



**To:** Nicor Gas

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**Date:** September 30, 2022

**Re:** Nicor Gas Residential Non-Participant Spillover Final 2022 Research Results

## Executive Summary

The objective of the research was to estimate residential non-participant spillover (NPSO) for Nicor Gas using Illinois TRM version 10 Attachment A, Section 4.1.3 *Non-Participant Spillover Measured from Customers*<sup>1</sup>. The study was not joint with other utilities – the scope was limited to Nicor Gas. Guidehouse fielded the NPSO survey in August 2022 through an online survey sent to 40,000 randomly selected non-participants identified by analysis of Nicor Gas tracking data. These results will inform Guidehouse’s September 2022 recommendations to SAG about NTG values to be used for 2023.<sup>2</sup> Table 1 summarizes the NPSO research findings.

**Table 1. Net-to-Gross Research Results for Residential NPSO**

Population Sector	NPSO Savings per Non-Participant (Therms)	Residential Non-Participant Population (Customers)	Total NPSO Therms	Total Evaluated Net Therms from 2021 Program Participants	NPSO Rate
Residential, Non-Income-Eligible	0.55	714,849	391,181	8,088,304	0.048

Source: Guidehouse 2022 residential NPSO research

## Survey Methodology

The study approach follows Illinois TRM version 10 Attachment A, Section 4.1.3 *Non-Participant Spillover Measured from Customers*<sup>3</sup>.

<sup>1</sup> Available on the SAG web site: <https://www.ilsag.info/technical-reference-manual/il-statewide-technical-reference-manual-version-10-0/>

<sup>2</sup> Per Illinois Energy Efficiency Policy Manual Version 2.1, Section 7.4, Free Ridership and Spillover, “a sector or Portfolio-level Spillover analysis should be considered by each utility at least once every Plan period when it is feasible and considered viable by evaluation.”

<sup>3</sup> Available on the SAG web site: <https://www.ilsag.info/technical-reference-manual/il-statewide-technical-reference-manual-version-10-0/>

1. The survey was conducted online with a large, randomly selected sample of residential customers who have not participated in any Nicor Gas energy efficiency programs, including behavioral or energy-saving kit programs, within the past three years, from the period January 1, 2019 to December 31, 2021. The residential non-participant population was identified by removing participants from the past three years, identified by account ID, from Nicor Gas residential customer account data. A random sample of 100,000 customers was selected from approximately 1.2 million residential non-participants.
2. An invitation with a link to the survey was sent in two waves, 5,000 during the soft launch and 35,000 during the full launch, with a quota of 400 survey-confirmed non-participant responses. A \$10 incentive gift card was offered to survey-confirmed respondents to complete the survey.
3. The survey asked respondents about their participant status regarding energy efficiency rebate programs, kit offerings, the Home Energy Reports behavioral program, and elementary energy education kits brought home from schools. The survey exited customers who reported participation.
4. The survey remained open until 443 non-participant responses were recorded.
5. The survey followed the TRM protocol to identify candidates for NPSO by confirming awareness of Nicor Gas energy efficiency programs and marketing messages.
6. NPSO candidates were asked whether they had undertaken any energy efficiency improvements within the past twelve months that save natural gas. A list of measures including water heating, home heating, weatherization, and respondent-specified "other" was presented for selection. An additional screen ensured the respondent's measures did not receive rebates or were free products from Nicor Gas. Nineteen of the 443 respondents that initially indicated they did not receive rebates or free products from Nicor Gas (See Appendix questions A2, A3, and A3a) indicated later in the survey (Question SO4) that one or more of the measures they installed within the past year did receive a rebate or was a free product from Nicor Gas. These nineteen respondents were considered participants and were removed from the non-participant sample.
7. For each selected measure, NPSO candidates were asked the two-factor TRM attribution scoring (zero to 10 scale) for influence (attribution score 1) and a counterfactual likelihood (attribution score 2). Influence was presented in four scenarios:
  - Information from a contractor or retailer about the Nicor Gas Energy Efficiency Program's offerings
  - Information that Nicor Gas provided through print, email, or online about saving energy
  - Information from a friend or family member who participated in the Nicor Gas Energy Efficiency Program
  - Personal experience previously participating in the Nicor Gas Energy Efficiency Program

8. NPSO candidates with a spillover score passing the attribution threshold proceeded to a measure savings estimation battery for each measure passing the attribution scoring. The formula to determine the Spillover Score (per the TRM v10) is:

$$\text{Spillover Score} = (\text{Attribution Score 1} + (10 - \text{Attribution Score 2}))/2.$$

The TRM v10 defines Attribution Score 1 as, “The influence level (on a scale of 0 to 10, where 10 is extremely influential and 0 is not at all influential) the Program Administrator had on the decision to purchase the measure.” Attribution Score 2 is, “the likelihood (on a scale of 0 to 10, where 10 is highly likely and 0 is not at all likely) that the customer would have installed the measure had they not been influenced by the program.” In order to have savings attributed to Nicor Gas, a respondent’s Spillover Score must be greater than 5.0.

