



Residential Education and Outreach Program Impact Evaluation Report

Home Energy Reports

**Energy Efficiency Plan: Program Year 2021
(1/1/2021-12/31/2021)**

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Peoples Gas and North Shore Gas

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Table of Contents

Executive Summary	1
E.1 Program Savings	2
E.2 Program Volumetric Detail	3
E.3 Findings and Recommendations	4
1. Introduction	5
2. Evaluation Approach	6
2.1 Impact Evaluation Methodology – Normalized Savings	6
2.2 Original 2013 Waves	6
2.2.1 NSG September 2019 Wave.....	7
2.2.2 Accounting for Savings Persistence.....	7
2.3 Process Evaluation.....	8
3. Net Impact Evaluation	9
4. Findings and Recommendations	10
Appendix A. Total Resource Cost Detail	11

List of Figures and Tables

Table 1-1. CY2021 Peoples Gas and North Shore Gas HER Program Customer Counts.....	5
Table 2-1. Normalized Per Household Per Day Savings for CY2021	6
Table 2-2. HER Gas Savings Persistence Factors	7
Table 3-1. CY2021 Peoples Gas and North Shore Gas HER Program Net Savings	9
Table 4-1. Historical Realization Rates and NTG Values	10
Table A-1. Total Resource Cost Savings Summary for PGL and NSG.....	11

Executive Summary

This report summarizes Guidehouse’s findings and results from the impact evaluation of Calendar Year 2021 (CY2021)¹ of the Peoples Gas (PGL) and North Shore Gas (NSG) Home Energy Reports (HER) program. Based on guidance from the Illinois Stakeholder Advisory Group (SAG), Guidehouse normalized CY2021 program savings for the effect of the coronavirus pandemic.² Initially launched in 2013, the program is designed to generate energy savings by providing residential customers with information about their energy use and energy conservation suggestions and tips. Program participants receive information in the form of paper and email home energy reports, and via the customer’s energy management portal online.

An important feature of the PGL and NSG HER program is that it is designed as a randomized controlled trial (RCT).³ Customers in the target group of residential customers from each utility are randomly assigned to either the recipient group or the control (non-recipient) group to estimate changes in energy use due to the program. Customers may opt *out* of the program at any time, but cannot opt *in* due to the RCT design. An implication of the RCT design is that the savings estimates are intrinsically net of free-ridership and most spillover bias. Unless otherwise noted, reported “savings” in this report refer to *normalized net savings*.⁴

In CY2021, the program included three waves of customers: one for PGL and two for NSG. Treated customer counts for each of these waves are summarized in Table E-1.

Table E-1. CY2021 Peoples Gas and North Shore Gas HER Program Customer Counts

Wave	Treated Customer Counts
PGL	86,875
NSG	52,918
NSG – Sept 2019 Wave	15,782

Source: Guidehouse analysis of PGL and NSG customer billing data.

¹ CY2021 began January 1, 2021 and ended December 31, 2021.

² This decision is documented in meeting notes from the June 11 and August 24, 2020 and February 22, 2021 SAG meetings (available at <https://www.ilsag.info/events/list>).

³ In selecting each wave, the program implementer, Oracle, randomly allocated targeted PGL and NSG residential customers between participant and control groups. As each wave was added, Guidehouse confirmed that the usage data was consistent with an RCT design.

⁴ In some instances, the word “net” appears in column headings and summary sentences for added clarity. For CY2021 specifically, the reported savings are normalized savings.

E.1 Program Savings

Table E-1 summarizes the HER Program’s CY2021 natural gas savings. The savings values in the table represent savings normalized for the effects of COVID-19 using an approach agreed upon by Guidehouse, the utilities, and the implementer, which leverages historical savings trends. These savings reflect adjustments for uplift,⁵ as well as CY2018, CY2019, and CY2020 persisting savings.⁶ The normalized savings methodology is described in Section 2.1.

Guidehouse verified net savings of 769,290 therms for PGL (realization rate of 119%) and 591,431 therms for NSG (realization rate of 130%). The persistence adjustment reduced savings by almost one-half and is also accounted for in the implementer’s *ex ante* savings estimates. The high realization rates are potentially driven by differences in the way the implementer and the evaluation team calculate persistence, particularly in the calculation of retention rates, and are in line with the realization rates from the last several years’ evaluations.

