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Small and Midsize Business 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 22, 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 Small and Midsize Business (SMB) programs 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 SMB Program seeks to secure energy savings through direct installation of low-cost efficiency measures, rebates for the installation of prescriptive retrofit measures, and custom rebates for non-prescriptive upgrades. A network of partner trade allies (PTA) promotes measures and assists in engaging customers to participate in site assessments to identify savings opportunities. To serve as a PTA, participation and customer satisfaction goals must be achieved. Customers using a PTA will be eligible for enhanced rebate levels.

The SMB Program offered commercial food service (CFS) equipment incentives using program delivery channels. This path's goals are to reduce barriers for food service operators to purchasing energy efficient equipment, and to reduce energy usage in the commercial food service sector.

The PGL program had 151 participants in 2022 and completed 280 projects as shown in Table 2-1. The 2022 program participation involved private sector projects only, no public sector projects.

Table 2-1. 2022 Volumetric Summary for PGL

Participation	Prescriptive / PTA	CFS	Custom	Total
Private Sector				
Participants *	138	9	4	**151**
Installed Projects †	167	109	4	**280**
Measure Types Installed*	18	9	4	**31**
Public Sector				
Participants *	0	0	0	**0**
Program 2022 Total				
Participants *	138	9	4	**151**
Installed Projects †	167	109	4	**280**
Measure Types Installed*	18	9	4	**31**

* Participants are defined as distinct count of account names.
† Installed Projects are defined as the distinct count of project IDs
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.

Table 2-2. 2022 Installed Measure Quantities for PGL

Program Category	Program Path	Measure	Quantity Unit	Installed Quantity
Private	**Prescriptive / PTA**	Boiler Reset Controls	MBH	1,000
	Prescriptive / PTA	Boiler Tune Up - Process	MBH	32,933
	Prescriptive / PTA	Boiler Tune Up (COM)	MBH	387,532
	Prescriptive / PTA	Condensate Tank Insulation	Square Feet	150
	Prescriptive / PTA	DHW Storage Tank Insulation	Square Feet	133
	Prescriptive / PTA	Energy Star Fryer	Each	1
	Prescriptive / PTA	High Efficiency Boiler - HW	MBH	11,724
	Prescriptive / PTA	High Efficiency Boiler - Steam	MBH	16,368
	Prescriptive / PTA	High Speed Washer - Laundromat	lbs-capacity	5,675
	Prescriptive / PTA	Large Gas Water Heater	MBH	199
	Prescriptive / PTA	Linkageless controls -for new burners	MBH	12,550
	Prescriptive / PTA	Pipe Insulation - DHW	Linear Feet	2,711
	Prescriptive / PTA	Pipe Insulation - HW	Linear Feet	373
	Prescriptive / PTA	Pipe Insulation - Steam	Linear Feet	2,476
	Prescriptive / PTA	Steam Traps - Dry Cleaner	Project	418
	Prescriptive / PTA	Steam Traps - HVAC Repair/Rep	Each	777
	Prescriptive / PTA	Steam Traps - Industrial/Process	Each	137
	Prescriptive / PTA	Water Heater 88% TE - Laundromat	Each	796
	CFS	Combination Oven	MBH	5
	CFS	Conveyor Oven	Each	1
	CFS	Double Rack Ovens	Each	1
	CFS	Energy Star Convection Oven	Each	10
	CFS	Energy Star Dishwasher	Each	2
	CFS	Energy Star Fryer	Each	106
	CFS	Infrared Broilers	Each	4
	CFS	Pasta Cooker	Each	1
	CFS	Pre-Rinse Spray Valves	Each	1
	Custom	HVAC - Other	Each	1
	Custom	Process - Insulation >212 F	Each	3
	Custom	Process - Insulation 100-212 F	Each	4
	Custom	Process - Other	Square Feet	1

Source: Peoples Gas tracking data and Guidehouse evaluation team analysis.

The NSG program had 61 participants in 2022 and completed 69 projects as shown in Table 2-3. The 2022 program participation involved private sector projects only, no public sector projects.

Table 2-3. 2022 Volumetric Summary for NSG

Participation	Prescriptive / PTA	CFS	Custom	Total
Private Sector				
Participants *	53	6	2	**61**
Installed Projects †	57	10	2	**69**
Measure Types Installed*	11	5	2	**18**
Public Sector				
Participants *	0	0	0	**0**
Program 2022 Total				
Participants *	53	6	2	**61**
Installed Projects †	57	10	2	**69**
Measure Types Installed*	11	5	2	**18**

* Participants are defined as distinct count of account names.
† Installed Projects are defined as the distinct count of project IDs
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.