9. For each measure passing the attribution scoring threshold, respondents were asked the questions needed to quantify measure savings using TRM v10. The measure questions establish quantities and efficiency characteristics.
10. After completing the TRM measure questions, respondents were asked three demographic questions: type of home, number of people living in the home year round, and household income.

The survey disposition and analysis of the responses are described in below.

## Survey Disposition

The survey disposition is presented in Table 2.

**Table 2. Survey Disposition for Residential NPSO Survey**

Disposition	Total
Completed survey <sup>4</sup>	424
Ineligible survey <sup>5</sup>	260
Incomplete survey	67
Survey started, not completed	126
Email opened, survey not started	14,858
Email unopened/not delivered	24,246
<b>Total Participants Invited</b>	<b>40,000</b>

*Source: Guidehouse 2022 residential NPSO research*

It was necessary to remove non-participants who were eligible for income eligible programs from the 424 non-participants.<sup>6</sup> We made our best efforts to identify those that qualify for income eligible programs (<80% of area median income, AMI) versus those that do not. Although the survey asked for income in ranges, we have responses for only 59 of the 443 respondents. Assuming respondents income is the mid-point of the income range they indicated (e.g., if the range is \$50,000 to \$100,000, the assumed income is \$75,000), 17 (29%) of the 59 respondents fell into the income eligible population. This demonstrates that many of the respondents were in the income eligible population. We concluded that the residential population average of 40.6%<sup>7</sup> (172 of the 424) was the best available estimate income eligible customers within the 424 survey respondents, leaving 252 non-income eligible non-participants.

## NPSO Analysis

The evaluation team applied the approach described in TRM v10 to estimate NPSO savings, using respondent data, Nicor Gas customer account data, and 2021 impact evaluation results.

## NPSO Measure Savings from Survey Respondents

For each measure with a passing spillover threshold score, respondents provided information through the online survey to quantify measure savings using TRM v10. The measure questions

<sup>4</sup> A completed survey is a survey response from a confirmed non-participant in Nicor Gas' EEP.

<sup>5</sup> An ineligible survey is a survey response from a self-reported participant in Nicor Gas' EEP. A substantial number of these respondents (212) reported being a Home Energy Reports recipient. We interpret these as likely recipients of ComEd Home Energy reports, which the survey did not distinguish in the screening. There were 45 ineligible respondents due to receiving an EEE school kit – the EEE program does not collect customer identification information from recipients, and it was necessary to screen them out as a part of the survey.

<sup>6</sup> Per the Illinois Energy Efficiency Policy Manual Version 2.1: "There has been general consensus among Illinois stakeholders that the NTG Ratio for most Income Eligible Programs is not likely to be significantly different from 1.0, particularly where the person making the participation decision is the Low Income Customer. Therefore, Evaluators will not perform NTG research for Income Eligible Programs unless the SAG and Income Qualified Advisory Committees consensus concludes that there is value in performing the NTG research."

<sup>7</sup> The proportion of non-income-eligible residential accounts for the study period was based on information provided by Nicor Gas from their Energy Efficiency Plan 4.0 filing, For the Nicor Gas residential market: 2,088,761 total households/accounts, 848,591 income eligible accounts under 80% of AMI, which is 40.6% (848,591 / 2,088,761).

established quantities and efficiency characteristics. Table 4-2 in the TRM residential NPSO section (Figure 1) shows how gas savings per surveyed customer is calculated. Column F shows the average savings per surveyed customer, determined by dividing the total allocated savings (sum of column E) by the number of completed surveys by non-income-eligible non-participants.

**Figure 1. Table 4-2 from TRM v10**

The table shows how kWh NPSO savings would be calculated; calculations of therm or demand savings would be accomplished in the same manner.

**Table 4-2. Estimation of Respondents' NPSO Savings**

A	B	C	D	E	F
Spillover Measure	Spillover Score	Measure Savings (kWh)	Allocated Savings	Total kWh Savings	Average kWh Per Surveyed Customer
Measure1	Scale of 0 to 10	Savings1	100% if [B] > 5.0	[C] x [D]	N/A
Measure2	Scale of 0 to 10	Savings2		[C] x [D]	
MeasureN	Scale of 0 to 10	SavingsN	0% if [B] ≤ 5.0	[C] x [D]	
				Sum of column E = Total kWh Savings	Total kWh Savings ÷ Number of Completed Surveys

Of the 252 non-income eligible residential non-participant respondents, 5 passed all spillover screening criteria to qualify for NPSO with one or more measures.<sup>8</sup> Evaluation team engineers quantified gross therm savings for each measure using TRM v10 and engineering judgement where participants included open-ended descriptions.<sup>9</sup> Once measure savings were estimated, it was necessary to review each measure to ensure spillover is not double-counted with other program NTG estimates<sup>10</sup>. We concluded that high-efficiency furnaces and boiler measures identified in the residential NPSO survey would be double counted with non-participant spillover adders in the HEER program. Based on our residential NPSO survey findings, energy-efficient furnaces and boilers were not present in the qualifying residential sector NPSO results and there is no double-counting.