Table E-1 CY2021 Peoples Gas and North Shore Gas HER Program Net Savings

Wave	<i>Ex Ante</i> Savings (Therms)	Verified Unadjusted Savings (Therms)*	Persistence Adjustment (Therms) †	Final Verified Savings (Therms)	Verified Realization Rate‡
PGL	645,654	1,396,111	626,820	769,290	119%
NSG		847,743	381,703	466,039	
NSG – Sept 2019 Wave	455,734	171,157	45,765	125,391	130%

Source: Guidehouse analysis of PGL and NSG customer billing data.

* Verified unadjusted savings account for uplift (which is inherently accounted for in the normalization method) but not persistence.

† This adjustment reduces savings by the amount attributable to sending reports in CY2018, CY2019, and CY2020 and is prescribed in the *Adjustments to Behavior Savings to Account for Persistence* measure in the Illinois Technical Reference Manual (TRM). See TRM, Measure 6.1.1, Volume 4, Version 8.0. Per TRM Version 9.0, HER “evaluations of CY2021 should use IL-TRM v8.0.”

‡ The verified realization rate compares final verified savings with *ex ante* savings.

⁵ Uplift refers to the impact of the HER program on enrollment in *other* PGL and NSG EE programs. In the normalized savings, uplift is already accounted for in the historic data used to produce savings. To avoid double-counting the savings from this indirect effect, Guidehouse subtracts the estimated uplift savings from the total HER program savings, including legacy uplift from prior years (see the CY2020 report for details). The fact that uplift savings is subtracted from the HER programs’ total energy savings does not indicate that the uplift savings was not *caused by* the HER programs, or that the HER programs shouldn’t be credited for its occurrence. It is an accounting adjustment to avoid double-counting when aggregating savings over multiple EE programs. Indeed, the existence of uplift is an indicator of successful cross-marketing by the HER programs, and thus should be seen as an added program benefit.

⁶ This adjustment is prescribed in the *Adjustments to Behavior Savings to Account for Persistence* measure in the Illinois Technical Reference Manual (TRM). See TRM, Measure 6.1.1, Volume 4, Version 8.0. Per TRM Version 9.0, HER “evaluations of CY2021 should use IL-TRM v8.0.” See Section 2.2.2 for details.

E.2 Program Volumetric Detail

Table E- presents participation details for the CY2021 PGL and NSG HER programs. The PGL and original NSG waves both had normalized savings of 0.045 therms per day in CY2021, while the NSG September 2019 wave had 0.031 therms per day. Guidehouse did not calculate the percentage savings implied by these normalized absolute savings values, as we did not review any customer billing data for the CY2021 evaluation.

Table E-2. CY2021 Peoples Gas and North Shore Gas HER Program Participation Detail

Utility	Number of Participants	Number of Controls	Average Participant Net Savings per Day (Therms)
PGL	86,875	12,129	0.045
NSG	52,918	12,349	0.045
NSG – Sept 2019 Wave	15,782	12,764	0.031

Source: Guidehouse analysis of PGL and NSG customer billing data.

E.3 Findings and Recommendations

For PGL's HER program, Guidehouse verified CY2021 impacts of 769,290 therms; and for NSG, the corresponding figure was 591,430 therms. As this is the last year of the program, Guidehouse has not offered any recommendations at this time.

Finding 1. CY2021 marked the fourth year since the program measure life was revised from 1 to 5 years, with savings decay in the TRM associated with each year. Continuous treatment of customers required adjustment of the current year's savings for the persisting savings claimed as part of the previous years' impacts. In CY2021, the evaluation team reduced total savings by 44% to account for persisting savings from CY2018, CY2019, and CY2020 interventions.

Finding 2. The program realization rate was 119% for PGL and 130% for NSG. High realization rates have been a trend for this program for several years, as shown in Table 4-1, and these rates are in line with past years. In CY2020, discussions with the implementer for other Illinois evaluations revealed differences in the way the implementer calculated persistence, and particularly retrospective retention rates, compared with the evaluation team. This is a possible cause of the high realization rates.

