Opinion Dynamics

Memorandum

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From: The Opinion Dynamics Evaluation Team

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Re: Market Rate Multifamily Initiative NTGR Survey Results

Introduction

This memorandum summarizes the Net-to-Gross Ratio (NTGR) findings from in-depth interviews with property managers who participated in the Market Rate Multifamily (MRMF) Initiative. The interview sample included participants from January 2022 through June 2023. Seven property managers provided an interview.

Methods

This effort was part of a larger Multifamily Initiatives survey effort including Income Qualified and Public Housing properties, however, only MRMF Initiative managers received NTGR questions. We decided to collect this information using in-depth interviews, rather than a survey, considering the limited sample and to ensure we could qualitatively capture any intricacies of property managers' decision-making and the Initiative's influence. We fielded interviews over an extended period, from October 2022 through June 2023, incrementally adding new contacts as more MRMF projects were completed. More information comparing respondents to the overall population is available later in this memorandum.

Many property managers received a wide variety of measures; however, we asked each manager about up to two measures to reduce respondent burden (i.e., avoid many batteries of repetitive questions) and prioritized a specific set of measures that either had never been evaluated in AIC territory or had potentially outdated NTGR estimates. We ultimately collected NTGR-related data on three measure categories: advanced thermostats, Air Sealing Measures (specifically including door sweeps and wall plate gaskets), and Water Measures (specifically low-flow showerheads, thermostatic restrictor shower valves (TSVs), and low-flow faucet aerators). In the sampling stage, we chose to aggregate air sealing and water measures in anticipation that we would not capture enough response to calculate individual measure NTGRs. We also attempted to collect NTGR data on Ductless Heat Pumps, however, only a small number of property managers received this measure in the evaluation period and none of them responded.

Summary of Results

Table 1 summarizes NTGR ratios for each measure category, based on survey results, including the Free Ridership (FR) and Participant Spillover (PSO) estimates that underly the calculation. We also include a comparison to the most current NTGR recommendations for these measures. Overall, we found low levels of FR across the measures and there were no qualifying cases of PSO. These NTGRs are generally in the same range but higher than the current recommendations in most cases.

Table 1. Summary of MRMF Initiative NTGR Results

Program	FR (Weighted)		PSO		NTGR (1-FR+PSO)		2023 NTGR Recommendations (for Comparison)
	Electric	Gas	Electric	Gas	Electric	Gas	
Air Sealing Measures (n=4)[a]	0.152	0.000	0.000	0.000	0.848	1.000	0.861
Advanced Thermostat (n=3)	0.000	0.000			1.000	1.000	0.8 (heating), 0.9 (cooling)
Water Measures (n=2)[b]	0.062	0.060			0.938	0.940	0.800 (TSVs)

Note: FR scores are weighted by relative project savings.

[a] Air sealing includes door sweeps and wall plate gaskets (n=4) and door sweeps (n=2).

[b] Water measures include low-flow showerheads (n=2), low-flow faucet aerators (n=2), and TSVs (n=1).

Representativeness

Table 2 compares the respondents to the population (January 2022 through June 2023) in terms of participation and project savings. The total number of respondents is small overall but in the normal range of response rates that we expect for Multifamily, considering the population. Respondent projects savings generally represented a relatively small percentage of total savings from the population. However, we interviewed two property managers that represented very large Air Sealing projects. Together, Air Sealing respondents represented over half of the population's Air Sealing savings.

Table 2. Multifamily Market Rate Initiative Interview Respondents Versus Population

Program	Respondents			Population (January 2022-June 2023)			Respondents as % of the Population		
	Properties	kWh Savings	Therm Savings	Properties	kWh Savings	Therm Savings	Properties	kWh Savings	Therm Savings
Air Sealing Measures	4	13,294	2	24	24,752	255	17%	54%	1%
Advanced Thermostat	3	37,537	190	21	722,772	3,204	14%	5%	6%
Water Measures	2	191	226	28	402,862	2,324	7%	0%	10%

Note: 2022 savings is verified gross savings from the year-end evaluation. 2023 savings is ex ante gross savings from Initiative tracking data.

Recommendations

Based on the results of this research, we recommend the following.

- Air Sealing Measures
  - Do not submit an update to electric NTGR recommendations, as the results of this study and the current recommendation are not statistically different. However, cite this study as corroboration for current recommendations.
  - Submit an update to gas NTGR recommendations for door sweeps and wall plate gaskets.
- Advanced Thermostats
  - Submit an update to electric and gas NTGRs recommendations. The representativeness of the respondents is limited, but all three respondents had identical NTGRs of 1.000.

- Water Measures
  - Do not submit an update to the electric or gas NTGR recommendations, considering the limited representativeness of the respondents to the population.

Detailed Methods

This section provides details on the calculation of FR, PSO, and NTGR. All methods follow the protocols prescribed in the Illinois Technical Reference Manual Version 11.0 (IL-TRM V11.0), specifically the Multifamily Protocol for Non-Lighting Measures.

