Opinion Dynamics

Memorandum

To: Christina Pagnusat (Peoples Gas/North Shore Gas), Jean Gibson (WEC Energy Group), Thomas Manjarres (WEC Energy Group), Omayra Garcia (Peoples Gas/North Shore Gas), Erin Stitz (Applied Energy Group), Barbara Ryan (Applied Energy Group), Zach Obert (Franklin Energy), Jennifer Alvarado (Franklin Energy), Humberto Gutierrez (Franklin Energy), Gabby Gutierrez (Franklin Energy), Allen Dusault (Franklin Energy) Marcus Hemphill (Franklin Energy), Kevin Kopterski (Franklin Energy), Elizabeth Horne (Illinois Commerce Commission), and David Brightwell (Illinois Commerce Commission)

From: The Opinion Dynamics Evaluation Team - Final

Date: September 26th, 2023

Re: Peoples Gas/North Shore Gas Non-residential Nonparticipant Spillover Research Results

Introduction

This memo presents the results from a nonresidential nonparticipant spillover (NPSO) study for North Shore Gas and Peoples Gas. This study is part of a state-wide study of NPSO in Illinois, which supports updating portfolio-wide assumptions for nonresidential NPSO as part of the 2023 Illinois Stakeholder Advisory Group Net-to-Gross update process. Ameren Illinois Company (AIC), Nicor Gas, and Peoples Gas/North Shore Gas (PGL/NSG) jointly sponsored this study.

The primary goal of this study is to estimate NPSO among nonparticipating business customers for portfolio-wide applications. As deemed possible within research constraints, this study also provides a limited amount of additional information from nonparticipants; examples of additional information include nonparticipating customer characteristics, energy-related needs, and awareness of Illinois energy efficiency programs.

Data Collection

Nonparticipant Survey

To estimate NPSO, the evaluation team conducted survey research with nonparticipating business customers to identify customers where NPSO occurred and to gather information to quantify energy savings resulting from NPSO. The full survey instrument is provided in Appendix B) Opinion Dynamics employed multiple strategies to field this survey, including a mail-push-to-web (MPTW) approach and email outreach to customers with available email addresses. We elaborate on our fielding strategy below.

Fielding

At the launch of the survey, the evaluation team recruited respondents via an MPTW approach, which involved sending mailers to customers' addresses requesting their completion of the online survey. However, the customer response rate was significantly lower than expected (see Table 2) and the evaluation team modified its fielding strategy to focus on email outreach.

Sampling

The evaluation team developed a valid population for the study based on the entire population of Peoples Gas/North Shore Gas business customers, selected a simple random sample of customers, and removed accounts with missing contact information.[1] We also removed duplicate records from the sample; we removed duplicate addresses for the MPTW sample and email addresses for the email outreach sample. Table 1 displays the valid population, sample size, and number of completed surveys for Peoples Gas/North Shore Gas.

Table 1. Valid Population, Sample Size, and Number of Completed Surveys

Step	Count
Valid Population	34,024
MPTW Sample Size	8,858
MPTW Survey Completes	13
Email Sample Size	31,829
Email Survey Completes	173

Survey Disposition and Response Rate

We fielded the survey of non-residential nonparticipants from June 30th to September 15th, 2023. Table 2 presents the final survey dispositions and response rate.

Table 2. Non-Participant Survey Dispositions

Disposition	Count
Completes (I)	186
Partial Completes (P)	21
Refusals/Break-offs (R)	172
Non-Contacts (NC)	26,161
Others (O)	0
Break-offs (with eligibility) (R1)	172
Unknown If Eligible for Survey (UH1)	0
Unknown If Eligible for Survey, Other (UO1)	0
Unknown If Eligible Household/Business/Respondent (UH2)	26,161

[1] Guidehouse developed the valid population and customer sample for PGL/NSG. According to Section 3.2 in Volume 4 of the IL TRM, the valid population is defined as unique business-premises that have not participated in PGL/NSG-sponsored energy efficiency programs in the past three years (2020-2022), with ineligible accounts dropped from the population. Ineligible accounts include exempt customers and/or non-retrofittable sites such as cellphone towers and utility-owned facilities.

