



Income Eligible Single Family Program Impact Evaluation Report

**Energy Efficiency Plan: Program Year 2022
(1/1/2022-12/31/2022)**

Prepared for:

Peoples Gas and North Shore Gas

FINAL

June 5, 2023

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1. Introduction

This report presents the results of the impact evaluation of the Peoples Gas (PGL) and North Shore Gas (NSG) 2022 Income Eligible Single Family (SFIE) program and a summary of the energy impacts for the total program and broken out by relevant measure and program structure details. The appendices present the impact analysis methodology and Illinois total resource cost (TRC) inputs. Program year 2022 covers January 1, 2022, through December 31, 2022.

2. Program Description

The SFIE program offers installation of energy efficiency measures for qualifying homeowners with a household income at or below 80% of the area median income (AMI). Eligible measures include programmable and advanced thermostats, water efficiency devices, weatherization measures, pipe insulation, heating and cooling equipment, and custom energy-saving measures for eligible properties. The program also offers installation of health and safety measures including vents, electrical repairs, and asbestos and mold remediation. The program also distributed leave-behind kits (home energy assessment kits), which are composed of weatherstripping, door sweep, and shower timer measures.

The SFIE program has three paths:

- The SFIE Retrofits program component offers direct install products and no-cost weatherization services for customers. The PGL and NSG program is delivered jointly with ComEd through approved agencies or partners (e.g., Chicago Bungalow Association) that perform outreach and intake. The program is implemented by Resource Innovations. The Single Family – Illinois Home Weatherization Assistance Program (IHWAP) path is administered by ComEd, PGL, NSG, and Nicor Gas and is implemented by Resource Innovations. Weatherization services are provided to low-income residents through local community action agencies or not for profit agencies.
- The Home Energy Assessment (HEA) program path is administered by ComEd, Nicor Gas, PGL, and NSG and is implemented by Resource Innovations. The HEA program offers energy-saving products installed in homes at no-cost to the customer. Homeowners can reduce their energy and water use with the installation of products available to owners of single-family homes, two-flats, and individually-metered condos and townhomes. Renters are also eligible with permission from their landlords.

Table 2-1 presents the PGL program participants and project count by program path.

Table 2-1. 2022 Volumetric Summary for PGL

Participation	IHWAP	Retrofits	HEA	Total
Participants*	70	1,326	1,531	2,899
Installed Projects†	70	1,475	1,542	3,063

* Participants are defined as unique site addresses. Total unique participants are 2,899.

† Installed projects are defined as unique account numbers. Total unique account numbers are 3,063.

Source: Peoples Gas tracking data and Guidehouse evaluation team analysis

Table 2-2 summarizes the installed measure quantities that are the basis for verified energy savings for the PGL program.

Table 2-2. 2022 Installed Measure Quantities for PGL

Program Path	Measure	Quantity Unit	Installed Quantity
HEA	Advanced Thermostat - Blended	Each	3
	Advanced Thermostat - Manual	Each	129
	Advanced Thermostat - Programmable	Each	176
	Boiler Pipe Insulation	Projects	38
	Domestic Hot Water (DHW) Pipe Insulation	Projects	352
	HEA Kit ¹	Each	1,368
	Low Flow Faucet Aerator - Bathroom	Each	485
	Low Flow Faucet Aerator - Kitchen	Each	287
	Low Flow Showerhead	Each	808
	Programmable Thermostat	Each	241
IHWAP	Advanced Thermostat - Manual	Each	27
	Advanced Thermostat - Programmable	Each	4
	Air Sealing	Projects	66
	Attic Insulation	Projects	98
	Basement Sidewall Insulation	Projects	9
	Domestic Hot Water (DHW) Pipe Insulation	Projects	60
	Duct Insulation and Sealing	Projects	8
	Floor Insulation	Projects	8
	Furnace Tune-Up	Each	2
	Gas Water Heater - ER	Each	33
	Gas High Efficiency Boiler – Early Replacement (ER)	Each	7
	Gas High Efficiency Boiler – Time of Sale (TOS)	Each	2
	Gas High Efficiency Furnace – ER	Each	36
	Gas High Efficiency Furnace – TOS	Each	2
	Low Flow Faucet Aerator - Bathroom	Each	43
	Low Flow Faucet Aerator - Kitchen	Each	17
	Low Flow Showerhead	Each	30
	Programmable Thermostat	Each	10
	Rim Insulation	Projects	11
	Wall Insulation	Projects	59
Retrofit	Advanced Thermostat - Manual	Each	12

¹ Consists of 16 feet of weatherstripping (cell foam), one door sweep, and one shower timer.