Table 3, based on Table 4-2 in the TRM residential NPSO section, shows how gas savings per surveyed customer is calculated. Columns A, B, and C describe the spillover measure, the spillover score for the specific measure, and the therm savings, respectively. All measures shown in Table 3 passed the spillover threshold and 100% of therms for each measure were allocated to the total therms saved. Column F shows the average savings per surveyed

<sup>8</sup> A total of six respondents passed the NPSO screening criteria, and all provided income information. One respondent was income eligible and five were not. The income eligible respondent was removed from Table 3 for that reason, but also made a thermostat adjustment that did not save therms.

<sup>9</sup> One of the five non-income-eligible customers had one qualifying NPSO measure (lower clothes washer temperature) but provided responses that resulted in zero therm savings. This respondent did not provide a number or make a qualitative selection on the previous water heater setting, and did not know the current water heater setting but selected "very hot" currently from the qualitative options, which equals the hottest qualitative option for the before setting. Qualitative responses need to confirm a temperature drop to assign savings. This respondent is not included in Table 3. NPSO savings were estimated for each of the remaining four respondents with no inconsistent responses.

<sup>10</sup> For Nicor Gas, the Home Energy Efficiency Rebate (HEER) program has 13% non-participant spillover from primary research, consisting of high efficiency boilers and furnaces.

customer, determined by dividing the total allocated savings (sum of column E) by the number of completed surveys.

**Table 3. Estimation of Respondents' NPSO Savings**

A	B	C	D	E	F
Spillover Measure	Spillover Score	Measure Savings (therms)	Allocated Savings	Total Therms Saved	Average Therms per Survey Customer
Attic Insulation	7.0	13.2	100%	13.2	252 Surveyed Customers
Weather Stripping	5.5	43.8	100%	43.8	
Basement Insulation	7.5	12.2	100%	12.2	
Duct Insulation	8.0	9.8	100%	9.8	
Faucet Aerators	5.5	13.9	100%	13.9	
Adjust Thermostat	5.5	35.7	100%	35.7	
Weather Stripping	5.5	9.1	100%	9.1	
Lower Clothes Washer Temperature	6.0	0.3	100%	0.3	
<b>TOTAL</b>				137.9	0.55

Source: Guidehouse 2022 residential NPSO research

## NPSO Population Analysis

The TRM describes the procedure for estimating total NPSO generated by the Program Administrator (Nicor Gas) during the program year in Table 4-3 of the NPSO section (Figure 2). The savings attributed from the survey population is extrapolated to the non-income eligible, non-participating residential customer population to determine the overall NPSO savings. Then NPSO energy savings is converted into a rate using the total evaluated therm savings for the program year.

**Figure 2. Table 4-3 from TRM v10**

Table 4-3 shows the process for estimating total NPSO generated by the Program Administrator during the program year (for electric savings). The savings attributed from the survey population will be extrapolated to the nonparticipating residential customer population to determine the overall NPSO savings. Then NPSO energy savings will be converted into a percentage using the total evaluated electric savings for the program year. A similar process would apply for calculating therm or demand NPSO.

**Table 4-3. Calculation of Total NPSO Generated**

Variable	Description	Source/Calculation
F	Average kWh Energy Savings per Surveyed Customer	Survey data and Savings Calculation
J	Total Nonparticipating Residential Population	Customer database
K	NPSO MWh Energy Savings Extrapolated to Nonparticipating Population	$[F \times J] \div 1,000 \text{ kWh/MWh}$
S	Total Evaluated MWh Savings	Residential Portfolio Savings
G	NPSO Spillover Rate	$K \div S$

We estimated the total non-participating residential population through several steps. Nicor Gas provided residential population account information for customers using Residential Service Rate 1.<sup>11</sup> This service classification includes individually metered single-family households including owners and renters, plus individually-metered multi-family customers. Of 2,057,725 residential accounts, Nicor Gas provided account data (account ID, first name, last name) for 1,235,865 customers (60.1% of residential accounts based on account IDs) that had not participated in a Nicor Gas energy efficiency offering in the previous three years, from January 1 2019 through December 31, 2021.