Table 2-4. 2022 Installed Measure Quantities for NSG

Program Category	Program Path	Measure	Quantity Unit	Installed Quantity
Private	**Prescriptive / PTA**	Boiler Tune Up - Process	MBH	1,260
	Prescriptive / PTA	Boiler Tune Up (COM)	MBH	4,000
	Prescriptive / PTA	DHW Storage Tank Insulation	Square Feet	472
	Prescriptive / PTA	Energy Star Fryer	Each	4
	Prescriptive / PTA	Linkageless controls -for new burners	MBH	8,375
	Prescriptive / PTA	Pipe Insulation - DHW	Linear Feet	1,304
	Prescriptive / PTA	Pipe Insulation - HW	Linear Feet	1,537
	Prescriptive / PTA	Pipe Insulation - Steam	Linear Feet	186
	Prescriptive / PTA	Steam Traps - Dry Cleaner	Each	189
	Prescriptive / PTA	Steam Traps - HVAC Repair/Rep	Each	44
	Prescriptive / PTA	Steam Traps - Industrial/Process	Each	6
	CFS	Combination Oven	Each	4
	CFS	Energy Star Convection Oven	Each	1
	CFS	Energy Star Fryer	Each	4
	CFS	Infrared Broilers	Each	2
	CFS	Steamer	Each	2
	Custom	Process - Insulation >212 F	Each	2
	Custom	Process - Insulation 100-212 F	Each	1

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

3. Program Savings Detail

Table 3-1 summarizes the energy savings the PGL Small and Midsize Business Program achieved by path in 2022.

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

Program Category	Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms	NTG†	Verified Net Savings (Therms)
Private	**Prescriptive / PTA**	1,225,054	100%	1,225,135	0.93	1,139,375
	CFS	82,984	95%	79,073	0.93	73,538
	Custom	90,775	101%	91,320	0.93	84,783
Private Subtotal		1,398,813	100%	1,395,528	0.93	1,297,696
Public Subtotal		-	-	-	-	-
Total or Weighted Average		**1,398,813**	**100%**	**1,395,528**	**0.93**	**1,297,696**

* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.
† Net-to-Gross: 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.

Table 3-2 summarizes the energy savings the NSG Small and Midsize Business Program achieved by path in 2022.

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

Program Category	Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms	NTG†	Verified Net Savings (Therms)
Private	**Prescriptive / PTA**	171,333	100%	171,324	0.93	159,331
	CFS	12,240	83%	10,134	0.93	9,425
	Custom	19,129	93%	17,748	0.93	16,506
Private Subtotal		202,701	98%	199,206	0.93	185,262
Public Subtotal		-		-		-
Total		**202,701**	**98%**	**199,206**	**0.93**	**185,262**

Note: Totals may not sum due to rounding.
* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.
† Net-to-Gross: 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 program includes 31 measures as shown in Table 4-1. The steam traps, boiler tune-ups, and pipe insulation measures contributed the most savings.

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

Program Management	Program Path	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
Private	**Prescriptive / PTA**	Boiler Reset Controls	1,342	100%	1,342	0.93	1,248
	Prescriptive / PTA	Boiler Tune Up - Process	33,680	100%	33,682	0.93	31,324
	Prescriptive / PTA	Boiler Tune Up (COM)	183,515	100%	183,514	0.93	170,668
	Prescriptive / PTA	Condensate Tank Insulation	928	100%	928	0.93	863
	Prescriptive / PTA	DHW Storage Tank Insulation	712	100%	712	0.93	662
	Prescriptive / PTA	Energy Star Fryer	512	100%	513	0.93	477
	Prescriptive / PTA	High Efficiency Boiler - HW	13,657	100%	13,656	0.93	12,700
	Prescriptive / PTA	High Efficiency Boiler - Steam	10,039	100%	10,039	0.93	9,336
	Prescriptive / PTA	High Speed Washer - Laundromat	26,380	100%	26,381	0.93	24,534