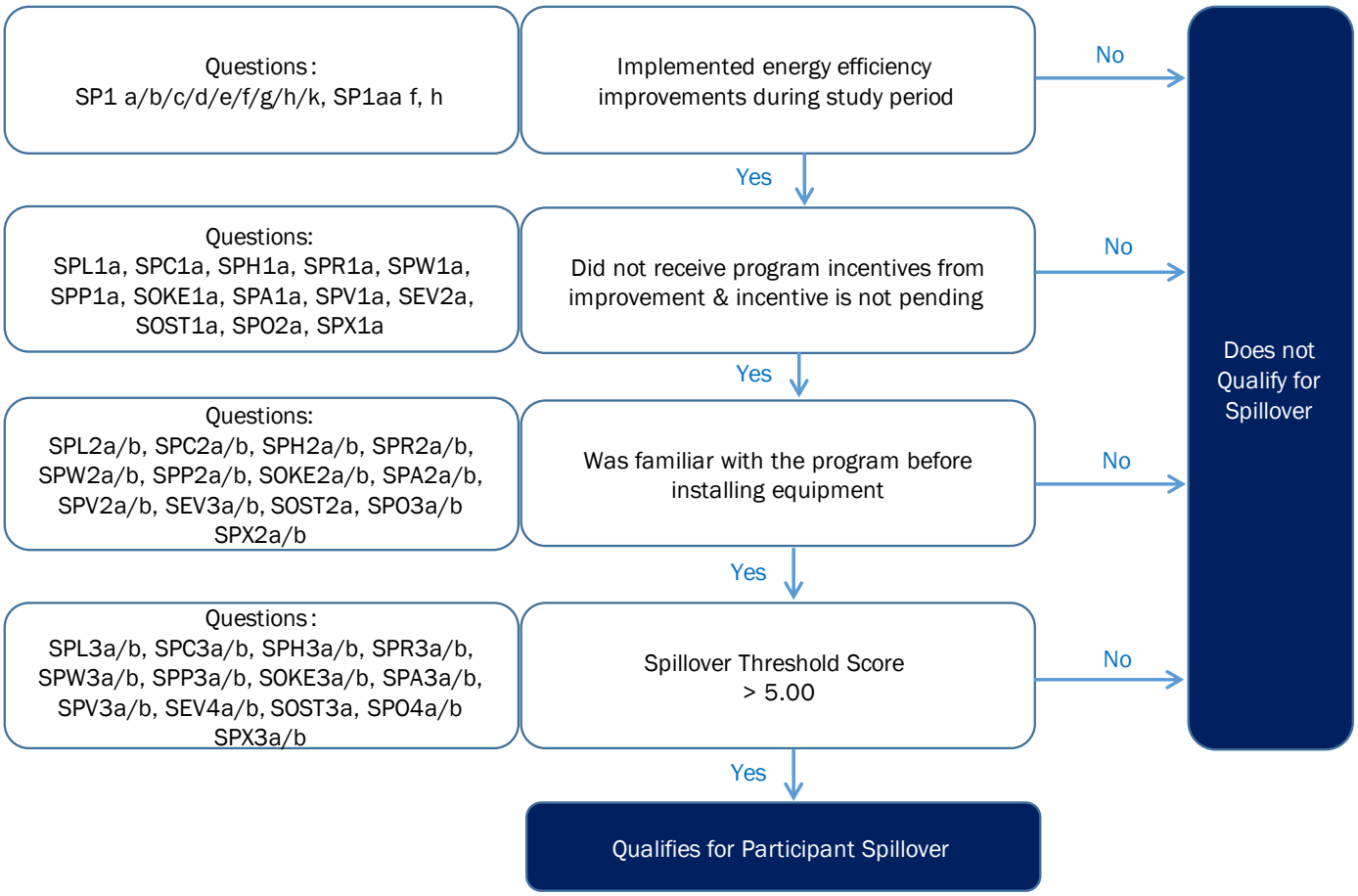
Disposition	Count
Unknown If Eligible Household/Business/Respondent, Other (UO2)	0
Unused Sample (UH3)	0
Ineligible for Survey (X1)	113
Ineligible Household/Business/Respondent (X2)	2,100
Ineligible Sample Units (X3)	5,271
Estimated proportion of sample that is eligible to complete survey (e1)	77.0%
Estimated proportion of sample that is eligible HH/BUS/R (e2)	19%
Estimated proportion of sample that is an eligible sample unit (e3)	84.5%
No partial completes but eligibility criteria (AAPOR RR3)	4.4%
Total Records	**34,024**