The non-participant account population included income eligible customers, defined as customers with a pre-tax household income less than 80% of Area Median Income, that needed to be removed from the sample. Nicor Gas estimates that 40.6% of their residential accounts are income eligible under this definition. We assumed income eligible accounts were uniformly distributed between participants and non-participants. Therefore, we reduced the 1,235,865, non-participant population by 502,089 (40.6%) accounts, leaving 733,776 non-income-eligible, non-participant accounts (based on account ID).

The 1,235,865 customer non-participant count did not remove any of the 53,078 total participants from 2019 through 2021 in the Elementary Energy Education program which does not collect customer-identifiable information when distributing energy efficiency kits. We assumed that EEE participation was uniformly distributed among participants and non-participants (based on account ID). Furthermore, we assumed that EEE participants were split between income eligible and non-income eligible in the same proportion as the total residential population, resulting in 21,564 income eligible (40.6%) and 31,514 non-income eligible EEE participants. We assumed the non-income eligible EEE participants were uniformly distributed between the participants (meaning they participated in EEE and other programs) and non-participants. Therefore, we removed 18,927 (60.1% of 31,514) accounts from the non-participant population under the assumption that they received an EEE kit. Removing 18,927 accounts from 733,776 accounts left a total non-participating residential population of 714,849 non-income-eligible residential accounts.

The “Total Nonparticipating Residential Population”, which is Variable J from Table 4-3, is 714,849 accounts. The calculations described above are presented in Table 4 below.

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<sup>11</sup> Email from Rohith Mannam, Nicor Gas, August 30, 2022. The reported non-participant count was 1,235,865 total accounts. The reported participants were 821,860 accounts. The sum is 2,057,725 accounts. Rohith reported the vast majority of these accounts are not eligible for the Multi-Family program (buildings with 5 or more units).

**Table 4. Total Non-Participating Residential Population Calculation Summary**

Population Category	Total Residential Population Account IDs	Account ID Participation Ratio	Estimated Income Eligible Population	Not Income Eligible Population Account IDs	2019-2021 Non-Income Eligible EEE	Not Income Eligible Population
Total Residential Population	2,057,725		835,982	1,221,743	31,514	
Non-participants	1,235,865	60.1%	502,089	733,776	18,927	714,849
Participants	821,860	39.9%	333,893	487,967	12,587	

Source: Guidehouse 2022 residential NPSO research

Table 5, based on Table 4-3 in the TRM residential NPSO section, shows how the gas savings per surveyed customer were extrapolated to the total non-participant residential population and expressed as an NPSO rate. The 0.048 NPSO rate is a multiplier on residential net savings and is not additive to individual program-level NTG values (e.g., a HEER program NTG of 0.84 does not become 0.888). Each year, the NPSO rate of 0.048 will be multiplied by the program portfolio total residential net therms saved, and the resulting NPSO therms will be added to the portfolio total net therms.

**Table 5. Estimation of Respondents' NPSO Savings**

Variable	Description	Calculation
F	Average Therm Energy Savings per Surveyed Customer	0.55
J	Total Non-participating Residential Population	714,849
K	NPSO Therm Savings Extrapolated to the Non-participating Population	391,181
S	Total Evaluated Net Therm Savings, Residential 2021 Programs	8,088,304
G	NPSO Rate (K / S)	0.048

Source: Guidehouse 2022 NPSO Research

By comparison, a 2018 residential sector study for Ameren Illinois found savings of 0.22 therms per customer, for an NPSO rate of 0.044 on residential net therm savings.

## Residential NPSO Survey Instrument for Nicor Gas

### Landing Page

Thank you for taking a few minutes to answer questions about energy-saving improvements you may have made around your home. Your feedback is important to us and will help us improve the program to better serve customers like you. All responses will be kept confidential.

Thank you for participating in this important survey!

### Online Non-Participant Survey Battery

[PROGRAMMING NOTES: Please include the Nicor Gas Energy Efficiency Program logo at the top-left portion of the screen, and a progress bar at the bottom center of the screen. Please do not include question numbers or section titles in the visible programming. Please turn on question validation unless optional is specified and include a back button allowing customers to navigate back to the previous question. Unless otherwise noted include only one question per page.]

First, we have some questions about your familiarity with the Nicor Gas Energy Efficiency Program's offerings.

A2. In the past three years, did your household receive a free energy-saving kit, a free home assessment, or a rebate from Nicor Gas for installing efficient equipment or making improvements that save natural gas?

1. Yes [SKIP TO A8]

2. No

98. Don't know

A3. Some Nicor Gas customers receive personalized Home Energy Reports that provide recommendations for reducing energy consumption and compare their energy usage to similar homes in their towns. Do you recall receiving one of these reports either via standard mail or email within the last three years?