Program Management	Program Path	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
	Prescriptive / PTA	Large Gas Water Heater	140	100%	140	0.93	130
	Prescriptive / PTA	Linkageless controls -for new burners	7,063	100%	7,062	0.93	6,568
	Prescriptive / PTA	Pipe Insulation - DHW	7,531	100%	7,532	0.93	7,004
	Prescriptive / PTA	Pipe Insulation - HW	1,900	100%	1,900	0.93	1,767
	Prescriptive / PTA	Pipe Insulation - Steam	17,626	100%	17,630	0.93	16,395
	Prescriptive / PTA	Steam Traps - Dry Cleaner	270,807	100%	270,870	0.93	251,909
	Prescriptive / PTA	Steam Traps - HVAC Repair/Rep	297,344	100%	297,347	0.93	276,532
	Prescriptive / PTA	Steam Traps - Industrial/Process	351,038	100%	351,048	0.93	326,474
	Prescriptive / PTA	Water Heater 88% TE - Laundromat	841	100%	842	0.93	783
	Prescriptive / PTA Subtotal		***1,225,054***	***100%***	***1,225,135***	***0.93***	***1,139,375***
	CFS	Combination Oven	1,542	111%	1,713	0.93	1,593
	CFS	Conveyor Oven	2,652	100%	2,652	0.93	2,466
	CFS	Double Rack Ovens	2,162	89%	1,931	0.93	1,795
	CFS	Energy Star Convection Oven	9,273	72%	6,711	0.93	6,241
	CFS	Energy Star Dishwasher	885	41%	366	0.93	340
	CFS	Energy Star Fryer	63,602	99%	62,814	0.93	58,417
	CFS	Infrared Broilers	1,427	100%	1,427	0.93	1,327
	CFS	Pasta Cooker	1,380	100%	1,380	0.93	1,283
	CFS	Pre-Rinse Spray Valves	61	130%	79	0.93	74
	CFS Subtotal		***82,984***	***95%***	***79,073***	***0.93***	***73,538***
	Custom	HVAC - Other	14,394	100%	14,404	0.92	13,252
	Custom	Process - Insulation >212 F	53,592	110%	58,853	0.93	54,733
	Custom	Process - Insulation 100-212 F	19,477	76%	14,751	0.93	13,718
	Custom	Process - Other	3,312	100%	3,312	0.93	3,080
	Custom Subtotal		***90,775***	***101%***	***91,320***	***0.93***	***84,783***
Public			-		-		-

Program Management	Program Path	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
Total or Weighted Average			**1,398,813**	**100%**	**1,395,528**	**0.93**	**1,297,696**

* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.
† Net-to-Gross: 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 program includes 18 measures as shown in the following table. The steam traps and pipe insulation measures contributed the most savings.

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

Program Management	Program Path	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
Private	**Prescriptive / PTA**	Boiler Tune Up - Process	1,289	100%	1,289	0.93	1,198
	Prescriptive / PTA	Boiler Tune Up (COM)	1,894	100%	1,894	0.93	1,762
	Prescriptive / PTA	DHW Storage Tank Insulation	2,525	100%	2,525	0.93	2,348
	Prescriptive / PTA	Energy Star Fryer	2,050	100%	2,050	0.93	1,907
	Prescriptive / PTA	Linkageless controls -for new burners	4,713	100%	4,713	0.93	4,383
	Prescriptive / PTA	Pipe Insulation - DHW	3,224	100%	3,224	0.93	2,999
	Prescriptive / PTA	Pipe Insulation – HW	4,639	100%	4,639	0.93	4,314
	Prescriptive / PTA	Pipe Insulation – Steam	902	100%	902	0.93	839
	Prescriptive / PTA	Steam Traps - Dry Cleaner	122,484	100%	122,475	0.93	113,901
	Prescriptive / PTA	Steam Traps - HVAC Repair/Rep	14,925	100%	14,925	0.93	13,880
	Prescriptive / PTA	Steam Traps - Industrial/Process	12,687	100%	12,688	0.93	11,800
	Prescriptive / PTA Subtotal		***171,333***	***100%***	***171,324***	***0.93***	***159,331***
	CFS	Combination Oven	1,292	100%	1,286	0.93	1,196
	CFS	Energy Star Convection Oven	1,560	73%	1,146	0.93	1,066
	CFS	Energy Star Fryer	3,240	96%	3,099	0.93	2,882
	CFS	Infrared Broilers	2,796	67%	1,887	0.93	1,755
	CFS	Steamer	3,352	81%	2,716	0.93	2,526
	CFS Subtotal		***12,240***	***83%***	***10,134***	***0.93***	***9,425***
	Custom	Process - Insulation >212 F	18,671	93%	17,292	0.93	16,082

Program Management	Program Path	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
	Custom	Process - Insulation 100-212 F	458	100%	456	0.93	424
	Custom Subtotal		**19,129**	**93%**	**17,748**	**0.93**	**16,506**
Public			-		-		-
Total or Weighted Average			**202,701**	**98%**	**199,206**	**0.93**	**185,262**

* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.
† Net-to-Gross: 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 shows the unit therm savings and realization rate findings by measure from the evaluation team's review. The realization rate is the ratio of the verified savings to the ex ante savings. Following the table are findings and recommendations, including discussion of all measures with realization rates above or below 100 percent. Appendix 1 provides a description of the impact analysis methodology.