Methodology

NPSO refers to the installation of energy-efficient measures by program non-participants who were influenced by the program but did not receive an incentive. An example of a potential NPSO is a customer who was aware of and previously participated in PGL/NSG's Energy Efficiency Program and made an equipment upgrade at the recommendation of a contractor who stated they would fill out the incentive application on the customer's behalf. In this example, the contractor may have failed to submit the application due to an administrative oversight, and the customer did not inquire about the incentive with the utility or the contractor. For this example to be confirmed as NPSO, the customer would need to confirm that the awareness of the program influenced their decision to make the equipment upgrade.

Calculation of non-participant spillover involves four steps: (1) identify energy efficiency improvements that qualify as NPSO; (2) estimate annual NPSO savings for all survey respondents; (3) extrapolate respondent-level NPSO to the population; and (4) develop the NPSO ratio (for future application). Figure 1 summarizes the criteria used to identify cases of spillover, based on non-participant survey responses.

Figure 1. Criteria for NPSO Eligibility



The following questions were used to calculate the spillover threshold score:

- **Measure Attribution Score 1:** On a scale of 0 to 10 where 0 is "not at all influential" and 10 is "very influential", how much influence did your knowledge of the incentives and information Peoples Gas/North Shore Gas offers have on your decision to make the <MEASURE> improvements?
- **Measure Attribution Score 2:** If you had NOT known about the incentives and information Peoples Gas/North Shore Gas offers, would you still have made the <MEASURE> improvements? Please use a scale of 0 to 10, where 0 means you "definitely WOULD NOT have made this improvement" and 10 means "definitely WOULD have made this improvement".
- **Consistency Check:** (If the responses to the two questions above were inconsistent) In your own words, can you explain HOW your knowledge of the program influenced the decisions you made in terms of the <MEASURE> improvements that you made in the past two years?

Provided that the open-ended responses do not contradict the influence of the program, spillover is attributable to the program if the average of the Measure Attribution Score 1 and (10-Measure Attribution Score 2) exceeds 5.0. If the average is greater than 5.0, 100% of the measure energy savings referenced in the question are considered NPSO. If the average is not greater than 5.0, none of the measure energy savings are considered NPSO.

We then conducted an engineering analysis to determine savings associated with each measure identified as spillover and summed the measure-specific estimates to develop a total two-year respondent-level spillover. We extrapolated

respondent-level NPSO to the population by multiplying the respondent-level NPSO value by the case weight (calculated as the eligible population at the premise level divided by the number of customers surveyed).

To develop the NPSO rate, we divided the two-year population-level NPSO value by the sum of 2021 and 2022 portfolio ex post gross impacts. This approach allows us to express NPSO as a percentage of ex post gross program savings and facilitates future application of the NPSO estimate. *Equation 1* presents the equation used to calculate the NPSO rate.

