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|  | Income Eligible Multi-Family and Public Housing Programs Impact Evaluation Report  Energy Efficiency Plan: Program Year 2023  (1/1/2023-12/31/2023) | | | | |
|  | Prepared for:  Peoples Gas and North Shore Gas  DRAFT  **April 5, 2024** | | | | |
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# Introduction

This report presents the results of the impact evaluation of the Peoples Gas (PGL) and North Shore Gas (NSG) 2023 Multi-Family Income Eligible (MFIE) program. The MFIE program includes the Income Eligible and the Illinois Home Weatherization Assistance Program (IHWAP) program paths. This report presents a summary of the energy impacts for the total program, with relevant measure and program structure details. The second section of the report presents impact results for the Public Housing Energy Savings (PHES) program. The appendix presents the impact analysis methodology. Program year 2023 covers January 1, 2023 through December 31, 2023.

# Multi-Family Income Eligible and IHWAP Program

## Program Description

The Income Eligible Multi-Family Program provides energy efficiency upgrades to customers in the PGL and NSG territories with incomes below 80% of the Area Median Income (AMI) level as defined by the geography or location of the building and/or the subsidy status and rent levels of the building. The programs offer assessments, direct installation of energy efficiency measures, rebates for replacement of inefficient equipment, technical assistance, and educational information.

There are two program paths offered to multi-family income eligible customers.

* The Income Eligible Multi-Family Savings path, jointly implemented with ComEd.
* The Income Eligible Illinois Home Weatherization Assistance Program (IHWAP), jointly implemented with ComEd.

The program had 574 participants in 2023 and completed 2,388 projects as shown in Table 2‑1.

Table 2‑1. 2023 Volumetric Summary for PGL

|  |  |  |  |
| --- | --- | --- | --- |
| Participation | Income Eligible | IHWAP | Total |
| Participants \* | 573 | 1 | 574 |
| Installed Projects † | 2,386 | 2 | 2,388 |
| Measures Type Installed | 47 | 4 | 51 |

\* Participants are defined as unique Gas Account Numbers.

† Installed Projects are defined as unique Work Order 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. 2023 MFIE Program Installed Measure Quantities for PGL

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Program Category | Program Path | Measure | Quantity Unit | Installed Quantity |
| Multi-Family | Income Eligible | Attic Insulation | Sq Ft | 868,790 |
| Pipe Insulation | Ln Ft | 188,173 |
| Air Sealing | Ln Ft | 59,410 |
| Shower Timer (IU) | Each | 10,163 |
| Showerhead (IU) | Unit | 9,563 |
| Wall Insulation | Sq Ft | 8,892 |
| Faucet Aerator - Kitchen (IU) | Unit | 7,500 |
| Faucet Aerator - Bathroom (IU) | Unit | 5,831 |
| Steam Traps | Unit | 5,522 |
| Boiler Tune Up | Unit | 4,549 |
| Crawl Space Ceiling Insulation | Sq Ft | 2,120 |
| Programmable Thermostat | Unit | 1,859 |
| On Demand DHW Control | Unit | 1,382 |
| Covers and Gap Sealers for Room AC | Unit | 1,274 |
| Steam Pipe Averaging Controls | Unit | 1,216 |
| Reprogrammable Thermostat | Unit | 690 |
| High Efficiency Furnace | MBH | 542 |
| Central Water Heater | Unit | 176 |
| High Efficiency Boiler | Unit | 129 |
| Advanced Thermostat | Unit | 95 |
| Thermostatic Radiator Valve | Unit | 36 |
| Water Heater | Unit | 36 |
| Boiler Reset Controls | Unit | 3 |
| IHWAP | Air Sealing | Ln Ft | 25,749 |
| Custom - Covers and Gap Sealers for AC | Unit | 1 |

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

The NSG program had 23 participants in 2023 and completed 1,263 projects as shown in Table 2‑3.

Table 2‑3. 2023 MFIE Program Volumetric Summary for NSG

|  |  |  |
| --- | --- | --- |
| Participation | Income Eligible | IHWAP |
| Participants \* | 23 | 0 |
| Installed Projects † | 1,263 | 0 |
| Measure Types Installed | 21 | 0 |

\* Participants are defined as unique Gas Account Numbers.