1. Yes [SKIP TO C1]

2. No

98. Don't know

A3a. Some Nicor Gas customers received a free energy-saving kit brought home by their child as part of a school educational program. Do you recall receiving one of these kits within the last three years?

1. Yes [SKIP TO C1]

2. No

98. Don't know

### Awareness and NPSO

A4. Before today, were you aware that Nicor Gas offers rebates and discounts for energy-saving equipment and home improvements?

1. Yes

2. No [SKIP TO A6]

98. Don't know [SKIP TO A6]

A5. [IF "YES" TO A4] What rebates for energy-saving equipment and home improvements or free energy-saving kits have you heard about? [OPEN END; ACCEPT MULTIPLE RESPONSES]

A6. [IF "NO" OR "DON'T KNOW" TO A4] Do any of the following rebates, free energy-saving kits, or home assessments that Nicor Gas offers sound familiar to you? [RANDOMIZE LIST (1-10); ACCEPT MULTIPLE RESPONSES]

1. High-efficiency furnace rebate or discount
2. Smart thermostat rebate
3. Air sealing and/or insulation rebate
4. Home Energy Reports
5. Self-installation kit (water saving or weatherization)
6. Free home assessment

Other (please specify): [OPEN END]

98. Don't know [SKIP TO C1]

A7. [IF "YES" TO A4 OR "YES" TO ANY RESPONSES TO A6 EXCLUDING "DON'T KNOW"] Where did you hear or read about Nicor Gas' energy efficiency offerings? [RANDOMIZE LIST (1-14); MULTIPLE RESPONSES]

A Nicor Gas representative

Nicor Gas website

An email

Newsletter

Bill inserts

An advertisement on the internet

TV or radio

Newspaper

Billboard

A family member, friend, neighbor and/or colleague

A contractor

Community event

An internet search on Google, Yahoo, Bing or some other search site

Social media such as twitter or Facebook

Other (please specify): [OPEN END]

Don't know [EXCLUSIVE]

[FOR PROGRAMMER: IF A2 = 1, A8; ALL OTHERS SKIP]

A8. What rebate or free energy-saving offering from Nicor Gas did you or your household receive in the last three years? [MULTIPLE RESPONSES]

1. A free energy or water savings kit
2. A free home assessment
3. A rebate for installing equipment that saves natural gas (i.e., high-efficiency furnace or smart thermostat)
4. A rebate for improving home efficiency (e.g., air sealing, insulation)

5. A free energy-saving kit brought home by a child as part of a school educational program

98. Don't know

[FOR PROGRAMMER: FOR ALL RESPONSES, C1]

## Spillover

SO2. What energy-efficient changes have you made at home in the past year? We are especially interested in changes, improvements or equipment upgrades that save natural gas. These may include installing high-efficiency showerheads, furnaces, thermostats or insulation. Choose all that apply. [MULTIPLE RESPONSES]

Water Heating Equipment and Water Efficiency

Purchased and installed a high-efficiency or tankless water heater (e.g. water-using appliances, faucet aerators, lowering hot water temperature)

Purchase and installed faucet aerators

Purchased and installed high-efficiency showerheads

Lowered the temperature setting on your water heater

Purchased and installed water heater pipe insulation

Lowered the temperature setting for normal washing machine cycle

Purchased and installed ENERGY STAR® Clothes Washer

Purchased and installed ENERGY STAR® Dishwasher

Home Heating Equipment and Operation (e.g. thermostats, duct insulation)

Purchased and installed a high-efficiency furnace

Purchased and installed a high-efficiency boiler

Purchased and installed a new programmable or smart thermostat

Adjusted your thermostat schedule and setting or completed furnace tune-ups

Sealed gaps and cracks in the duct work in your home

Insulated ducts to help air stay at the desired temperature

Weatherization (e.g. attic sealing and insulation, weather-stripping doors or windows)

Sealed gaps and cracks in your attic (air sealing)

Insulated your attic or walls to help air stay at the desired temperature

Weather-stripped the house by sealing windows and doors airtight using door sweeps, etc., covering foundation vents in the winter, or insulating attic access door, etc.

Other, specify

Don't know [SKIP TO C1]

I have not made any energy efficiency changes **[SKIP TO C1]**

SO4. Did you receive any rebates or free products from Nicor Gas for the following equipment or improvements?