Table 5-1. Verified Gross Savings Parameters

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	Realization Rate	Data Source(s)
Boiler Reset Controls	MBH	1.34	1.34	100%	Illinois TRM v10.0, Section 4.4.4
Boiler Tune Up - Process	MBH	1.02	1.02	100%	Illinois TRM v10.0, Section 4.4.3
Boiler Tune Up (COM)	MBH	0.47	0.47	100%	Illinois TRM v10.0, Section 4.4.3
Combination Oven	Each	314.81	333.23	106%	SMB Tracking Data*
Condensate Tank Insulation	Square Feet	6.18	6.18	100%	SMB Tracking Data*
Conveyor Oven	Each	2,652.00	2,652.00	100%	Illinois TRM v10.0, Section 4.2.4†
DHW Storage Tank Insulation	Square Feet	5.35	5.35	100%	SMB Tracking Data*
Double Rack Ovens	Each	2,162.00	1,930.50	89%	Illinois TRM v10.0, Section 4.2.1†
Energy Star Convection Oven	Each	984.82	714.25	73%	Illinois TRM v10.0, Section 4.2.5†
Energy Star Dishwasher	Each	590.00	243.94	41%	Illinois TRM v10.0, Section 4.2.6†
Energy Star Fryer	Each	603.52	595.44	99%	Illinois TRM v10.0, Section 4.2.7†
High Efficiency Boiler - HW	MBH	1.16	1.16	100%	Illinois TRM v10.0, Section 4.4.10†

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	Realization Rate	Data Source(s)
High Efficiency Boiler - Steam	MBH	0.61	0.61	100%	Illinois TRM v10.0, Section 4.4.10†
High Speed Washer - Laundromat	lbs-capacity	4.65	4.65	100%	Illinois TRM v10.0, Section 4.8.5†
Infrared Broilers	Each	703.83	552.36	78%	Illinois TRM v10.0, Section 4.2.12,14,15†
Large Gas Water Heater	MBH	0.70	0.70	100%	Illinois TRM v10.0, Section 4.3.1†
Linkageless controls -for new burners	MBH	0.56	0.56	100%	Illinois TRM v10.0, Section 4.4.21†
Pasta Cooker	Each	1,380.00	1,380.00	100%	Illinois TRM v10.0, Section 4.2.17†
Pipe Insulation - DHW	Linear Feet	2.68	2.68	100%	Illinois TRM v10.0, Section 4.4.14†
Pipe Insulation - HW	Linear Feet	3.42	3.42	100%	Illinois TRM v10.0, Section 4.4.14†
Pipe Insulation - Steam	Linear Feet	6.96	6.96	100%	Illinois TRM v10.0, Section 4.4.14†
Pre-Rinse Spray Valves	Each	122.00	158.28	130%	Illinois TRM v10.0, Section 4.2.11†
Steam Traps - Dry Cleaner	Each	647.93	648.01	100%	Illinois TRM v10.0, Section 4.4.16†
Steam Traps - HVAC Repair/Rep	Each	380.35	380.36	100%	Illinois TRM v10.0, Section 4.4.16†
Steam Traps - Industrial/Process	Each	2,543.53	2,543.61	100%	Illinois TRM v10.0, Section 4.4.16
Steamer	Each	1,676.00	1,357.95	81%	Illinois TRM v10.0, Section 4.2.3†
Water Heater 88% TE - Laundromat	MBH	1.06	1.06	100%	Illinois TRM v10.0, Section 4.3.1†
Custom - HVAC - Other	Each	14,394.29	14,404.43	100%	Engineering File Review‡
Custom - Process - Insulation >212 F	Each	14,452.72	15,228.97	105%	Illinois TRM v10.0, Section 4.4.14; 3E Plus
Custom - Process - Insulation 100-212 F	Each	3,986.85	3,041.33	76%	Illinois TRM v10.0, Section 4.4.14; 3E Plus
Custom - Process - Other	Each	3,311.73	3,311.73	100%	Engineering File Review‡

* Program Tracking Data (PTD) provided by Peoples Gas and North Shore Gas; extract dated January 30, 2022.
† State of Illinois Technical Reference Manual version 10.0 from **http://www.ilsag.info/technical-reference-manual.html**.
‡ Project files and monthly billing data provided by Peoples Gas and North Shore Gas.