1. Introduction

This report presents a summary of the findings and results from the impact evaluation of calendar year 2021 (CY2021) for the Peoples Gas (PGL) and North Shore Gas (NSG) Home Energy Reports (HER) program. Based on guidance from the Illinois Stakeholder Advisory Group (SAG), Guidehouse normalized CY2021 program savings for the effect of the coronavirus pandemic.⁷ This program is designed to generate energy savings by providing residential customers with information about their energy use and energy conservation suggestions and tips. Program participants receive information in the form of home energy reports that give customers various types of information, including:

- Assessments of how their recent energy use compares to their own energy use in the past
- Tips on how to reduce energy consumption, some of which are tailored to their own circumstances
- Information on how their energy use compares to that of neighbors with similar homes

Recipient customers received reports by mail and were also invited to log onto a dedicated program website that offers suggestions of additional opportunities to save energy and allows participants to fine-tune their profiles and report energy conservation steps that they have taken. Other studies have shown that receiving reports containing this type of information can stimulate customers to reduce their energy use, creating average energy savings in the one percent to three percent range, depending on local energy use patterns.

An important feature of the PGL and NSG HER programs is that both programs were designed as randomized controlled trials (RCTs).⁸ Customers in the target group of residential customers from each utility were randomly assigned to either the recipient group or the control (non-recipient) group to estimate changes in energy use due to the program. Having an RCT experimental design makes the process of verifying energy savings simpler and more robust. Among other things, it effectively eliminates free-ridership bias, and thus the need for net-to-gross research. Customers may opt *out* of the program at any time, but they cannot opt *in* due to the RCT design.

In CY2021, the program included three waves of customers: one for PGL and two for NSG. Treated customer counts for each of these waves are summarized in Table 1-1.

Table 1-1. CY2021 Peoples Gas and North Shore Gas HER Program Customer Counts

Wave	Treated Customer Counts
PGL	86,875
NSG	52,918
NSG – Sept 2019 Wave	15,782

Source: Guidehouse analysis of PGL and NSG customer billing data.

⁷ This decision is documented in meeting notes from the June 11 and August 24, 2020 and February 22, 2021 SAG meetings (available at <https://www.ilsag.info/events/list>).

⁸ Guidehouse has verified the RCT design of each of these waves as they were launched into the program.

2. Evaluation Approach

The evaluation approach used to produce the results presented in this report follows the SAG's direction to normalize savings for the effects of the coronavirus pandemic.⁹

2.1 Impact Evaluation Methodology – Normalized Savings

Continued social distancing and sustained work-from-home behaviors in CY2021 across Illinois as a result of the coronavirus pandemic likely continued to impact usage patterns compared to pre-pandemic. Notably, pandemic-related impacts may have limited the program's ability to influence energy efficiency behaviors that participants are willing and able to take. While the program RCT design should produce an unbiased estimate of program savings given the pandemic, it does not normalize the savings that occur under the pandemic. For CY2021 (as in CY2020), SAG directed evaluation teams to normalize claimable savings for pandemic-related changes across the utilities' energy efficiency programs, including the HER Program.

The evaluation team developed a normalization approach that builds upon historical program data, is wave-specific, and incorporates available history for each wave. For each wave, the evaluation team developed per household, per day savings adjusted for current year and legacy uplift, but before subtracting persisting savings from previous years. The evaluation team used absolute (therm) savings rather than percentage savings, as usage patterns and levels may have differed from normal in CY2021. The description of accounting for savings persistence can be found in Section 2.2.2.

The normalized savings per household per day are summarized in Table 2-1, and a description of the method for each wave follows.

Table 2-1. Normalized Per Household Per Day Savings for CY2021

Wave	Per Household Per Day Savings (Therms)
	January – December 2021
PGL	0.045
NSG	0.045
NSG - Sept 2019 Wave	0.031

Source: Guidehouse analysis of historic PGL-NSG HER Program data

2.2 Original 2013 Waves

For the original PGL and NSG waves launched in GPY3 (2013),¹⁰ the evaluation team recommends using the same normalized savings as CY2020, as no new information is available to influence those values. In CY2020, normalized savings were based on CY2019 per household per day savings, after adjusting for both current year and legacy uplift. These two waves were restructured between 2017 and 2020, with a reduction in customers during GPY6 (2016 to 2017), and the addition of some of those customers back into the program in CY2019

⁹ As this is the final year PGL and NSG are running their HER program and they are claiming normalized savings, Guidehouse did not calculate any actual savings based on customer billing data for CY2021.

¹⁰ The program was first offered in Gas Program Year 3 (GPY3), which began June 1, 2013 and ended May 31, 2014. Program years GPY3 through GPY5 began June 1 and ended May 31. GPY6 began June 1, 2016 and ended December 31, 2017. Beginning January 1, 2018, program year (PY) coincides with calendar year (CY).

and CY2020. Given this restructuring, the evaluation team, the utilities, and the implementer agreed CY2019 could be expected to be most reflective of CY2020 and CY2021.