**[CREATE A TABLE. COLUMNS ARE AS LISTED BELOW. FOR ROWS, IMPORT SELECTED RESPONSES FROM SO2]**

	Yes	No	DK
[SO2 Selected Response x]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[SO2 Selected Response y] . . .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**[FOR PROGRAMMER: IF SO4 = NO, GO TO SO5; = YES, DK, SKIP TO C1]**

SO5. How influential was your experience with each of the following factors on your making additional energy efficiency improvements on your own? Please rate on a scale of 0 to 10, where 0 is not at all influential and 10 is extremely influential. **[SCALE 0-10; 98 = Don't know]**

**[PIPE IN SELECTED EQUIPMENT RESPONSE OPTIONS WHERE SO4=NO]**

	SO5a. Information from a contractor or retailer about the Nicor Gas Energy Efficiency Program's offerings	SO5b. Information that Nicor Gas provided through print, email, or online about saving energy	SO5c. Information from a friend or family member who participated in the Nicor Gas Energy Efficiency Program	SO5d. Personal experience previously participating in the Nicor Gas Energy Efficiency Program	
	<b>SCALE 0-10</b>				<b>DK</b>
[SO2 Selected Response x]					<input type="checkbox"/>
[SO2 Selected Response y]					<input type="checkbox"/>
...					<input type="checkbox"/>

**[CREATE A TABLE FOR EACH FACTOR FROM SO5 WHERE ANY SCORE >0. COLUMNS ARE AS LISTED BELOW. FOR ROWS, IMPORT SELECTED RESPONSES FROM SO2 WHERE SO5 SCORE >0]**

SO6. If you had not received information from Nicor Gas or heard about Nicor Gas Energy Efficiency offerings from other sources, how likely is it that you would have made this (these) additional energy-efficient improvement(s)? Please rate on a scale of 0 to 10 where 0 means you definitely WOULD NOT have made the improvement and 10 means you definitely WOULD have made the improvement. **[SCALE 0-10; 98 = Don't know]**

**[PIPE IN SELECTED EQUIPMENT RESPONSE OPTIONS FROM SO5]**

	[Each Factor with any Score > 0]	
	SCALE 0-10	DK

[SO2 Selected Response x]

[SO2 Selected Response y]. . .

**[FOR EACH EQUIPMENT, CREATE MEASURE ATTRIBUTION SCORE 1 (MAS1) = SO5 numeric response]**

**[FOR EACH EQUIPMENT, CREATE MEASURE ATTRIBUTION SCORE 2 (MAS2) = SO6 numeric response]**

**[FOR EACH EQUIPMENT AND EACH FACTOR, SPILLOVER SCORE (SS) = (MAS1 + (10-MAS2))/2,**

**IF SS > 5, PROCEED WITH RELEVANT SPILLOVER QUESTIONS. OTHERWISE, SKIP TO NEXT EQUIPMENT OR D1.]**

SO7. Why did you not receive a rebate or instant discount from Nicor Gas for **[PIPE IN EACH SELECTED EQUIPMENT RESPONSE OPTIONS FROM SO2. PIPE IN ONE EQUIPMENT RESPONSE AT A TIME. REPEAT THIS QUESTION FOR EACH EQUIPMENT RESPONSE]**? (Select all that apply).

It was not eligible for a rebate or instant discount

No rebate or instant discount was available

The rebate or instant discount was not worth the application effort

The equipment did not meet the efficiency requirements

The program application paperwork was too long or complicated

I haven't had time

I planned to but forgot

I didn't know I could

Other **[OPEN ENDED]**

Did receive a rebate from Nicor Gas **[SKIP TO NEXT EQUIPMENT TYPE OR D1 IF NO OTHER EQUIPMENT IF THIS IS SELECTED]**

Don't know

**Water Heating Module [ASK WATER HEATING MODULE IF SO2=1 AND SO4=NO OR IF SO2=1 AND SO4A=NO]**

SO\_WH1. What form of energy does your water heater use?

Electric **[GO TO FURNACE MODULE]**

Natural Gas

Other **[OPEN END]**

Don't know

SO\_WH2. **[ASK IF SO2=1a]** Where is the water heater located?

Conditioned space (area inside your home where temperature is controlled)

Unconditioned space (area inside your home where temperature is not controlled: could be your garage, attic, or unfinished basement)

Unknown location

Don't Know

SO\_WH3. **[ASK IF SO2=1]** Does your water heater have an ENERGY STAR® label?

Yes

No

Don't know

SO\_WH4. **[ASK IF SO2=1a]** How old was the replaced water heater?

1. 0-4 years
2. 5-9 years
3. 10-14 years
4. 15-19 years
5. 20 years or older
8. Don't know

SO\_WH5. **[ASK IF SO2=1b]** How many bathroom faucet aerators did you install? **[NUMERIC RANGE; MIN: 0; MAX: 100, DK]**

SO\_WH6. **[ASK IF SO2=1b]** How many kitchen faucet aerators did you install? **[NUMERIC RANGE; MIN: 0; MAX: 100, DK]**

SO\_WH7. **[ASK IF SO2=1c]** How many high-efficiency showerheads did you install? **[NUMERIC RANGE; MIN: 1; MAX: 100, DK]**

SO\_WH8a. **[ASK IF SO2=1d]** What temperature was the water heater originally set to? **[NUMERIC RANGE; MIN: 60; MAX: 150, DK]** (Fahrenheit)

SO\_WH8b. **[ASK IF SO\_WH8a=DK]** Approximately how hot was your original hot water setting?