Free-ridership methodology

Free-riders are Initiative participants who would have implemented the incented energy-efficient measure(s) even without the Initiative. FR estimates are based on a series of questions that explore the influence of the Initiative on participants' decisions to make the energy-efficient installations, as well as actions the participant likely would have taken had the Initiative not been available.

FR consists of two main scores: An Initiative Influence Score and a Non-Initiative Score (counterfactual). The algorithms employ supplementary adjustments that account for an order effect (when the customer learned about the Initiative relative to deciding to complete the upgrade), as well as the Initiative's influence on the upgrade timing and quantity.

The two scores included in the algorithm and their adjustments are described below.

Initiative Influence Score. The Preliminary Initiative Influence Score is based on the importance of Initiative components and an order adjustment. The Initiative components portion of the score is based on a series of questions that ask respondents to rate the importance of five different Initiative components in their decision to install the energy-efficient equipment, using a scale of 0 to 10 (where 0 is "Not at all important" and 10 is "Very important"). Initiative components considered include the availability of rebated or free measures (as applicable), recommendations from a Program Ally, recommendations from the Multifamily Energy Advisor, and information or recommendations included in the property assessment report. As seen below in the Final Initiative Influence Score, the greater importance of the Initiative components signifies a lower level of FR.

In addition to Initiative components, the Preliminary Initiative Influence Score incorporates an Order Adjustment (i.e. a temporal sequence adjustment) to account for the order in which a participant learned about Initiative discounts or free measures and decided to perform upgrades. This adjustment is based on a question that asks respondents to indicate whether they decided to have the upgrades installed before or after they learned about the Initiative. When a customer decides to have the upgrades installed before learning about the Initiative, this signifies the Initiative was less influential on the participant's decision to undertake the project. As such, the customer is more likely to be a free rider. On the other hand, when a customer decides to have the upgrades installed after learning about the Initiative this signifies a lower level of FR. We applied the order adjustment score as a scaling factor (0.5) on the Preliminary Initiative Influence Score for the rebates/free measures components, as follows:

Preliminary Initiative Influence Score

= *(Initiative Rebate/Free Measure Component Rating), if decided to complete upgrade after learning about the Initiative*

= *(Initiative Rebate/Free Measure Component Rating) * 0.5, if decided to complete upgrade before learning about the Initiative*

The Final Initiative Influence Score is an inverse of the maximum Preliminary Initiative Influence Score, across all components. The Final Initiative Influence FR Score is calculated as:

Final Initiative Influence FR Score = 10 – (Maximum Preliminary Initiative Influence Score)

Non-Initiative Score. This score is based on the participant's self-reported likelihood to have installed the exact same type and quantity of energy-efficient equipment at the same time without the Initiative.

Timing Score: Even if the participant was highly likely to have installed the same type of equipment without the Initiative, the Initiative still might have influenced the participant to undertake the project sooner than they would have otherwise. The Timing Score is measured as a customer's likelihood to purchase upgrades within six months of when they received them through the Initiative.

Timing Score = Likelihood to Install Measures in Similar Time Frame

Quantity Score: Similarly, even if the participant was highly likely to have installed the same type of equipment without the Initiative, the Initiative still might have influenced the participant to install a larger quantity of the equipment. The Quantity Score is measured as a customer's likelihood to purchase fewer of the same pieces of equipment if the Initiative was not available. We calculate the Quantity Score as an inverse of the response to this question because a lower score means a greater likelihood the respondent would have installed the same number or more measures.

Quantity Score = 10 – Likelihood to Install Fewer Measures

Efficiency Score: The Initiative may have influenced participants to install equipment that is more energy efficient in comparison to the type of equipment they would have selected without the Initiative. The Efficiency Score is measured as a customer's likelihood to purchase the exact same equipment if the Initiative was not available.

Efficiency Score = Likelihood to Install the Exact Same Measures

The Non-Initiative Score is comprised of the minimum of the Timing, Efficiency, and Quantity Scores, which are all measured on 0 to 10 scales from "not at all likely" to "very likely".

Non-Initiative Score = Minimum (Timing Score, Efficiency Score, Quantity Score)

We implemented and analyzed the following FR algorithm:

FR Algorithm: FR = (Average (Final Initiative Influence Score + Final Non-Initiative Score)) / 10

Addressing Triggered Consistency Checks

The IL-TRM V11.0 includes recommendations for developing consistency checks to address the possibility of conflicting responses to FR elicitation questions. No respondents triggered consistency checks.

Spillover

PSO is the additional energy savings that occur as a result of the program's influence when a program participant independently (i.e., not incentivized by the program) installs incremental energy efficiency measures or applies energy-saving practices after having participated in the energy efficiency program. Four respondents mentioned potential cases of spillover. However, none of these cases ultimately qualified based on respondents' self-reported influence of the MFMR Initiative.

Net-to-Gross

The formula to calculate the NTGR is:

NTGR Algorithm: NTGR = 1 – FR + SO