5.2 Findings and Recommendations

Finding 1. Custom projects for pipe/fitting insulation measures were evaluated for both PGL and NSG for process temperatures > 212 F and 100-212 F. Most of the process pipe/fitting insulation measures had a verified realization rate of 100%.

The NSG project 9173029 had one pipe/fitting insulation measure for each of the process temperature ranges >212 F and 100-212 F with realization rates of 128% and 129%, respectively. It appears that legacy values were used for the equivalent length of fixtures not listed in IL TRM v10 in their savings calculations. The evaluation team used interpolated values for fixture equivalent length for fitting sizes not listed.

> **Recommendation 1.** Interpolated values should be used to determine the equivalent length of fitting sizes not listed in the TRM (v10) as opposed to internal legacy values.

Finding 2. The PGL custom project 9821749 had one pipe/fitting insulation measure for each of the process temperature ranges >212 F and 100-212 F with realization rates of 124% and 54%, respectively. The evaluation noted a clerical error where an approximate 5,000 therms savings was inadvertently applied to the 100-212 F process temperature range. When applied correctly to the >212 F temperature range, total therms savings were approximately the same as that calculated by the evaluation team.

> **Recommendation 2.** Review and adjust internal quality control measures with the goal of eliminating all clerical errors.

Finding 3. CFS projects completed under both the PGL and NSG programs had a combined RR of 94%. The major driver of this was the RR of the Fryer – 1 vat measure (97%) and the Convection Oven – Double Stack (73%). Both measures had a combined total ex ante savings of approximately 71,000 therms and verified gross therms savings of approximately 67,000 therms. These savings accounted for 74% of the total CFS measures ex ante savings and 75% of the total verified therms savings.

A closer evaluation review showed that most of the Fryer – 1 vat models and Convection Ovens – Double Stack models identified by the implementor team were not located in the Energy Star Qualified Product List (QPL), and as such, the evaluation team used the IL-TRM v10 default values for each of these measures to calculate verified savings.

> **Recommendation 3.** The implementor should verify that equipment installed under the CFS program is listed on the current QPL and be more transparent in its calculation of ex ante savings. Any data inputs used to estimate ex ante savings that are different from QPL values should be noted and an explanation provided as to why these are appropriate custom values. Guidehouse acknowledge that going forward, the implementor will provide detailed QPL input parameters for the energy savings calculations.

Finding 4. In addition to the fryer and convection oven cases reported in Finding 3, several other manufacturers provided in the tracking data were not listed in the QPLs. The measures and manufacturers can be seen in Table B-1. Therefore, IL-TRM v10 input values were used in performing verified savings calculations which, in many cases, did not align with inputs used by the implementor team in performing its ex ante savings calculations. The tracking data did not provide sufficient information to identify specification sheets for the Underfired Broiler, Infrared Salamander Broiler, or Infrared Overfired/Upright Broiler; therefore, IL-TRM v10 deemed values were used (see Table B-2).

Recommendation 4. Ensure the program tracking data has accurate and detailed manufacturer, model number, or other equipment information, as appropriate. Guidehouse acknowledge that going forward, the implementor will provide detailed QPL input parameters for the energy savings calculations.

Finding 5. Most of the Combination Ovens were listed in the QPL. However, the "Number of Pans" used by the implementor in performing ex ante calculations were different from that listed in the QPL. The evaluation team used the number of pans associated with a "full" pan in performing verified savings calculations.

Recommendation 5. The implementor should use data inputs derived from the QPL when determining the number of pans and other savings parameters.

Finding 6. The implementor team reported a quantity of 0.5 for each Dishwasher in its ex ante savings calculation, assuming a dual fuel savings split between electric and gas utilities, which resulted in a gross savings realization rate of 41%. However, the evaluation team determined that even a quantity of 1.0 produced a realization rate of 83% because the evaluation utilized IL TRM v10 default values where the implementor did not report these information. Approximately 30% of dishwasher models were not listed in the QPL.

Recommendation 6. The implementor should use data inputs derived from the QPL for Dishwasher savings calculation and improve the tracking data for dual fuel measure savings inputs.