2.2.1 NSG September 2019 Wave

The NSG wave launched in September 2019 had only four months of program history pre-pandemic, meaning the evaluation team had to look to other program data to determine an appropriate normalized value for CY2020. As discussed in CY2020 report,¹¹ for the period from January to December 2020, the evaluation team recommended averaging GPY6 savings, which was the year with the lowest absolute per customer per day savings,¹² from the original PGL and NSG waves to get normalized savings for the September 2019 NSG wave.

CY2021 is the third year of savings for this wave and based on prior program performance, Guidehouse sees that HER program savings typically continue to ramp up into the third year. As GPY6 was used to determine savings for CY2020, Guidehouse looked to the change in savings from GPY6 to CY2018 to inform the ramp up from CY2020 to CY2021. Between GPY6 and CY2018, savings increased by average of 94% across the original PGL and NSG waves. Applying the same increase to the NSG September 2019 wave in CY2021 results in normalized program savings of 0.031 therms per day.

2.2.2 Accounting for Savings Persistence

Continued implementation of HER programs in Illinois and across the country has demonstrated persistence of savings beyond the first year, leading Illinois to adopt a measure persistence framework in Version 8.0 of the TRM.¹³ This framework assumes that savings persist over five years, but the persistence decays in each year. The TRM recommends using the persistence factors presented in Table 2-2 over the five-year life to estimate lifetime gas savings for the program. In CY2021, the original PGL and NSG waves are in Year 4, while the NSG September 2019 wave is in Year 3.

Table 2-2. HER Gas Savings Persistence Factors

Year	Gas Persistence Factor
Year 1	100%
Year 2	45%
Year 3	20%
Year 4	9%
Year 5	4%

Source: TRM, Measure 6.1.1, Volume 4, Version 8.0¹⁴

¹¹ Guidehouse. 2021. *Residential Education and Outreach Program Impact Evaluation Report*. Prepared for Peoples Gas and North Shore Gas. < https://ilsag.s3.amazonaws.com/PGL_NSJ-Home-Energy-Reports-2020-Impact-Eval-Report-2021-06-15-Final.pdf>

¹² Guidehouse considered averaging first-year savings (from GPY3) across those two waves for this wave, but found that this resulted in considerably higher absolute savings for CY2020 than for the two more mature waves. Therefore, in discussion with the utilities and the implementer, we opted for a more conservative recommendation.

¹³ Per TRM Version 9.0, HER "evaluations of CY2021 should use IL-TRM v8.0."

¹⁴ Per TRM Version 9.0, HER "evaluations of CY2021 should use IL-TRM v8.0."

Per the TRM, the adjustment for persistence also accounts for the program retention rate.¹⁵

2.3 Process Evaluation

Guidehouse's CY2021 PGL and NSG HER process evaluation included interviews with the program implementer to update our information about the program, such as plans for ending the program. The evaluation did not include any participant surveys or interviews.

¹⁵ Retention is calculated separately for CY2021 compared to each prior year (CY2018, CY2019 and CY2020). For the CY2019 and CY2018 calculations, the retention rate was based on the treatment customers who were also in the program in CY2019 (i.e., not the treatment customers added into the program in the PGL September 2020 expansion) or CY2018 (i.e., not the treatment customers added into the program in expansions in 2019).

3. Net Impact Evaluation

A key feature of the RCT design of the HER program is that the analysis inherently estimates net savings because there are no participants who would have received the individualized reports in the absence of the program. While some customers receiving reports may have taken energy-conserving actions or purchased high-efficiency equipment anyway, the random selection of program participants (as opposed to voluntary participation) implies that the control group of customers not receiving reports would be expected to exhibit the same degree of energy-conserving behavior and purchases. Therefore, this method estimates net savings, and no further net-to-gross (NTG) adjustment is necessary.