Program Path	Measure	Quantity Unit	Installed Quantity
	Advanced Thermostat - Programmable	Each	23
	Air Sealing	Projects	914
	Attic Insulation	Projects	1,167
	Basement Sidewall Insulation	Projects	30
	Domestic Hot Water (DHW) Pipe Insulation	Projects	261
	Duct Insulation and Sealing	Projects	27
	Floor Insulation	Projects	109
	Furnace Tune-Up	Each	497
	Gas Water Heater - TOS or New Construction	Each	9
	Gas High Efficiency Boiler - TOS	Each	14
	Gas High Efficiency Furnace - TOS	Each	17
	HEA Kit	Each	44
	Low Flow Faucet Aerator - Bathroom	Each	82
	Low Flow Faucet Aerator - Kitchen	Each	77
	Low Flow Showerhead	Each	245
	Programmable Thermostat	Each	167
	Rim Insulation	Projects	51
	Wall Insulation	Projects	1,050

Source: Peoples Gas tracking data and Guidehouse evaluation team analysis

Table 2-3 presents the NSG program participants and project count by program path.

Table 2-3. 2022 Volumetric Summary for NSG

Participation	IHWAP	Retrofits	HEA	Total
Participants*	0	7	160	168
Installed Projects†	0	7	160	165

* Participants are defined as unique site addresses. Total unique participants are 168.

† Installed projects are defined as unique account numbers. Total unique account numbers are 165.

Source: North Shore Gas tracking data and Guidehouse evaluation team analysis

Table 2-4 summarizes the installed measure quantities that are the basis for verified energy savings for the NSG program.

Table 2-4. 2022 Installed Measure Quantities for NSG

Program Path	Measure	Quantity Unit	Installed Quantity
HEA	Advanced Thermostat - Blended	Each	1
	Advanced Thermostat - Manual	Each	19
	Advanced Thermostat - Programmable	Each	25
	Boiler Pipe Insulation	Projects	3
	Domestic Hot Water (DHW) Pipe Insulation	Projects	61
	HEA Kit	Each	148
	Low Flow Faucet Aerator - Bathroom	Each	93
	Low Flow Faucet Aerator - Kitchen	Each	20
	Low Flow Showerhead	Each	87
	Programmable Thermostat	Each	15
Retrofit	Advanced Thermostat - Manual	Each	1
	Air Sealing	Projects	5
	Attic Insulation	Projects	4
	Domestic Hot Water (DHW) Pipe Insulation	Projects	4
	Furnace Tune-Up	Each	3
	Low Flow Faucet Aerator - Bathroom	Each	3
	Low Flow Showerhead	Each	4
	Rim Insulation	Projects	5
Wall Insulation	Projects	5	

Source: North Shore Gas tracking data and Guidehouse evaluation team analysis

3. Program Savings Detail

Table 3-1 summarizes the energy savings the PGL IHWAP, Retrofit, and HEA programs achieved by path in 2022.

Table 3-1. 2022 Annual Energy Savings Summary for PGL

Program Path	Ex Ante Gross Savings (therms)	Verified Gross RR*	Verified Gross Savings (therms)	NTG†	Verified Net Savings (therms)
Retrofit	308,852	100%	308,852	1.00	308,852
HEA	53,203	100%	53,203	1.00	53,203
IHWAP	25,415	100%	25,415	1.00	25,415
Total or Weighted Average	387,470	100%	387,470	1.00	387,470

* Realization rate (RR) is the ratio of verified gross savings to ex ante gross savings based on evaluation research findings.

† Net-to-Gross (NTG): A deemed value. Available on the Stakeholder Advisory Group (SAG) website:

<https://www.ilsag.info/evaluator-ntg-recommendations-for-2022/>.

Source: Peoples Gas tracking data and Guidehouse evaluation team analysis

Table 3-2 summarizes the energy savings the NSG Retrofit, and HEA programs achieved by path in 2022.

Table 3-2. 2022 Annual Energy Savings Summary for NSG

Program Path	Ex Ante Gross Savings (therms)	Verified Gross RR*	Verified Gross Savings (therms)	NTG†	Verified Net Savings (therms)
HEA	6,028	100%	6,028	1.00	6,028
Retrofit	651	100%	651	1.00	651
Total or Weighted Average	6,679	100%	6,679	1.00	6,679

* RR is the ratio of verified gross savings to ex ante gross savings based on evaluation research findings.

† Net-to-Gross (NTG): A deemed value. Available on the SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2022/>.

Source: North Shore Gas tracking data and Guidehouse evaluation team analysis

4. Program Savings by Measure

The PGL IHWAP includes 20 measures, the PGL Retrofit program includes 19 measures, and the PGL HEA program includes 10 measures, as

Table 4-1 shows. The air sealing and attic insulation measures contributed to the most savings in the IHWAP and the Retrofit program, and the programmable thermostat and HEA Kit contributed to the most savings in the HEA program.