Finding 7. The evaluation team used implementor tracking data values for the verified savings calculations for Pre-rinse Spray Valves because the device does not have a QPL listing. A specification sheet for the device did not provide suitable information. Use of implementor data resulted in a higher verified saving value and RR of 130%.

Recommendation 7. The implementor should revisit and document the sources for all tracker data inputs for Spray Valves and the methodology used for ex ante savings calculations.

5.3 Historical Realization Rates and NTG Values

Table 5-2 shows the historical gross realization rates and NTG values for the Small and Midsize Business Impact Program.

Table 5-2. Historical Realization Rates and NTG Values

Program Year	PGL Verified Gross RR	NSG Verified Gross RR	PGL NTG	NSG NTG
2018	101%	100%	0.82	0.92
2019	100%	100%	0.92	0.93
2020	100%	99%	0.92	0.92
2021	100%	103%	0.92	0.92
2022	100%	102%	0.93	0.93

Source: Guidehouse evaluation research.

Appendix A. Impact Analysis Methodology

Guidehouse calculated the verified gross savings for each measure type by conducting a review of the tracking data and applying the algorithms of the IL-TRM v10[1]. The evaluation team checked that provided savings inputs from the tracking data matched the IL-TRM v10 and that custom inputs were properly used. Then the tracking data and custom values used for the verified savings were adjusted from the tracking data, as necessary. The savings algorithms were applied to determine the verified savings of each measure. Verified gross realization rates are calculated by dividing the verified savings by the ex ante gross savings.

For measures in the CFS path, Guidehouse did an extra tracking data verification step. Measures defined in the IL-TRM v10 as needing to be under ENERGY STAR certification had their efficient ENERGY STAR tracking data values compared to the ENERGY STAR QPLs[2] by manufacturer and model number, and tracking data values were updated when these two documents disagreed. The evaluation team performed supplemental research for specification sheets for measures that did not need to be under ENERGY STAR certification as defined in the IL-TRM v10. This approach aligns with the process taken for the ComEd and Nicor Gas evaluations. Details of evaluation findings are provided in Appendix B.

For the Custom path, Guidehouse performed an in-depth application review to assess the engineering methods, parameters and assumptions used to generate all ex ante impact estimates. For each project, engineers estimated ex post gross savings based on their review of documentation and engineering analysis. To support this review, the implementation contractor provided project documentation in electronic format for each sampled project. Documentation included some or all scanned files of hardcopy application forms and supporting documentation from the applicant (invoices, measure specification sheets, and vendor proposals), pre-inspection reports and photos, post inspection reports and photos, and calculation spreadsheets.

The evaluation team calculated verified net savings by multiplying the verified gross savings estimates by a NTGR deemed by a consensus process through the SAG.[3]

[1] Available on the Illinois Stakeholder Advisory Group website: **https://www.ilsag.info/technical-reference-manual/il-statewide-technical-reference-manual-version-10-0/**

[2] Found on the ENERGY STAR website: **https://www.energystar.gov/products/commercial_food_service_equipment**

[3] Available on the Illinois Stakeholder Advisory Group website: **https://www.ilsag.info/evaluator-ntg-recommendations-for-2022/**

Appendix B. Impact Analysis-Commercial Food Services (CFS) Equipment

Table B-1. Measure Types with Manufacturer not in QPL

Savings Category	Manufacturer	Model Number
Combination Oven	UNOX	XAVS-10FS-GPR
Convection Oven	MOFFAT	G32D5
Convection Oven	American Range	MSD-1
Conveyor Oven	EDGE	EDGE-3270
Double Rack Oven	REVENT	724
Pasta Cooker	PITCO	SSPG14
Steamer	Cleveland	22CGT6.1
Dishwasher	Jackson	Rackstar 44
Fryer	American Range	AF50HE
Fryer	Frymaster	FPPH255
Fryer	PITCO	VF65S

Source: PGNSG tracking data and evaluation team analysis.

Table B-2. Measure Types Missing Information for Specification Sheets

Savings Category	Measure ID	Manufacturer	Model Number
Underfired Broiler	1031513	Vulcan	VTEC14
Infrared Salamander Broiler	1052200	Southbend	P48-NFR
Infrared Salamander Broiler	1080280	Garland	GIR60
Infrared Salamander Broiler	1089281	Southbend	P36-NFR
Infrared Overfired/Upright Broiler	1105775	Southbend	270

Source: PGNSG tracking data and evaluation team analysis.