Equation 1. Non-Participant Spillover Rate

$$Annual\ Portfolio\ NPSO\ Rate = \frac{Two\ Year\ Population\ Level\ NPSO}{2021 + 2022\ Portfolio\ Ex\ Post\ Impacts}$$

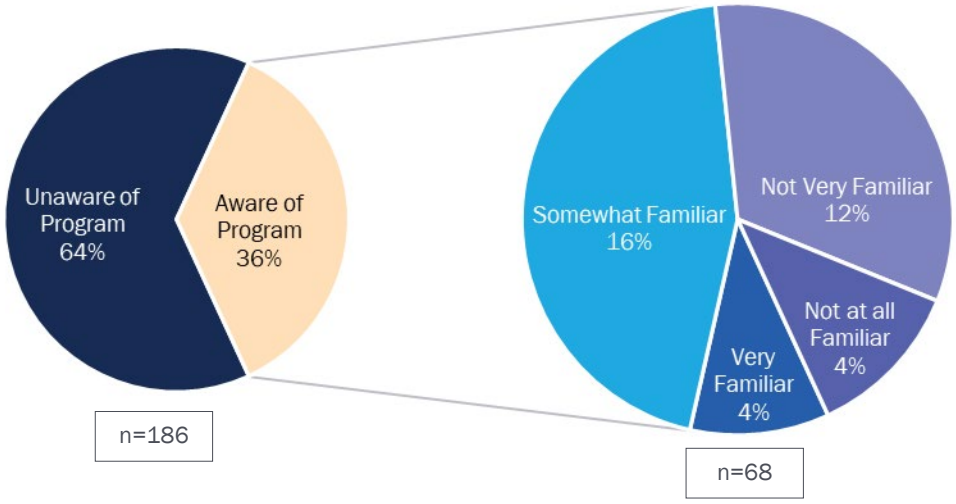
Detailed Findings

This section presents results from the non-participant survey, including respondents' level of awareness of Peoples Gas/North Shore Gas' energy efficiency programs, equipment used at their facility, upgrades and retro-commissioning their company completed at their facility in the last two years, as well as NPSO results.

Awareness

Non-participants reported moderate levels of general awareness that PGL/NSG-sponsored offers energy efficiency programs, incentives, and information to its industrial, commercial, and public sector customers, with 43% (81) of non-participants indicating general awareness of such offerings. Fewer participants (30%, or 57) were aware of the Energy Efficiency Program when it was mentioned by name (without it being described to them), and another 6% (11) of respondents were aware of the program once it was described to them. Overall, 36% of non-participants were aware of the Energy Efficiency Program. While non-participants were generally unaware of the Energy Efficiency Program, more than half of those who were aware of the program (54%, or 37 of 68) were somewhat or very familiar with the program. Figure 2 displays respondents' levels of familiarity with the program.

Figure 2. Awareness of Program and Familiarity with Program



Facility Information

We asked respondents about the types of equipment they currently possess and use in their facility and equipment they have upgraded or replaced in the past two years. To be comprehensive, the survey asked respondents about a range of equipment, including gas-consuming as well as electricity-consuming equipment. Although not relevant to PGL/NSG's energy efficiency program as gas utility companies, we summarize all types of equipment to provide a complete representation of respondent characteristics.

All respondents had lighting, and many respondents had cooling (73%, or 241), heating (94%, or 265), and water heating (90%, or 233) equipment. The penetration of steam traps was the lowest (4%, or 20). Over half of respondents (63%, or 177) made upgrades to some of this equipment in the past two years. The most common equipment replaced was lighting, with 45% (84) of total respondents saying they replaced or upgraded such equipment in the past two years. In addition to equipment replacements and upgrades, we asked participants if they conducted retro-commission in the last two years, and 6% (11) of respondents reported taking such action at their facility. Table 3 lists respondents' ownership of specific equipment types and their respective replacements or upgrades within the past two years.