Table 4-1. 2022 Annual Energy Savings by Measure for PGL

Program Path	End Use Type	Savings Category	Ex Ante Gross Savings (therms)	Verified Gross RR*	Verified Gross Savings (therms)	NTG†	Verified Net Savings (therms)
HEA	HVAC	Programmable Thermostat	13,878	100%	13,878	1.00	13,878
	Kit	HEA Kit	13,019	100%	13,019	1.00	13,019
	HVAC	Advanced Thermostat - Manual	9,786	100%	9,786	1.00	9,786
	HVAC	Advanced Thermostat - Programmable	9,293	100%	9,293	1.00	9,293
	Hot Water	Domestic Hot Water (DHW) Pipe Insulation	2,804	100%	2,804	1.00	2,804
	Hot Water	Low Flow Faucet Aerator - Kitchen	1,931	100%	1,931	1.00	1,931
	Hot Water	Low Flow Showerhead	1,797	100%	1,797	1.00	1,797
	Hot Water	Low Flow Faucet Aerator - Bathroom	349	100%	349	1.00	349
	HVAC	Advanced Thermostat - Blended	190	100%	190	1.00	190
	HVAC	Boiler Pipe Insulation	155	100%	155	1.00	155
		HEA Subtotal	53,203	100%	53,203	1.00	53,203
IHWAP	Shell	Attic Insulation	6,529	100%	6,528	1.00	6,528
	HVAC	Gas High Efficiency Furnace - ER	4,787	100%	4,787	1.00	4,787
	Shell	Air Sealing	4,243	100%	4,243	1.00	4,243
	Shell	Wall Insulation	2,180	100%	2,180	1.00	2,180
	HVAC	Duct Insulation and Sealing	1,826	100%	1,826	1.00	1,826
	HVAC	Gas High Efficiency Boiler - Early Replacement (ER)	1,823	100%	1,823	1.00	1,823
	HVAC	Advanced Thermostat - Manual	1,270	100%	1,270	1.00	1,270
	Hot Water	Gas Water Heater - ER	671	100%	671	1.00	671
	Hot Water	Domestic Hot Water (DHW) Pipe Insulation	603	100%	603	1.00	603

Program Path	End Use Type	Savings Category	Ex Ante Gross Savings (therms)	Verified Gross RR*	Verified Gross Savings (therms)	NTG†	Verified Net Savings (therms)
	HVAC	Programmable Thermostat	368	100%	368	1.00	368
	Shell	Basement Sidewall Insulation	357	100%	357	1.00	357
	HVAC	Gas High Efficiency Boiler – Time of Sale (TOS)	148	100%	148	1.00	148
	HVAC	Advanced Thermostat - Programmable	131	100%	131	1.00	131
	HVAC	Gas High Efficiency Furnace – TOS	130	100%	130	1.00	130
	HVAC	Furnace Tune-Up	123	100%	122	1.00	122
	Shell	Floor Insulation	87	100%	87	1.00	87
	Hot Water	Low Flow Faucet Aerator - Kitchen	60	100%	60	1.00	60
	Shell	Rim Insulation	36	100%	36	1.00	36
	Hot Water	Low Flow Showerhead	30	100%	30	1.00	30
	Hot Water	Low Flow Faucet Aerator - Bathroom	14	100%	14	1.00	14
		IHWAP Subtotal	25,415	100%	25,415	1.00	25,415
Retrofit	Shell	Attic Insulation	104,287	100%	104,287	1.00	104,287
	Shell	Air Sealing	98,955	100%	98,955	1.00	98,955
	Shell	Wall Insulation	50,150	100%	50,150	1.00	50,150
	HVAC	Furnace Tune-Up	34,683	100%	34,688	1.00	34,688
	HVAC	Programmable Thermostat	5,215	100%	5,215	1.00	5,215
	HVAC	Duct Insulation and Sealing	4,147	100%	4,147	1.00	4,147
	Shell	Basement Sidewall Insulation	3,227	100%	3,227	1.00	3,227
	Shell	Floor Insulation	1,755	100%	1,755	1.00	1,755
	Hot Water	Domestic Hot Water (DHW) Pipe Insulation	1,451	100%	1,451	1.00	1,451
	HVAC	Gas High Efficiency Furnace – TOS	1,338	100%	1,338	1.00	1,338
	HVAC	Gas High Efficiency Boiler – TOS	1,040	100%	1,040	1.00	1,040
	HVAC	Advanced Thermostat - Programmable	755	100%	755	1.00	755
	HVAC	Advanced Thermostat - Manual	566	100%	566	1.00	566
	Hot Water	Low Flow Showerhead	345	100%	345	1.00	345
	Hot Water	Low Flow Faucet Aerator - Kitchen	330	100%	330	1.00	330