Table B-3. Combination Oven ENERGY STAR QPL Values Used for Verified Savings

Measure ID	Convection Production Capacity	Convection Cooking Energy Efficiency	Steam Cooking Energy Efficiency	Realization Rate
1050051	157	0.65	0.52	200%
1066474	114.3	0.59	0.5	155%
1110438	190.66	0.64	0.57	98%
1134693	106.97	0.66	0.55	150%

* This measure uses the IL-TRM v10 Production Capacity value due to pan size of 40
Source: PGNSG tracking data, ENERGY STAR QPL, and evaluation team analysis.

Table B-4. Convection Oven ENERGY STAR QPL Values Used for Verified Savings

Measure ID	Cooking Efficiency	Production Capacity	Preheat Length	Preheat Energy Rate	Idle Energy Rate	Realization Rate
1085739	0.51	78.2	16.17	40000	6798	73%
1086298	0.51	78.2	16.17	40000	6798	73%
1102953	0.51	78.2	16.17	40000	6798	73%
1108451	0.54	95.3	10.03	70000	8866	71%
1128900	0.54	95.3	10.03	70000	8866	71%
1116967	0.49	114.9	7.4	60000	6435	85%
1140171	0.51	78.2	16.17	40000	6798	73%

Source: PGNSG tracking data, ENERGY STAR QPL, and evaluation team analysis.

Table B-5. Fryer ENERGY STAR QPL Values Used for Verified Savings

Measure ID	Fryer Type	Cooking Efficiency	Idle Energy Rate	Realization Rate
1032362	Standard Vat	0.54	8764	105%
1033922	Standard Vat	0.54	8764	105%
1040934	Standard Vat	0.54	306	164%
1062447	Standard Vat	0.54	980	160%
1063810	Standard Vat	0.54	306	164%
1065835	Large Vat	0.53	490	199%
1075772	Standard Vat	0.54	8764	105%
1080124	Standard Vat	0.54	8764	105%
1081449	Standard Vat	0.54	8764	105%
1089509	Standard Vat	0.54	8764	105%
1097886	Standard Vat	0.54	8764	105%
1098558	Standard Vat	0.54	8764	105%
1099099	Standard Vat	0.54	8764	105%
1100233	Standard Vat	0.57	7940	106%
1104602	Standard Vat	0.54	8764	105%
1108447	Standard Vat	0.54	8764	105%
1115910	Standard Vat	0.54	8764	105%
1115958	Standard Vat	0.54	8764	105%
1115964	Standard Vat	0.54	8764	105%
1115969	Standard Vat	0.54	8764	105%
1115973	Standard Vat	0.54	8764	105%
1116955	Standard Vat	0.54	8764	105%
1116963	Standard Vat	0.54	8764	105%
1116965	Standard Vat	0.54	8764	105%
1116968	Standard Vat	0.54	8764	105%
1116969	Standard Vat	0.54	8764	105%
1121628	Standard Vat	0.54	8764	105%
1126013	Standard Vat	0.54	8764	105%
1126018	Standard Vat	0.54	8764	105%
1127851	Standard Vat	0.54	8764	105%
1132372	Standard Vat	0.54	8764	105%
1133164	Standard Vat	0.54	8764	105%
1134232	Standard Vat	0.54	8764	105%
1146922	Standard Vat	0.50	7296	103%

Source: PGNSG tracking data, ENERGY STAR QPL, and evaluation team analysis

Appendix C. Program Specific Inputs for the Illinois TRC

Table C-1 and Table C-2 show the Total Resource Cost (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. Guidehouse will include annual and lifetime water savings and greenhouse gas reductions in the end of year summary report.