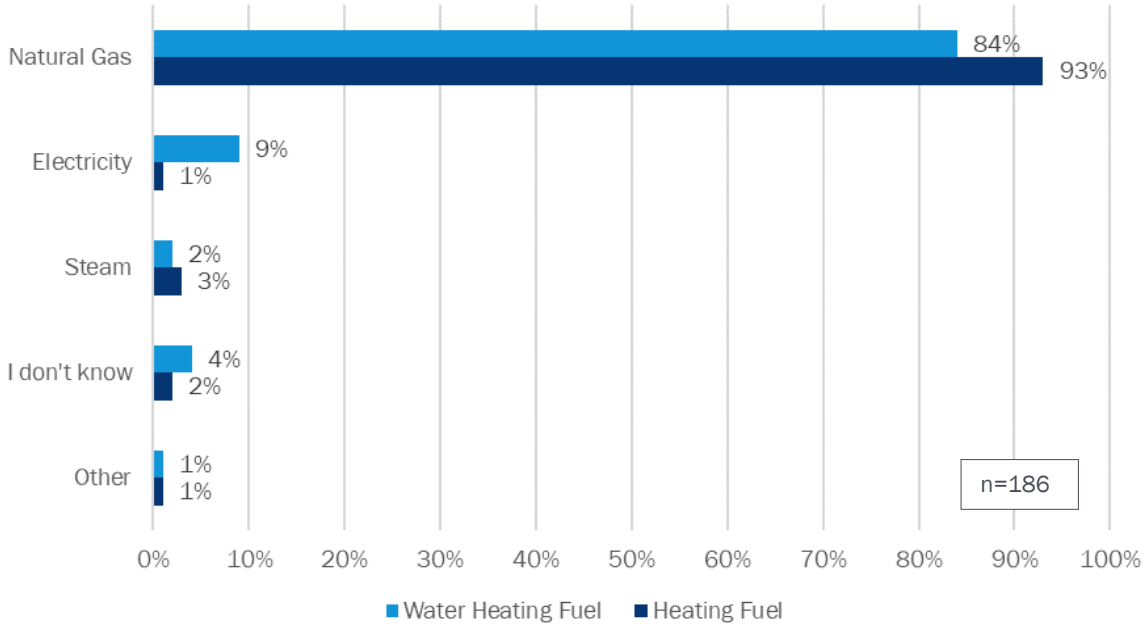
Table 3. Presence of Equipment and Replacement Status

Equipment Type/Upgrade	Share of Non-Participants Who Have Equipment (n=332)	Replaced/Upgraded Within Past Two Years Among Non-Participants Who Have Equipment
Lighting	100%	45%
Cooling	73%	33%
Heating	94%	30%
Refrigeration	58%	23%
Water Heating	90%	31%
Motors or Drives	15%	19%

Equipment Type/Upgrade	Share of Non-Participants Who Have Equipment (n=332)	Replaced/Upgraded Within Past Two Years Among Non-Participants Who Have Equipment
Kitchen Equipment	46%	22%
Compressed Air	13%	12%
Energy Management	10%	26%
Steam Traps	4%	14%
Retro-commissioning	N/A	6%

Most respondents reported using natural gas for space heating (93%, or 173) and water heating (84%, or 156). Figure 3 displays the heating and water heating fuel types of the respondents.