Program Path	End Use Type	Savings Category	Ex Ante Gross Savings (therms)	Verified Gross RR*	Verified Gross Savings (therms)	NTG†	Verified Net Savings (therms)
	Kit	HEA Kit	259	100%	259	1.00	259
	Shell	Rim Insulation	191	100%	191	1.00	191
	Hot Water	Gas Water Heater - TOS or New Construction	121	100%	121	1.00	121
	Hot Water	Low Flow Faucet Aerator - Bathroom	38	100%	38	1.00	38
Retrofit Subtotal			308,852	100%	308,852	1.00	308,852
Total or Weighted Average			387,470	100%	387,470	1.00	387,470

* RR is the ratio of verified gross savings to ex ante gross savings based on evaluation research findings.

† Net-to-Gross (NTG): A deemed value. Available on the SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2022/>.

Source: Peoples Gas tracking data and Guidehouse evaluation team analysis

The NSG Retrofit program includes 9 measures and the NSG HEA program includes 10 measures as Table 4-2 shows. The air sealing and attic insulation measures contributed the most savings in the Retrofit program, and the advanced thermostat and HEA Kit measures contributed to the most savings in the HEA program.

Table 4-2. 2022 Annual Energy Savings by Measure for NSG

Program Path	End Use Type	Savings Category	Ex Ante Gross Savings (therms)	Verified Gross RR*	Verified Gross Savings (therms)	NTG†	Verified Net Savings (therms)
	HVAC	Advanced Thermostat - Manual	1,441	100%	1,441	1.00	1,441
	Kit	HEA Kit	1,407	100%	1,407	1.00	1,407
	HVAC	Advanced Thermostat - Programmable	1,320	100%	1,320	1.00	1,320
	HVAC	Programmable Thermostat	825	100%	825	1.00	825
HEA	Hot Water	Domestic Hot Water (DHW) Pipe Insulation	518	100%	518	1.00	518
	Hot Water	Low Flow Showerhead	190	100%	190	1.00	190
	Hot Water	Low Flow Faucet Aerator - Kitchen	132	100%	132	1.00	132
	Hot Water	Low Flow Faucet Aerator - Bathroom	66	100%	66	1.00	66
	HVAC	Boiler Pipe Insulation	64	100%	64	1.00	64

Program Path	End Use Type	Savings Category	Ex Ante Gross Savings (therms)	Verified Gross RR*	Verified Gross Savings (therms)	NTG†	Verified Net Savings (therms)
	HVAC	Advanced Thermostat - Blended	63	100%	63	1.00	63
		HEA Subtotal	6,028	100%	6,028	1.00	6,028
Retrofit	Shell	Air Sealing	207	100%	207	1.00	207
	Shell	Attic Insulation	152	100%	152	1.00	152
	Shell	Wall Insulation	100	100%	100	1.00	100
	HVAC	Furnace Tune-Up	67	100%	67	1.00	67
	HVAC	Advanced Thermostat - Manual	47	100%	47	1.00	47
	Hot Water	Domestic Hot Water (DHW) Pipe Insulation	45	100%	45	1.00	45
	Shell	Rim Insulation	21	100%	21	1.00	21
	Hot Water	Low Flow Showerhead	9	100%	9	1.00	9
	Hot Water	Low Flow Faucet Aerator - Bathroom	2	100%	2	1.00	2
			Retrofit Subtotal	651	100%	651	1.00
Total or Weighted Average			6,679	100%	6,679	1.00	6,679

* RR is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.

† Net-to-Gross (NTG): A deemed value. Available on the SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2022/>.

Source: North Shore Gas tracking data and Guidehouse team analysis

5. Impact Analysis Findings and Recommendations

5.1 Impact Parameter Estimates

Table 5-1, Table 5-2, and Table 5-3 show the unit therms savings and realization rate (RR) findings by measure. The RR is the ratio of the verified savings to the ex ante savings. Following the table, the report provides findings and recommendations, including discussion of all measures with RR above or below 100%. Appendix A provides a description of the impact analysis methodology.