† Installed Projects are defined as unique Work Order 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. 2023 MFIE Program Installed Measure Quantities for NSG

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Program Category | Program Path | Measure | Quantity Unit | Installed Quantity |
| Multi-Family | Income Eligible | Air Sealing | Ln Ft | 981,112 |
| Shower Timer (IU) | Unit | 18,531 |
| Faucet Aerator - Bathroom (IU) | Unit | 18,438 |
| Showerhead (IU) | Unit | 18,133 |
| Faucet Aerator - Kitchen (IU) | Unit | 8,604 |
| Attic Insulation | Sq Ft | 7,881 |
| Pipe Insulation | Ln Ft | 1,444 |
| Covers and Gap Sealers for Room AC | Unit | 128 |
| Boiler Tune Up | Unit | 27 |
| Programmable Thermostat | Unit | 12 |
| Boiler Reset Controls | Unit | 3 |

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

## Program Savings Detail

Table 2‑5 summarizes the energy savings the PGL Income Eligible and IHWAP Program achieved by path in 2023.

Table 2‑5. 2023 MFIE Program 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) |
| **Multi-Family** | Income Eligible | 1,297,506 | 99% | 1,290,593 | 1.00 | 1,290,593 |
| IHWAP | 11,973 | 53% | 6,394 | 1.00 | 6,394 |
| **Total** |  | **1,309,479** | **99%** | **1,296,987** | **1.00** | **1,296,987** |

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

† A deemed value. Available on the SAG web site: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2023/>.

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

Table 2‑6 summarizes the energy savings the NSG Income Eligible Program achieved by path in 2023.

Table 2‑6. 2023 MFIE Program 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) |
| **Multi-Family** | Income Eligible | 446,390 | 100% | 447,004 | 1.00 | 447,004 |
| **Total** | | **446,390** | **100%** | **447,004** | **1.00** | **447,004** |

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

† A deemed value. Available on the SAG web site: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2023/>.

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

### Program Savings by Measure

The PGL program includes 25 measures as shown in Table 2‑7. The Attic Insulation and Pipe Insulation measures in the Income Eligible path contributed the most savings.

Table 2‑7. 2023 MFIE Program Annual Energy Savings by Measure for PGL

| Program Category | Program Path | Savings Category | Ex Ante Gross Savings (Therms) | Verified Gross RR\* | Verified Gross Savings (Therms) | NTG† | Verified Net Savings (Therms) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Multi-Family** | Income Eligible | Attic Insulation | 425,384 | 98% | 417,755 | 1.00 | 417,755 |
| Pipe Insulation | 280,390 | 100% | 281,169 | 1.00 | 281,169 |
| Steam Traps | 189,809 | 100% | 189,809 | 1.00 | 189,809 |
| Boiler Tune Up | 118,090 | 102% | 119,523 | 1.00 | 119,523 |
| On Demand DHW Control | 81,134 | 100% | 81,134 | 1.00 | 81,134 |
| Steam Pipe Averaging Controls | 67,089 | 95% | 63,837 | 1.00 | 63,837 |
| High Efficiency Boiler | 64,089 | 100% | 64,089 | 1.00 | 64,089 |
| Showerhead (IU) | 18,614 | 100% | 18,611 | 1.00 | 18,611 |
| Covers and Gap Sealers for Room AC | 12,760 | 100% | 12,762 | 1.00 | 12,762 |
| Programmable Thermostat | 10,244 | 100% | 10,244 | 1.00 | 10,244 |
| Shower Timer (IU) | 6,173 | 100% | 6,172 | 1.00 | 6,172 |
| Air Sealing | 5,748 | 100% | 5,748 | 1.00 | 5,748 |
| Reprogrammable Thermostat | 4,577 | 100% | 4,577 | 1.00 | 4,577 |
| Faucet Aerator - Kitchen (IU) | 3,134 | 100% | 3,134 | 1.00 | 3,134 |
| Boiler Reset Controls | 2,972 | 100% | 2,972 | 1.00 | 2,972 |
| Central Water Heater | 1,671 | 100% | 1,671 | 1.00 | 1,671 |
| High Efficiency Furnace | 1,663 | 100% | 1,663 | 1.00 | 1,663 |
| Water Heater | 1,522 | 100% | 1,522 | 1.00 | 1,522 |
| Faucet Aerator - Bathroom (IU) | 1,507 | 100% | 1,508 | 1.00 | 1,508 |
| Thermostatic Radiator Valve | 1,301 | 100% | 1,301 | 1.00 | 1,301 |
| Advanced Thermostat | 1,104 | 100% | 1,104 | 1.00 | 1,104 |
| Wall Insulation | 234 | 100% | 234 | 1.00 | 234 |
| Crawl Space Ceiling Insulation | 54 | 100% | 54 | 1.00 | 54 |
|  | ***Income Eligible Subtotal*** | ***1,299,262*** | ***99%*** | ***1,290,593*** | ***1.00*** | ***1,290,593*** |
| IHWAP | Air Sealing | 4,802 | 100% | 4,802 | 1.00 | 4,802 |
| Custom - Covers and Gap Sealers for AC | 7,171 | 22% | 1,593 | 1.00 | 1,593 |
|  | ***IHWAP Subtotal*** | ***11,973*** | ***53%*** | ***6,394*** | ***1.00*** | ***6,394*** |
| **Total** | | | **1,311,234** | **99%** | **1,296,987** | **1.00** | **1,296,987** |