Table 3-1 summarizes total program savings, before and after adjusting for persisting savings from CY2018, CY2019, and CY2020. Relative to the implementer’s *ex ante* estimates, Guidehouse verified higher savings for both PGL and NSG.¹⁶

Table 3-1. CY2021 Peoples Gas and North Shore Gas HER Program Net Savings

Wave	<i>Ex Ante</i> Savings (Therms)	Verified Unadjusted Savings (Therms)*	Persistence Adjustment (Therms) †	Final Verified Savings (Therms)	Verified Realization Rate‡
PGL	645,654	1,396,111	626,820	769,290	119%
NSG		847,743	381,703	466,039	
NSG – Sept 2019 Wave	455,734	171,157	45,765	125,391	130%

Source: Guidehouse analysis of PGL and NSG customer billing data.

* Verified unadjusted savings account for uplift (which is inherently accounted for in the normalization method) but not persistence.

† This adjustment reduces savings by the amount attributable to sending reports in CY2018, CY2019, and CY2020 and is prescribed in the *Adjustments to Behavior Savings to Account for Persistence* measure in the Illinois Technical Reference Manual (TRM). See TRM, Measure 6.1.1, Volume 4, Version 8.0. Per TRM Version 9.0, HER “evaluations of CY2021 should use IL-TRM v8.0.”

‡ The verified realization rate compares final verified savings with *ex ante* savings.

¹⁶ In CY2020, discussions with the implementer for other IL evaluations revealed differences in the way the implementer calculated persistence, and particularly retrospective retention rates, compared to the evaluation team. This is the most likely cause of the high realization rates.

4. Findings and Recommendations

For PGL’s HER program, Guidehouse verified CY2021 impacts of 769,290 therms; and for NSG, the corresponding figure was 591,430 therms. As this is the last year of the program, Guidehouse has not offered any recommendations at this time.

Finding 1. CY2021 marked the fourth year since the program measure life was revised from 1 to 5 years, with savings decay in the TRM associated with each year. Continuous treatment of customers required adjustment of the current year’s savings for the persisting savings claimed as part of the previous years’ impacts. In CY2021, the evaluation team reduced total savings by 44% to account for persisting savings from CY2018, CY2019, and CY2020 interventions.

Finding 2. The program realization rate was 119% for PGL and 130% for NSG. High realization rates have been a trend for this program for several years, as shown in Table 4-1, and these rates are in line with past years. In CY2020, discussions with the implementer for other Illinois evaluations revealed differences in the way the implementer calculated persistence, and particularly retrospective retention rates, compared to the evaluation team. This is a possible cause of the high realization rates.

Historical Results

Table 4-1 shows the historical net savings realization rates for the HER Program. The impact analysis method provides net savings directly. Gross savings are not estimated, and there is no NTG ratio.

Table 4-1. Historical Realization Rates and NTG Values

Program Year *	PGL Verified Net Savings RR	NSG Verified Net Savings RR	PGL NTG	NSG NTG
GPY1	No Program	No Program	-	-
GPY2	No Program	No Program	-	-
GPY3 (2013-14)	105%	98%	NA	NA
GPY4 (2014-15)	110%	125%	NA	NA
GPY5 (2015-16)	98%	101%	NA	NA
GPY6 (2016-17)	92%	116%	NA	NA
2018	106%	129%	NA	NA
2019	112%	153%	NA	NA
2020 (Normalized)	157%	206%	NA	NA
2020 (Actual)	136%	173%	NA	NA
2021	119%	130%	NA	NA

Source: Guidehouse evaluation research. Analysis method provides net savings directly.

* The program was first offered in GPY3, which began June 1, 2013 and ended May 31, 2014. Program years GPY3 through GPY5 began June 1 and ended May 31. GPY6 began June 1, 2016 and ended December 31, 2017. Beginning January 1, 2018, program year coincides with calendar year.

Appendix A. Total Resource Cost Detail

Table A-1, the Total Resource Cost savings table for PGL and NSG, includes cost-effectiveness analysis inputs available at the time of finalizing the CY2021 HER impact evaluation report. Additional required cost data (e.g., measure costs, program level incentive and non-incentive costs) are not included in this table and will be provided to evaluation later. Detail in this table (e.g., EULs), other than final CY2021 savings and program data, are subject to change and are not final.

Table A-1. Total Resource Cost Savings Summary for PGL and NSG

Savings Category	PGL	NSG	NSG Sept 2019 Wave
Number of Participants	86,875	52,918	15,782
Effective Useful Life (Years)	5	5	5
Ex Ante Savings, therms	645,654	455,734	
Verified Net Savings After Uplift Adjust., therms	769,290	466,039	125,391

Source: Guidehouse analysis of PGL and NSG program tracking and customer billing data.