Table 5-1. Verified Gross Savings Parameters – IHWAP

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	RR	Data Source(s)
Advanced Thermostat - Manual	Each	47.04	47.04	100%	Illinois TRM, v10.0†, Section 5.3.16 and PGL/NSG PTD*
Advanced Thermostat - Programmable	Each	32.82	32.82	100%	Illinois TRM, v10.0, Section 5.3.16 and PGL/NSG PTD
Air Sealing	Projects	64.29	64.29	100%	Illinois TRM, v10.0, Section 5.6.1 and PGL/NSG PTD
Attic Insulation	Sq. ft.	0.12	0.12	100%	Illinois TRM, v10.0, Section 5.6.5 and PGL/NSG PTD
Basement Sidewall Insulation	Sq. ft.	0.19	0.19	100%	Illinois TRM, v10.0, Section 5.6.2 and PGL/NSG PTD
Domestic Hot Water (DHW) Pipe Insulation	Lin. ft.	0.93	0.93	100%	Illinois TRM, v10.0, Section 5.4.1 and PGL/NSG PTD
Duct Insulation and Sealing	Each	228.27	228.27	100%	Illinois TRM, v10.0, Section 5.3.4 and PGL/NSG PTD
Floor Insulation	Sq. ft.	0.06	0.06	100%	Illinois TRM, v10.0, Section 5.6.3 and PGL/NSG PTD
Furnace Tune-Up	Each	61.29	61.21	100%	Illinois TRM, v10.0, Section 5.3.13 and PGL/NSG PTD
Gas Water Heater - ER	Each	20.35	20.35	100%	Illinois TRM, v10.0, Section 5.4.2 and PGL/NSG PTD
Gas High Efficiency Boiler – Early Replacement (ER)	Each	260.41	260.43	100%	Illinois TRM, v10.0, Section 5.3.6 and PGL/NSG PTD
Gas High Efficiency Boiler – Time of Sale (TOS)	Each	73.76	73.76	100%	Illinois TRM, v10.0, Section 5.3.6 and PGL/NSG PTD
Gas High Efficiency Furnace – ER	Each	132.98	132.97	100%	Illinois TRM, v10.0, Section 5.3.7 and PGL/NSG PTD
Gas High Efficiency Furnace – TOS	Each	65.05	65.05	100%	Illinois TRM, v10.0, Section 5.3.7 and PGL/NSG PTD
Low Flow Faucet Aerator - Bathroom	Each	0.32	0.32	100%	Illinois TRM, v10.0, Section 5.4.4 and PGL/NSG PTD
Low Flow Faucet Aerator - Kitchen	Each	3.54	3.54	100%	Illinois TRM, v10.0, Section 5.4.4 and PGL/NSG PTD
Low Flow Showerhead	Each	0.99	0.99	100%	Illinois TRM, v10.0, Section 5.4.5 and PGL/NSG PTD

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	RR	Data Source(s)
Programmable Thermostat	Each	36.80	36.80	100%	Illinois TRM, v10.0, Section 5.3.11 and PGL/NSG PTD
Rim Insulation	Sq. ft.	0.05	0.05	100%	Illinois TRM, v10.0, Section 5.6.6 and PGL/NSG PTD
Wall Insulation	Sq. ft.	0.04	0.04	100%	Illinois TRM, v10.0, Section 5.6.4 and PGL/NSG PTD

* Program tracking data (PTD) provided by PGL and NSG; extract dated January 30, 2022.

† Illinois Statewide Technical Reference Manual (IL-TRM) version 10.0 from <http://www.ilsag.info/technical-reference-manual.html>.

Source: PGL/NSG tracking data and Guidehouse team analysis

Table 5-2. Verified Gross Savings Parameters – Retrofit

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	RR	Data Source(s)
Advanced Thermostat - Manual	Each	47.15	47.15	100%	Illinois TRM, v10.0, Section 5.3.16 and PGL/NSG PTD
Advanced Thermostat - Programmable	Each	32.82	32.82	100%	Illinois TRM, v10.0, Section 5.3.16 and PGL/NSG PTD
Air Sealing	Projects	108.27	108.27	100%	Illinois TRM, v10.0, Section 5.6.1 and PGL/NSG PTD
Attic Insulation	Sq. ft.	0.11	0.11	100%	Illinois TRM, v10.0, Section 5.6.5 and PGL/NSG PTD
Basement Sidewall Insulation	Sq. ft.	0.37	0.37	100%	Illinois TRM, v10.0, Section 5.6.2 and PGL/NSG PTD
Domestic Hot Water (DHW) Pipe Insulation	Lin. ft.	0.93	0.93	100%	Illinois TRM, v10.0, Section 5.4.1 and PGL/NSG PTD
Duct Insulation and Sealing	Each	153.58	153.58	100%	Illinois TRM, v10.0, Section 5.3.4 and PGL/NSG PTD
Floor Insulation	Sq. ft.	0.07	0.07	100%	Illinois TRM, v10.0, Section 5.6.3 and PGL/NSG PTD
Furnace Tune-Up	Each	69.79	69.80	100%	Illinois TRM, v10.0, Section 5.3.13 and PGL/NSG PTD
Gas Water Heater - TOS or New Construction	Each	13.46	13.46	100%	Illinois TRM, v10.0, Section 5.4.2 and PGL/NSG PTD
Gas High Efficiency Boiler - TOS	Each	74.30	74.30	100%	Illinois TRM, v10.0, Section 5.3.6 and PGL/NSG PTD
Gas High Efficiency Furnace - TOS	Each	78.71	78.71	100%	Illinois TRM, v10.0, Section 5.3.7 and PGL/NSG PTD
HEA Kit†	Each	4.11 or 5.94	4.11 or 5.94	100%	Illinois TRM, v10.0, Section 5.6.1, 5.6.4, and PGL/NSG PTD
Low Flow Faucet Aerator - Bathroom	Each	0.47	0.47	100%	Illinois TRM, v10.0, Section 5.4.4 and PGL/NSG PTD
Low Flow Faucet Aerator - Kitchen	Each	4.28	4.28	100%	Illinois TRM, v10.0, Section 5.4.4 and PGL/NSG PTD
Low Flow Showerhead	Each	1.41	1.41	100%	Illinois TRM, v10.0, Section 5.4.5 and PGL/NSG PTD