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

† A deemed value. Available on the SAG web site: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2023/>.

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

The NSG program includes 11 measures as shown in Table 2‑8. The Air Sealing and Showerhead (IU) measures contributed the most savings.

Table 2‑8. 2023 MFIE Program Annual Energy Savings by Measure for NSG

| Program Category | Program Path | Savings Category | Ex Ante Gross Savings (Therms) | Verified Gross RR\* | Verified Gross Savings (Therms) | NTG† | Verified Net Savings (Therms) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Multi-Family** | Income Eligible | Air Sealing | 407,315 | 100% | 407,315 | 1.00 | 407,315 |
| Showerhead (IU) | 18,478 | 100% | 18,476 | 1.00 | 18,476 |
| Shower Timer (IU) | 5,558 | 100% | 5,558 | 1.00 | 5,558 |
| Faucet Aerator - Bathroom (IU) | 3,386 | 100% | 3,387 | 1.00 | 3,387 |
| Pipe Insulation | 2,298 | 141% | 3,229 | 1.00 | 3,229 |
| Boiler Tune Up | 2,913 | 100% | 2,913 | 1.00 | 2,913 |
| Attic Insulation | 2,896 | 89% | 2,581 | 1.00 | 2,581 |
| Faucet Aerator - Kitchen (IU) | 1,701 | 100% | 1,701 | 1.00 | 1,701 |
| Covers and Gap Sealers for Room AC | 913 | 100% | 912 | 1.00 | 912 |
| Boiler Reset Controls | 872 | 100% | 872 | 1.00 | 872 |
| Programmable Thermostat | 60 | 100% | 60 | 1.00 | 60 |
| **Total** | | | **446,390** | **100%** | **447,004** | **1.00** | **447,004** |

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

† A deemed value. Available on the SAG web site: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2023/>.

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

## Impact Analysis Findings and Recommendations

### Impact Parameter Estimates

Table 2‑9 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 gross ex ante savings. Following Table 2‑9 are findings and recommendations, including discussion of all measures with realization rates more or less than 100 percent. Appendix A provides a description of the impact analysis methodology.