Table C-1: Verified Cost Effectiveness Inputs – PGL

Program Path	Savings Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
Prescriptive / PTA	Boiler Reset Controls	MBH	1,000	20	1,342	1,342	1,248
Prescriptive / PTA	Boiler Tune Up - Process	MBH	32,933	3	33,680	33,682	31,324
Prescriptive / PTA	Boiler Tune Up (COM)	MBH	387,532	3	183,515	183,514	170,668
Prescriptive / PTA	Condensate Tank Insulation	Square Feet	150	15	928	928	863
Prescriptive / PTA	DHW Storage Tank Insulation	Square Feet	133	15	712	712	662
Prescriptive / PTA	Energy Star Fryer	Each	1	15	512	513	477
Prescriptive / PTA	High Efficiency Boiler - HW	MBH	11,724	25	13,657	13,656	12,700
Prescriptive / PTA	High Efficiency Boiler - Steam	MBH	16,368	25	10,039	10,039	9,336
Prescriptive / PTA	High Speed Washer - Laundromat	lbs-capacity	5,675	7	26,380	26,381	24,534
Prescriptive / PTA	Large Gas Water Heater	MBH	199	15	140	140	130
Prescriptive / PTA	Linkageless controls - for new burners	MBH	12,550	16	7,063	7,062	6,568
Prescriptive / PTA	Pipe Insulation - DHW	Linear Feet	2,711	15	7,531	7,532	7,004
Prescriptive / PTA	Pipe Insulation - HW	Linear Feet	373	15	1,900	1,900	1,767
Prescriptive / PTA	Pipe Insulation - Steam	Linear Feet	2,476	15	17,626	17,630	16,395
Prescriptive / PTA	Steam Traps - Dry Cleaner	Each	418	6	270,807	270,870	251,909
Prescriptive / PTA	Steam Traps - HVAC Repair/Rep	Each	777	6	297,344	297,347	276,532
Prescriptive / PTA	Steam Traps - Industrial/Process	Each	137	6	351,038	351,048	326,474
Prescriptive / PTA	Water Heater 88% TE - Laundromat	MBH	796	15	841	842	783
CFS	Combination Oven	Each	5	12	1,542	1,713	1,593
CFS	Conveyor Oven	Each	1	17	2,652	2,652	2,466
CFS		Each	1	12	2,162	1,931	1,795

Program Path	Savings Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
	Double Rack Ovens						
CFS	Energy Star Convection Oven	Each	10	12	9,273	6,711	6,241
CFS	Energy Star Dishwasher	Each	1.5	15	885	366	340
CFS	Energy Star Fryer	Each	106.0	12	63,602	62,814	58,417
CFS	Infrared Broilers	Each	4	12	1,427	1,427	1,327
CFS	Pasta Cooker	Each	1	12	1,380	1,380	1,283
CFS	Pre-Rinse Spray Valves	Each	0.5	5	61	79	74
Custom	HVAC - Other	Each	1	15	14,394	14,404	13,252
Custom	Process - Insulation >212 F	Each	3	15	53,592	58,853	54,733
Custom	Process - Insulation 100-212 F	Each	4	15	19,477	14,751	13,718
Custom	Process - Other	Each	1	15	3,312	3,312	3,080
Total or Weighted Average			**476,092**	**7**	**1,398,813**	**1,395,528**	**1,297,696**

Source: Peoples Gas tracking data and Guidehouse evaluation team analysis.

Table C-2. Verified Cost Effectiveness Inputs – NSG

Program Path	Savings Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
Prescriptive / PTA	Boiler Tune Up - Process	MBH	1,260	3	1,289	1,289	1,198
Prescriptive / PTA	Boiler Tune Up (COM)	MBH	4,000	3	1,894	1,894	1,762
Prescriptive / PTA	DHW Storage Tank Insulation	Square Feet	472	15	2,525	2,525	2,348
Prescriptive / PTA	Energy Star Fryer	Each	4	12	2,050	2,050	1,907
Prescriptive / PTA	Linkageless controls -for new burners	MBH	8,375	15	4,713	4,713	4,383
Prescriptive / PTA	Pipe Insulation - DHW	Linear Feet	1,304	15	3,224	3,224	2,999
Prescriptive / PTA	Pipe Insulation - HW	Linear Feet	1,537	15	4,639	4,639	4,314
Prescriptive / PTA	Pipe Insulation - Steam	Linear Feet	186	15	902	902	839
Prescriptive / PTA	Steam Traps - Dry Cleaner	Each	189	6	122,484	122,475	113,901
Prescriptive / PTA	Steam Traps - HVAC Repair/Rep	Each	44	6	14,925	14,925	13,880
Prescriptive / PTA	Steam Traps - Industrial/Process	Each	6	6	12,687	12,688	11,800

Program Path	Savings Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
CFS	Combination Oven	Each	4	12	1,292	1,286	1,196
CFS	Energy Star Convection Oven	Each	1	12	1,560	1,146	1,066
CFS	Energy Star Fryer	Each	4	12	3,240	3,099	2,882
CFS	Infrared Broilers	Each	2	12	2,796	1,887	1,755
CFS	Steamer	Each	2	12	3,352	2,716	2,526
Custom	Process - Insulation >212 F	Each	2	15	18,671	17,292	16,082
Custom	Process - Insulation 100-212 F	Each	1	15	458	456	424
Total			**17,393**	**8**	**202,701**	**199,206**	**185,262**

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