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	RR	Data Source(s)
Programmable Thermostat	Each	31.23	31.23	100%	Illinois TRM, v10.0, Section 5.3.11 and PGL/NSG PTD
Rim Insulation	Sq. ft.	0.06	0.06	100%	Illinois TRM, v10.0, Section 5.6.6 and PGL/NSG PTD
Wall Insulation	Sq. ft.	0.06	0.06	100%	Illinois TRM, v10.0, Section 5.6.4 and PGL/NSG PTD

* PTD provided by PGL and NSG; extract dated January 30, 2022.

† IL-TRMv10.0 from <http://www.ilsag.info/technical-reference-manual.html>.

‡ Gas Heat – Electric DHW unit savings is 4.11 therms, Gas Heat – Gas DHW unit savings is 5.94 therms.

Source: PGL/NSG tracking data and Guidehouse team analysis

Table 5-3. Verified Gross Savings Parameters – HEA

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	RR	Data Source(s)
Advanced Thermostat - Blended	Each	63.21	63.21	100%	Illinois TRM, v10.0, Section 5.3.16 and PGL/NSG PTD
Advanced Thermostat - Manual	Each	75.86	75.86	100%	Illinois TRM, v10.0, Section 5.3.16 and PGL/NSG PTD
Advanced Thermostat - Programmable	Each	52.80	52.80	100%	Illinois TRM, v10.0, Section 5.3.16 and PGL/NSG PTD
Boiler Pipe Insulation	Lin. ft.	0.53	0.53	100%	Illinois TRM, v10.0, Section 5.3.2 and PGL/NSG PTD
Domestic Hot Water (DHW) Pipe Insulation	Lin. ft.	1.50	1.50	100%	Illinois TRM, v10.0, Section 5.4.1 and PGL/NSG PTD
HEA Kit‡	Each	2.94or 6.61, or 9.55	2.94or 6.61, or 9.55	100%	Illinois TRM, v10.0, Section 5.6.1, 5.6.4, and PGL/NSG PTD
Low Flow Faucet Aerator - Bathroom	Each	0.72	0.72	100%	Illinois TRM, v10.0, Section 5.4.4 and PGL/NSG PTD
Low Flow Faucet Aerator - Kitchen	Each	6.73	6.73	100%	Illinois TRM, v10.0, Section 5.4.4 and PGL/NSG PTD
Low Flow Showerhead	Each	2.22	2.22	100%	Illinois TRM, v10.0, Section 5.4.5 and PGL/NSG PTD
Programmable Thermostat	Each	57.59	57.59	100%	Illinois TRM, v10.0, Section 5.3.11 and PGL/NSG PTD

* PTD provided by PGL and NSG; extract dated January 30, 2022.

† IL_TRM v10.0 from <http://www.ilsag.info/technical-reference-manual.html>.

‡ Electric Heat – Gas DHW unit savings is 2.94 therms, Gas Heat – Electric DHW unit savings is 6.61 therms, Gas Heat – Gas DHW unit savings is 9.55 therms.

Source: PGL/NSG tracking data and Guidehouse team analysis

5.2 Findings and Recommendations

5.2.1 HEA Kit

Finding 1. For PGL/NSG tracking data provided the Existing Heating System Type field and other inputs necessary for calculation of savings from measures in the HEA Kit. However, the data was missing a field for the direct hot water (DHW) fuel type. The evaluation team was able to match project IDs from PGL/NSG tracking data to those in ComEd SFIE tracking data and obtained the DHW fuel type for all kit projects.

Recommendation 1. The PGL/NSG tracking data should provide DHW fuel type field for all water heating measures.

5.2.2 IHWAP – Basement Sidewall Insulation

Finding 2. The program tracking data had missing values for the Existing Insulation R-Value Below Grade input (R_old_BG). The evaluation team assumed an R_old_BG value of 1 (based on program implementer's measure calculator) for projects with missing inputs. The evaluation team leveraged project IDs from the PGL/NSG database to the ComEd SFIE tracking data and obtained different R_old_BG values. The projects that Guidehouse was able to verify through ComEd's database had an RR of 100%.