Table 2‑9. 2023 MFIE Program Verified Gross Savings Parameters

| Measure | Unit Basis | Ex Ante Gross (therms/unit) | Verified Gross (therms/unit) | Realization Rate | Data Source(s) |
| --- | --- | --- | --- | --- | --- |
| Advanced Thermostat | Unit | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 5.3.16 and PTD\* |
| Air Sealing | Ln Ft | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 5.6.1 and PTD\* |
| Attic Insulation | Sq Ft | Varies | Varies | 98% | Illinois TRM, v11.0†, Section 5.6.5 and PTD\* |
| Boiler Reset Controls | Unit | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 4.4.4 and PTD\* |
| Boiler Tune Up | Unit | Varies | Varies | 101% | Illinois TRM, v11.0†, Section 4.4.2 and PTD\* |
| Central Water Heater | Unit | 9.49 | 9.49 | 100% | Illinois TRM, v11.0†, Section 4.3.7 and PTD\* |
| Covers and Gap Sealers for Room AC | Unit | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 4.4.38 and PTD\* |
| Crawl Space Ceiling Insulation | Sq Ft | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 5.6.3 and PTD\* |
| Custom - Covers and Gap Sealers for AC | Unit | 7170.66 | 1592.52 | 22% | Project File Review‡ |
| Faucet Aerator - Bathroom (IU) | Unit | 1.69 | 1.69 | 100% | Illinois TRM, v11.0†, Section 5.4.4 and PTD\* |
| Faucet Aerator - Kitchen (IU) | Unit | 2.82 | 2.82 | 100% | Illinois TRM, v11.0†, Section 5.4.4 and PTD\* |
| High Efficiency Boiler | Unit | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 4.4.10 and PTD\* |
| High Efficiency Furnace | MBH | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 4.4.11 and PTD\* |
| On Demand DHW Control | Unit | Varies | 62.70 | 99% | Illinois TRM, v11.0†, Section 4.3.8 and PTD\* |
| Pipe Insulation | Ln Ft | Varies | Varies | 101% | Illinois TRM, v11.0†, Section 4.4.14 and PTD\* |
| Programmable Thermostat | Unit | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 5.3.11 and PTD\* |
| Reprogrammable Thermostat | Unit | 40.50 | 40.50 | 100% | Illinois TRM, v11.0†, Section 5.3.11 and PTD\* |
| Shower Timer (IU) | Unit | 3.79 | 3.79 | 100% | Illinois TRM, v11.0†, Section 5.4.9 and PTD\* |
| Showerhead (IU) | Unit | 12.36 | 12.36 | 100% | Illinois TRM, v11.0†, Section 5.4.5 and PTD\* |
| Steam Pipe Averaging Controls | Unit | Varies | Varies | 95% | Illinois TRM, v11.0†, Section 4.4.36 and PTD\* |
| Steam Traps | Unit | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 4.4.16 and PTD\* |
| Thermostatic Radiator Valve | Unit | 36.13 | 36.13 | 100% | Illinois TRM, v11.0†, Section 5.3.19 and PTD\* |
| Wall Insulation | Sq Ft | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 5.6.4 and PTD\* |
| Water Heater | Unit | 42.27 | 42.27 | 100% | Illinois TRM, v11.0†, Section 4.3.1 and PTD\* |

\* Program Tracking Data (PTD) provided by Peoples Gas and North Shore Gas; extract dated January 30, 2024.

† State of Illinois Technical Reference Manual version 11.0 from <http://www.ilsag.info/technical-reference-manual.html>.

‡ Project files and monthly billing data provided by Peoples Gas.

### Findings and Recommendations

The evaluation team developed findings and recommendations based on the 2023 evaluation, organized by path type in the following sections. The overall realization rate for the program was 99% for PGL, and 100% for NSG, and the findings and recommendations reflect minor changes to overall program savings.

#### Multi-Family Income Eligible

**Finding 1.** For the Common Areas (CA) Steam Pipe Averaging Controls measure, the ex ante savings used a boiler efficiency of 61.6%, consistent with in-unit existing boilers. The evaluation team used a boiler efficiency of 64.8%, consistent with multifamily low pressure boilers. This change led to a realization rate of 95% for this measure.

**Recommendation 1.** Use the appropriate boiler efficiency depending on the specific use case, consistent with the Illinois Statewide Technical Reference Manual v11.0 (IL-TRM)[[1]](#footnote-2).

**Finding 2.** For 28 out of 142 instances for the Attic Insulation with Air Sealing measure, the ex ante savings did not take the minimum value of R-3 for uninsulated assemblies into account in the pre and post R-values. The evaluation team added a minimum value of R-3 to the pre and post R-values in the algorithm, consistent with the IL-TRM. There were four additional measure instances where the evaluation team could not replicate the ex ante savings exactly.

**Recommendation 2.** Review the savings algorithm and the inputs being used in the savings calculation and ensure these values match the algorithms from the IL-TRM (Section 5.6.5).

**Finding 3.** For three out of 161 instances for the Boiler Tune Up measure, the ex ante savings did not utilize the same MF Mid-Rise full load hours and efficiency assumptions as other MF Mid-Rise Boiler Tune Up measures. The evaluation team used similar EFLH and efficiencies consistent with the reported building type.