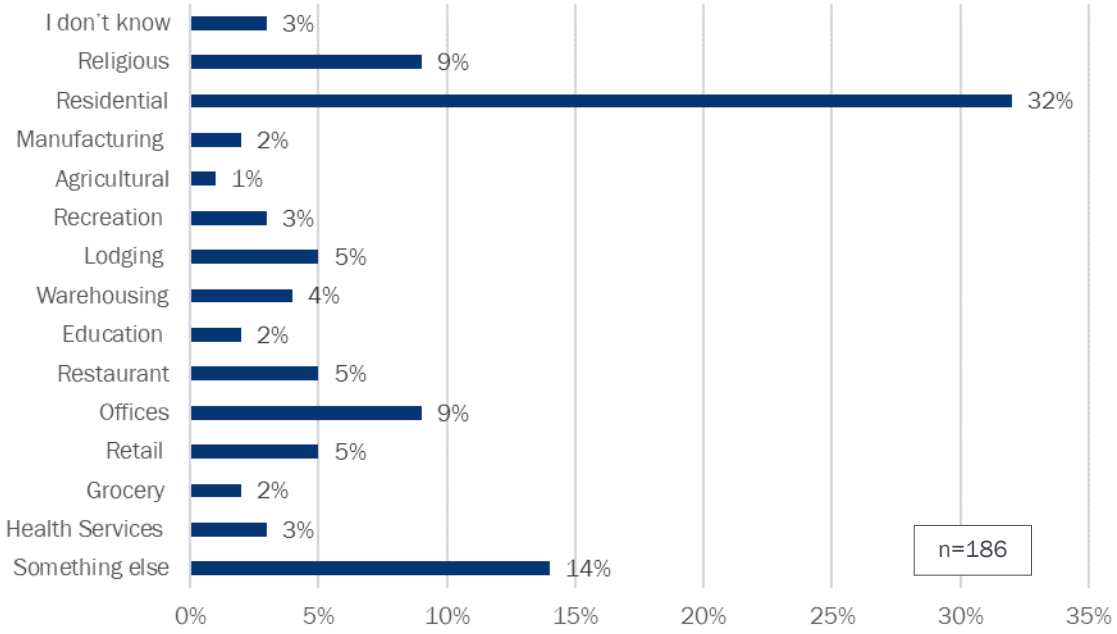
Figure 3. Heating Fuel Type and Water Heating Fuel Type



Respondent Firmographics

Respondents to our survey represented a wide variety of sectors. The most common use was residential (32%, or 58). Fourteen percent (26) of respondents said their facility is used for something other than the options listed. When we asked these 26 respondents for additional information about their facility, the most frequent responses were non-profit organizations (7 of 26) and vacation rentals (5 of 26). Examples of the less common primary use respondents provided include automotive repair and service and an art studio. Figure 4 below displays the various uses of respondents' facilities.

Figure 4. Primary Use of Facility



The survey captured additional firmographic information such as facility ownership, size, and age, as well as the number of employees who work at the respondent's facility. As shown in Table 4 below, most respondents reported their facilities are privately owned (88%) and more than half of the respondents indicated they own the facility they occupy (54%). Average respondent-reported facility age, staff size, and square footage are also displayed below.