Recommendation 2. The program should provide accurate R_old_BG values in the tracking data for all Basement Sidewall Insulation projects.

5.2.3 IHWAP, Retrofit, HEA IE – Missing Data

Finding 3. For several measures, inputs needed to calculate verified therms savings were missing in the PGL/NSG tracking data. Some examples of missing parameters include Capacity Input (Btuh) (used for Gas High Efficiency Boiler and Gas High Efficiency Furnace projects), Equipment Age (needed to determine derated efficiencies or η_{Heat} values), and Number of Stories (used to determine N_heat for Air Sealing projects). The evaluation team matched project IDs from PGL/NSG tracking data to the ComEd SFIE tracking data and was able to obtain most of the missing input values and calculated verified therms savings.

Recommendation 3. The program implementer should ensure that program data submitted for joint ComEd and PGL/NSG evaluation are consistent with the PGL/NSG data provided separately to the evaluation team.

Appendix A. Impact Analysis Methodology

Guidehouse determined verified gross savings for each program measure by conducting a tracking system review. Guidehouse checked whether measure inputs matched deemed IL-TRM (v10.0) values and validated custom inputs or adjusted as necessary. To be eligible, an IL-TRM measure must meet the physical, operational, and baseline characteristics as defined in the applicable version of IL-TRM.² Verified gross RR are calculated by dividing the verified gross savings by the ex ante gross savings. In 2022, the net-to-gross (NTG) estimates used to calculate the net verified savings were defined by a consensus process through the Stakeholder Advisory Group (SAG).³

² Illinois Statewide Technical Reference Manual for Energy Efficiency (IL-TRM) version 10.0 from <http://www.ilsaq.info/technical-reference-manual.html>.

³ Available on the SAG website: <https://www.ilsaq.info/evaluator-ntg-recommendations-for-2021/>.

Appendix B. Program-Specific Inputs for the Illinois TRC

Table B-1 and Table B-2 show the TRC cost-effectiveness analysis inputs available at the time of producing this impact evaluation report. Currently, 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 the evaluation team later.

Table B-1. TRC Inputs for PGL – IHWAP, Retrofit, and HEA

Program Path	End Use Type	Savings Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (therms)	Verified Gross Savings (therms)	Verified Net Savings (therms)
IHWAP	HVAC	Advanced Thermostat - Manual	Each	27	11	1,270	1,270	1,270
	HVAC	Advanced Thermostat - Programmable	Each	4	11	131	131	131
	HVAC	Duct Insulation and Sealing	Each	8	20	1,826	1,826	1,826
	HVAC	Gas High Efficiency Boiler – Early Replacement (ER)	Each	7	25	1,823	1,823	1,823
	HVAC	Gas High Efficiency Boiler – Time of Sale (TOS)	Each	2	25	148	148	148
	HVAC	Gas High Efficiency Furnace – ER	Each	36	20	4,787	4,787	4,787
	HVAC	Gas High Efficiency Furnace – TOS	Each	2	20	130	130	130
	HVAC	Programmable Thermostat	Each	10	8	368	368	368
	HVAC	Furnace Tune-Up	Each	2	3	123	122	122
	Hot Water	Domestic Hot Water (DHW) Pipe Insulation	Lin. Ft.	650	15	603	603	603
	Hot Water	Gas Water Heater - ER	Each	33	13	671	671	671
	Hot Water	Low Flow Faucet Aerator - Bathroom	Each	43	10	14	14	14
	Hot Water	Low Flow Faucet Aerator - Kitchen	Each	17	10	60	60	60
	Hot Water	Low Flow Showerhead	Each	30	10	30	30	30
	Shell	Air Sealing	Projects	66	20	4,243	4,243	4,243
	Shell	Attic Insulation	Sq. ft.	53,351	20	6,529	6,528	6,528
	Shell	Basement Sidewall Insulation	Sq. ft.	1,901	20	357	357	357
	Shell	Floor Insulation	Sq. ft.	1,558	20	87	87	87
	Shell	Rim Insulation	Sq. ft.	672	20	36	36	36
	Shell	Wall Insulation	Sq. ft.	51,924	20	2,180	2,180	2,180
Retrofit	HVAC	Advanced Thermostat - Manual	Each	12	11	566	566	566
	HVAC	Advanced Thermostat - Programmable	Each	23	11	755	755	755