Warm

Very Warm

Hot

Very Hot

SO\_WH9. **[ASK IF SO2=1e]** How many feet of water heater pipe insulation did you install? **[NUMERIC RANGE; MIN: 1; MAX: 10,000, DK]** (Note feet or inches)

SO\_WH10. **[ASK IF SO2=1e]** What is the diameter of the water heater pipe? **[NUMERIC RANGE; MIN: 0.1; MAX: 50, DK]** (inches)

SO\_WH11. **[ASK IF SO2=1e]** What is the R-value of the installed insulation? **[NUMERIC RANGE; MIN: 1; MAX: 100, DK]**

SO\_WH12a. **[ASK IF SO2=1f]** What temperature is the water heater now set to? **[NUMERIC RANGE; MIN: 60; MAX: 150, DK]** (Fahrenheit)

SO\_WH12b. **[ASK IF SO\_WH12a=DK]** Approximately how hot is your hot water now?

- Warm
- Very Warm
- Hot
- Very Hot

**Furnace Module [ASK FURNACE MODULE IF SO2=2 AND SO4=NO OR IF SO2=2 AND SO4A=NO]**

**[ASK SO\_H0 IF SO2 OPTION 2a OR b IS SELECTED]**

SO\_H0. How many did you install?

**[ASK SO\_H1 IF SO2 OPTION 2a OR b IS SELECTED]**

SO\_H1. What is the square footage of your home? **[NUMERIC OPEN END; 96=NOT APPLICABLE, 98=DON'T KNOW]**

**[LOOP THROUGH SOH2-SOH6 FOR EACH MEASURE SELECTED IN SO2 OPTION 2a OR b]**

SO\_H2. What is the capacity of the new high-efficiency heating equipment? (Capture in Btu/hr)  
a. Btu/hr **[NUMERIC OPEN END; 10,000-1,000,000; 96=NOT APPLICABLE, 98=DON'T KNOW]:**

**[ASK IF SO2 OPTION 2 SELECTION = a]**

SO\_H3. What is the efficiency or Annualized Fuel Utilization Efficiency (AFUE) value of this new high-efficiency heating equipment? **[NUMERIC OPEN END; 1-30, 96=NOT APPLICABLE; 98=DON'T KNOW]**

**[ASK IF SO2 OPTION 2 SELECTION = a or b]**

SO\_H4. Did this new high-efficiency heating equipment replace old equipment?

- Yes
- No
- Don't know

**[ASK IF SO\_H4=1]**

SO\_H5 How old was the replaced equipment?

1. 0-4 years
2. 5-9 years
3. 10-14 years
4. 15-19 years
5. 20 years or older
98. Don't know

**[END LOOP]**

**[ASK IF SO2 OPTION 2 SELECTION = b]**

SO\_H6. Is the new boiler a steam boiler or a hot water boiler?

- Steam Boiler
- Hot Water Boiler
- Don't know

**[ASK IF SO2 OPTION 2 SELECTION = b]**

SO\_H7. What is the efficiency rating of the new boiler?

- ENERGY STAR® minimum (AFUE 85%)
- AFUE 90%
- AFUE 95%
- Other **[OPEN ENDED]**
- Don't know

**[ASK IF SO2 OPTION 2 SELECTION = c]**

SO\_H8. Is/Are the thermostat(s) programmed to adjust the temperature at certain times of day?

- Yes
- No
- Don't know

**[ASK IF SO2 OPTION 2 SELECTION = c and SO\_H8 = 1]**

SO\_H9. Is it a "learning" or "smart" thermostat?

- Yes
- No

**[ASK IF SO2 OPTION 2 SELECTION = d]**

SO\_H10. Did you modify your thermostat schedule?

1. Yes, the thermostat is heating for fewer hours during the week. (The thermostat schedule was programmed to start later or end earlier)
2. Yes, the thermostat is heating for more hours during the week. (The thermostat schedule was programmed to start earlier or end later)
3. No, we did not adjust the thermostat schedule.
98. Don't know

**[ASK IF SO2 OPTION 2 SELECTION = d]**

SO\_H11. Did you adjust your thermostat temperature setting?

1. Yes, the heating temperature was lowered.
2. Yes, the heating temperature was raised.
3. No, I did not modify the thermostat heating temperatures.
98. Don't know

**[ASK IF SO2 OPTION 2 SELECTION = d]**

SO\_H12. Have you completed a furnace tune-up?

