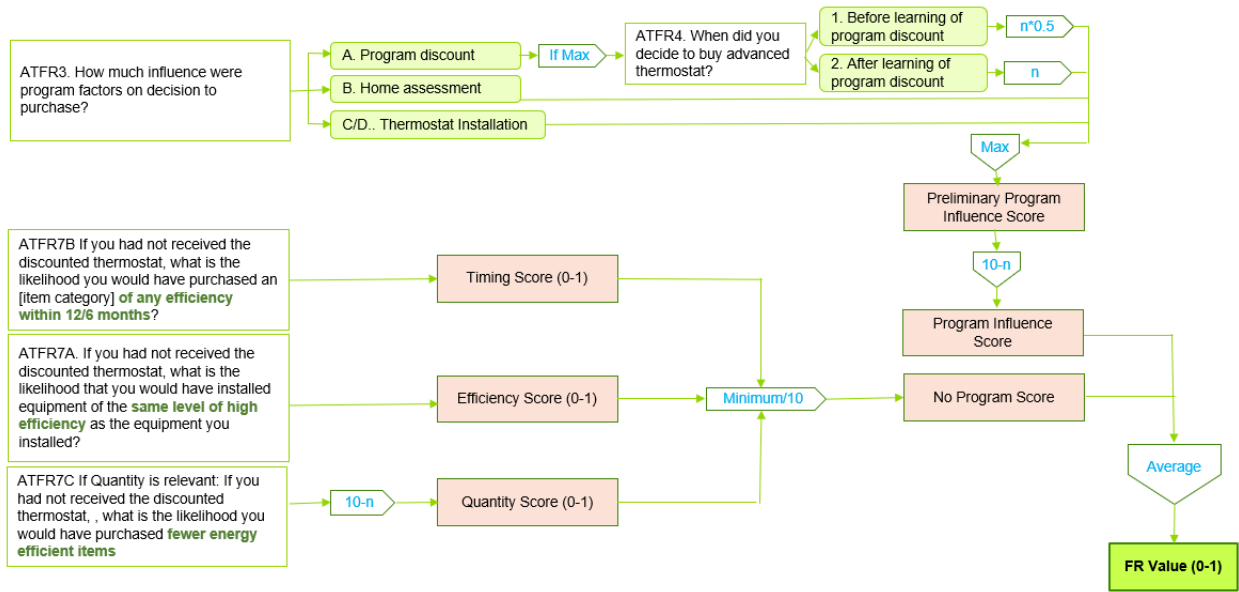
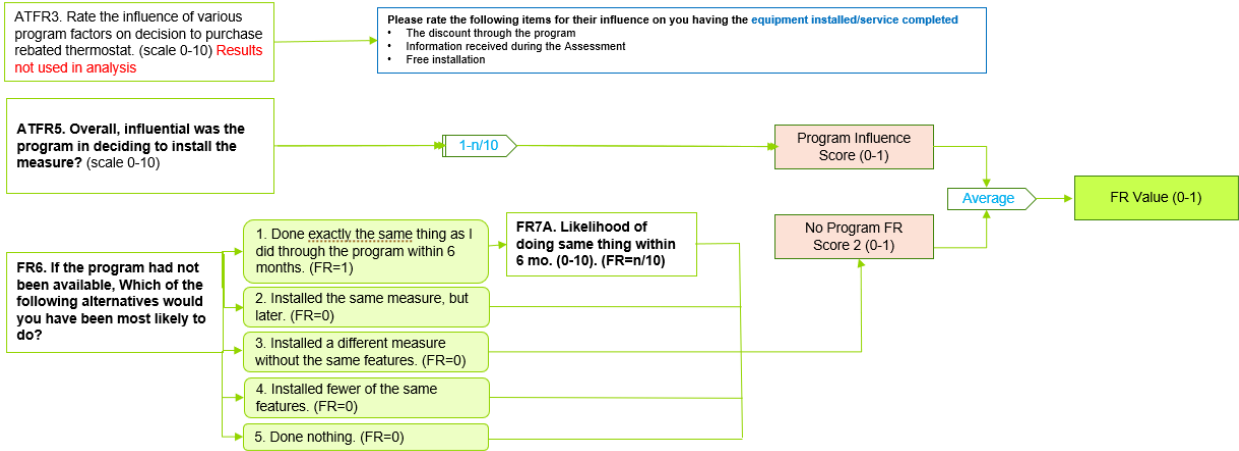