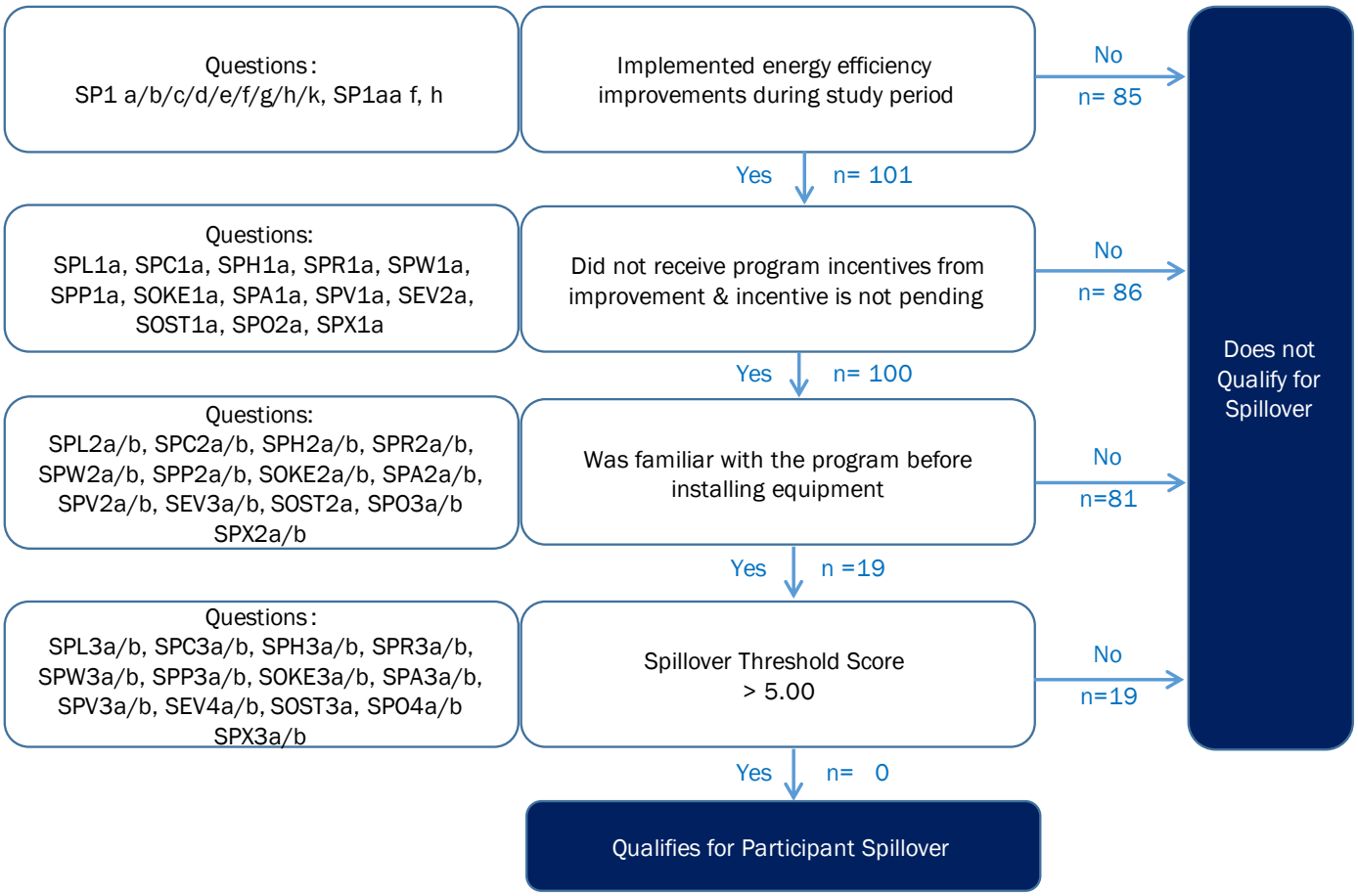
Table 4. Additional Firmographic Information

Firmographic Characteristic	Count
Proportion of privately-owned facilities	88%
Proportion of owner-occupied facilities	54%
Average reported facility age	75 years
Average reported staff size	8 employees
Average reported facility size	12,555 sq. ft.

Non-Participant Spillover Results

Analysis of the survey responses found that none of the 186 non-participants surveyed met the criteria for spillover. Figure 2 provides the full NPSO eligibility results.

Figure 5. Non-Participant Eligibility for Spillover -- Results



Appendix A. Response Rate Calculation

The response rate was calculated using the AAPOR RR3 calculation:

Equation 2. Response Rate Formula (AAPOR RR3)

$$RR3 = \frac{I}{(\mathrm{I} + \mathrm{P}) + (\mathrm{R1}) + (\mathrm{e1} * ((\mathrm{UH1} + \mathrm{UO1}) + (\mathrm{e2} * (\mathrm{UH2} + \mathrm{UO2})) + (\mathrm{e3} * \mathrm{UH3})))}$$

where:

$$e1 = \frac{(I + P + R1)}{(I + P + R1 + X1)}$$

$$e2 = \frac{(I + P + R1 + UH1 + UO1 + X1)}{(I + P + R1 + UH1 + UO1 + X1 + X2)}$$

$$e3 = \frac{(\mathrm{I} + \mathrm{P} + \mathrm{R1} + \mathrm{UH1} + \mathrm{UO1} + \mathrm{UH2} + \mathrm{UO2} + \mathrm{X1} + \mathrm{X2})}{(\mathrm{I} + \mathrm{P} + \mathrm{R1} + \mathrm{UH1} + \mathrm{UO1} + \mathrm{UH2} + \mathrm{UO2} + \mathrm{X1} + \mathrm{X2} + \mathrm{X3})}$$

Appendix B. Data Collection Instrument

2023 Illinois Nonresidential Non