1. Yes
2. No
98. Don't Know

**[ASK IF SO2 OPTION 2 SELECTION = e]**

SO\_H13. Approximately how many feet of HVAC ducts did you seal? **[NUMERIC RANGE, DK]**  
(Note feet or inches)

**[ASK IF SO2 OPTION 2 SELECTION = f]**

SO\_H14. Approximately how many feet of HVAC ducts did you insulate? **[NUMERIC RANGE, DK]**  
(Note feet or inches)

**[ASK IF SO2 OPTION 2 SELECTION = e OR f]**

SO\_H15. Where are the ducts located?

1. Attic
2. Basement
3. Vented crawl
98. Don't Know

**[ASK IF SO2 OPTION 2 SELECTION = e OR f]**

SO\_H16. What is the level of insulation on the ducts?

1. R-0
2. R-2
3. R-4+
4. R-8+
98. Don't know

**[ASK IF SO2 OPTION 2 SELECTION = e OR f]**

SO\_H17. Is the ductwork located in a semi-conditioned space or an unconditioned space?

1. Semi-conditioned space
2. Unconditioned space
98. Don't know

**Weatherization Module [ASK IF SO2=3 AND SO4=NO OR IF SO2=3 AND SO4A=NO]**

SO\_W1. [IF SO2 OPTION 3 = a] In what locations did you do air sealing? [OPEN ENDED, DK]

SO\_W2. [IF SO2 OPTION 3 = c] How many air sealing gaskets on electrical outlets did you install? [NUMERIC RANGE; MIN:0; MAX:1000, None, DK]

SO\_W3. [IF SO2 OPTION 3 = c] How many door sweeps did you install? [NUMERIC RANGE; MIN:0; MAX:1000, None, DK]

SO\_W4. [IF SO2 OPTION 3 = a] About what length of caulking, sealing, or polythene tape did you install? Your best estimate is fine. [NUMERIC RANGE; MIN:0; MAX:1000, None, DK]  
(NOTE: linear feet)

SO\_W5. [IF SO2 OPTION 3 = c] About what length of window or door weatherstripping did you install? Your best estimate is fine. [NUMERIC RANGE; MIN:0; MAX:1000, None, DK] (NOTE: linear feet)

SO\_W6. [IF SO2 OPTION 3 = b] In what location was the insulation installed? [OPEN ENDED, DK]

SO\_W7. [IF SO2 OPTION 3 = b] In what quantities was the insulation installed?  
R-value: [NUMERIC RANGE; MIN:1, MAX: 10,000, DK]  
Depth (note units of inches or feet): [NUMERIC RANGE, CHECK BOX FOR SQ FT OR INCHES]  
Area Installed (square feet): [NUMERIC RANGE]

SO\_W8. [IF SO2\_W2, SO2\_W3, and SO2\_W5 = DK] Please describe the weatherstripping that was installed.  
Type [TEXT BOX]  
Location [TEXT BOX]  
Approximate count (number of doors, length of crawl space, etc. please describe in text box) [TEXT BOX]  
Don't know

**Other Module [ASK IF SO2=4]**

[CREATE "OTHER, SPECIFY" BASED ON OPEN ENDED RESPONSES IN SO2]  
[LOOP THROUGH SO\_OT2 FOR EACH MEASURE LISTED IN SO2=4]

**[ASK SO\_OT1, IF SO\_WH1 WAS NOT ASKED]**

SO\_OT1 What form of energy does your water heater use?

Electric **[SKIP TO NEXT MEASURE AND REASK QUESTION OR D1]**

Natural gas

Other **[OPEN ENDED]**

98. Don't know

SO\_OT2. Can you describe the **[OTHER\_SPECIFY]** in more detail? We are interested in any details that would allow us to estimate the natural gas savings from the project. **[OPEN END; 98=DK]** (Factors may include the following for both the new and old equipment.)

	New equipment	Original (replaced) equipment	N/A	DK	RF
Quantity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Efficiency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Size	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Affected square footage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is it ENERGY STAR® labeled?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Demographics

We're almost finished! The last few questions are about your household.

D1. What type of home do you live in?

Single-family detached home

Single-family attached home such as townhouse or row house

Apartment or condominium

Mobile home

Other, please specify: **[OPEN END]**

D2. How many people live in your home year round? Please include adults and children in your response.

**[List. 1, 2, 3, 4, 5, 6, or 7+]**

D3. Which of the following categories best describes your total annual household income before taxes?

1. Less than \$25,000
2. \$25,000 to \$50,000
3. More than \$50,000 up to \$100,000
4. More than \$100,000 up to \$200,000
5. More than \$200,000
98. Don't know
99. Prefer not to answer

## Survey Closing

C1. Is there anything else you would like to share related to your experience with Nicor Gas?

**[OPEN ENDED]**

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break

**[END OF SURVEY MESSAGE]:** Thank you for your participation in this survey!