Figure 4. Proposed Residential Free Ridership Algorithm for Discounted Measures



ⁱ 1.4 Diverging from the IL-NTG Methods

The NTG methods for the programs outlined in this document are partially binding. The criteria for deviating from the IL-NTG Methods document are set forth below. In all cases, the evaluators (or any interested stakeholder) submits the proposed deviation to the full SAG for a ten business day SAG review and comment period. In the event of an objection by a SAG participant, efforts may be made to see if consensus can be reached on the proposed deviation in a subsequent monthly SAG meeting. In this case, a final opportunity for SAG review and comment to the proposed deviation will be provided following the SAG meeting.

Evaluators may modify the approaches described in this document if the following three conditions have been satisfied:

1. Evaluators must explicate within the annual evaluation research plan (or another document) how specific items in the proposed modified NTG method will diverge from what is written in this document. Evaluators must justify why the divergence is appropriate.
 2. Prior to the use of the modified NTG method for a particular program, evaluation teams must be in agreement on the use and execution of the modified NTG method.
 3. Any objection from SAG participants regarding the proposed modified NTG method is resolved.
- Evaluators may test alternative methods of estimating NTG for a particular program in addition to the NTG methods outlined in this document, if the following three conditions have been satisfied:

1. Evaluators must explicate within the annual evaluation research plan (or other document) the proposed alternative NTG method. Evaluators must explain why the proposed alternative NTG method might be superior to the NTG methods outlined in this document for the particular program. Evaluators must discuss the foundation for expecting that the proposed alternative NTG method is likely to produce meaningful results.
 2. Prior to the use of the alternative NTG method for a particular program, evaluation teams must be in agreement on the key details of the approach for implementing the alternative NTG method.
 3. Any objection from SAG participants regarding the proposed alternative NTG method gets resolved.
- When performing alternative NTG methods for a particular program, the choice of methods may vary across the state. For example, if ComEd's evaluator chooses to test Methods 1 and 2 for a particular program, Ameren's and Department of Commerce's evaluators do not also have to perform Methods 1 and 2 for a similar program.

Several sections of this attachment provide example questions that can be used to collect the data required in the NTG algorithms. Adjustments to refine specific question wording, e.g., to better reflect the design of the evaluated program, do not constitute divergence from the IL-NTG Methods. Evaluators are not required to use the exact wording provided in the example questions.

ⁱⁱ These updates for the non-residential algorithms will be included in version 12 of the TRM.

ⁱⁱⁱ To calculate free ridership, we used the questions and approach from the TRM (Energy Saving Kits and Elementary Education Protocol in Section 4.7) and from the Working Group that are applicable to a residential kit program. We expected the Working Group approach to yield free ridership results closer to the free ridership reported in response to the open-ended question, "Please describe in your own words if you would have purchased and installed **<measure type>** if the free weatherization kit was not given to you?".

To test this, two evaluators independently analyzed a random sample of 70 responses. This involved, per respondent, determining which free ridership result is closer to the free ridership reported in the verbatim

response. As shown in **Error! Reference source not found.**, for 74% of the responses, the Working Group free ridership is the better match to the verbatim (than the TRM result is).

Table Error! Main Document Only.. Comparison to Verbatim Results

Algorithm	Count	%
Working Group Matches Verbatim	52	74%
TRM Matches Verbatim	4	6%
Inconclusive (ambiguous or no verbatim)	14	20%

Source: Guidehouse 2021 NTG Research