Program Path	End Use Type	Savings Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (therms)	Verified Gross Savings (therms)	Verified Net Savings (therms)
	HVAC	Duct Insulation and Sealing	Each	27	20	4,147	4,147	4,147
	HVAC	Gas High Efficiency Boiler – TOS	Each	14	25	1,040	1,040	1,040
	HVAC	Gas High Efficiency Furnace – TOS	Each	17	20	1,338	1,338	1,338
	HVAC	Programmable Thermostat	Each	167	8	5,215	5,215	5,215
	HVAC	Furnace Tune-Up	Each	497	3	34,683	34,688	34,688
	Hot Water	Domestic Hot Water (DHW) Pipe Insulation	Lin. Ft.	1,563	15	1,451	1,451	1,451
	Hot Water	Gas Water Heater - TOS or New Construction	Each	9	13	121	121	121
	Hot Water	Low Flow Faucet Aerator - Bathroom	Each	82	10	38	38	38
	Hot Water	Low Flow Faucet Aerator - Kitchen	Each	77	10	330	330	330
	Hot Water	Low Flow Showerhead	Each	245	10	345	345	345
	Shell	Air Sealing	Projects	914	20	98,955	98,955	98,955
	Shell	Attic Insulation	Sq. ft.	941,819	20	104,287	104,287	104,287
	Shell	Basement Sidewall Insulation	Sq. ft.	8812	20	3,227	3,227	3,227
	Shell	Floor Insulation	Sq. ft.	25,724	20	1,755	1,755	1,755
	Shell	Rim Insulation	Sq. ft.	2,983	20	191	191	191
	Shell	Wall Insulation	Sq. ft.	845,620	20	50,150	50,150	50,150
	Kit	HEA Kit	Each	44	10	259	259	259
	HVAC	Advanced Thermostat - Manual	Each	129	11	9,786	9,786	9,786
	HVAC	Advanced Thermostat - Programmable	Each	176	11	9,293	9,293	9,293
	HVAC	Advanced Thermostat - Blended	Each	3	11	190	190	190
	HVAC	Boiler Pipe Insulation	Lin. Ft.	292	15	155	155	155
	HVAC	Programmable Thermostat	Each	241	8	13,878	13,878	13,878
HEA	Hot Water	Domestic Hot Water (DHW) Pipe Insulation	Lin. Ft.	1,868	15	2,804	2,804	2,804
	Hot Water	Low Flow Faucet Aerator - Bathroom	Each	485	10	349	349	349
	Hot Water	Low Flow Faucet Aerator - Kitchen	Each	287	10	1,931	1,931	1,931
	Hot Water	Low Flow Showerhead	Each	808	10	1,797	1,797	1,797
	Kit	HEA Kit	Each	1,368	14.5	13,019	13,019	13,019
Total or Weighted Average					17.0	387,470	387,470	387,470

Source: Peoples Gas tracking data and Guidehouse evaluation team analysis

Table B-2. TRC Inputs for NSG – Retrofit and HEA

Program Path	End Use Type	Savings Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (therms)	Verified Gross Savings (therms)	Verified Net Savings (therms)
Retrofit	HVAC	Advanced Thermostat - Manual	Each	1	11.0	47	47	47
	HVAC	Furnace Tune-Up	Each	3	3.0	67	67	67
	Hot Water	Domestic Hot Water (DHW) Pipe Insulation	Lin. ft.	48	15.0	45	45	45
	Hot Water	Low Flow Faucet Aerator - Bathroom	Each	3	10.0	2	2	2
	Hot Water	Low Flow Showerhead	Each	4	10.0	9	9	9
	Shell	Air Sealing	Projects	5	20.0	207	207	207
	Shell	Attic Insulation	Sq. ft.	2,290	20.0	152	152	152
	Shell	Rim Insulation	Sq. ft.	313	20.0	21	21	21
	Shell	Wall Insulation	Sq. ft.	1,713	20.0	100	100	100
HEA	HVAC	Advanced Thermostat – Manual	Each	19	11.0	1,441	1,441	1,441
	HVAC	Advanced Thermostat - Programmable	Each	25	11.0	1,320	1,320	1,320
	HVAC	Advanced Thermostat - Blended	Each	1	11.0	63	63	63
	HVAC	Boiler Pipe Insulation	Lin. ft.	121	15.0	64	64	64
	HVAC	Programmable Thermostat	Each	15	8.0	825	825	825
	Hot Water	Domestic Hot Water (DHW) Pipe Insulation	Lin. ft.	342	15.0	518	518	518
	Hot Water	Low Flow Faucet Aerator - Bathroom	Each	93	10.0	66	66	66
	Hot Water	Low Flow Faucet Aerator - Kitchen	Each	20	10.0	132	132	132
	Hot Water	Low Flow Showerhead	Each	87	10.0	190	190	190
	Kit	HEA Kit	Each	148	14.5	1,407	1,407	1,407
Total or Weighted Average					11.4	6,679	6,679	6,679

Source: North Shore Gas tracking data and Guidehouse evaluation team analysis