**Recommendation 3.** Use consistent EFLH and efficiency values consistent with the reported Building Type as per the IL-TRM (Section 4.4.2).

**Finding 4.** For one out of two instances for the Crawl Space Ceiling Insulation measure, the program data did not report Pre and Post R values. The evaluation team back calculated Pre and Post R values to replicate the ex ante savings.

**Recommendation 4.** Improve data quality and ensure that all measure algorithm inputs are reported in the program tracking data.

**Finding 5.** For nine out of 81 instances for the Steam Pipe Insulation-Joint MF measure and six out of 29 instances for Steam Pipe Insulation – Fitting-Joint MF measure, the program data did not report pipe size. This value is necessary to properly verify and quantify the savings, which depend on the pipe size and system configuration. The evaluation team was able to back calculate the appropriate steam size values and recreate the ex ante savings.

**Recommendation 5.** Improve data quality and ensure that all the algorithm inputs, including pipe size and system type are reported in the program data for this measure.

**Finding 6.** For eight out of 14 instances for the AC Cover and Gap Sealer measure, the program data did not report Number of Floors, which is needed to determine the Deemed Savings, consistent with the IL-TRM. The evaluation team back calculated the Number of Floors to replicate the ex ante savings.

**Recommendation 6.** Ensure that all the algorithm inputs are reported in the program data.

#### Multi-family IHWAP

**Finding 7.** Forthe custom AC Cover and Gap sealer measure, the evaluation team could not replicate the ex ante savings for this measure based on the supplied supplemental data and reference from the IL-TRM. The evaluation team used the supplied project documentation to determine site specific parameters based on Section 5.6.3 of the IL-TRM.

**Recommendation 7.** Cross-check that site specific parameters are used when determining savings for custom measures.

# Public Housing Energy Savings Program

## Program Description

The Public Housing Energy Savings Program (PHES) works with Public Housing Authorities (PHAs) in ComEd, Nicor Gas, PGL, and NSG territories to achieve electricity and natural gas savings. The PHA is the program participant, though the residents of the properties are directly affected by the program through in-unit and common area upgrades. Gas savings opportunities included room air conditioner (AC) covers and gap sealing, and boiler tune-ups.

The program had 23 participants in 2023, completed 25 projects and installed 2 measure types as Table 3‑1.

Table 3‑1. 2023 PHES Program Volumetric Summary for PGL

|  |  |
| --- | --- |
| Participation | Public Housing Authority |
| Participants \* | 23 |
| Installed Projects † | 25 |
| Measures Type Installed | 2 |

\* Participants are defined as unique Gas Account Numbers.

† Installed Projects are defined as unique Work Order IDs.

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

Table 3‑2 summarizes the installed measure quantities that are the basis for verified energy savings.

Table 3‑2. 2023 PHES Program Installed Measure Quantities for PGL

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Program Category | Program Path | Measure | Quantity Unit | Installed Quantity |
| **Multi-Family** | Public Housing | Covers and Gap Sealers for AC | Unit | 220 |
| Boiler Tune Up | Unit | 40 |

Source: People’s Gas tracking data and Guidehouse evaluation team analysis.

## Program Savings Details

Table 3‑3 summarizes the energy savings the PGL PHES program achieved in 2023.

Table 3‑3. 2023 PHES Program 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) |
| **Multi-Family** | Public Housing | 58,052 | 100% | 58,045 | 1.00 | 58,045 |
| **Total** |  | **58,052** | **100%** | **58,045** | **1.00** | **58,045** |

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

† A deemed value. Available on the SAG web site: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2023/>.

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

## Program Savings by Measure

The PHES program provided two types of measures to PGL customers in 2023, as shown in Table 3‑4.

Table 3‑4. 2023 PHES Program Annual Energy Savings by Measure for PGL

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Program Category | Program Path | Savings Category | Ex Ante Gross Savings (Therms) | Verified Gross RR\* | Verified Gross Savings (Therms) | NTG† | Verified Net Savings (Therms) |
| **Multi-Family** | Public Housing | Boiler Tune Up | 56,096 | 100% | 56,096 | 1.00 | 56,096 |
| Covers and Gap Sealers for Room AC | 1,956 | 100% | 1,949 | 1.00 | 1,949 |
| **Total** | | | **58,052** | **100%** | **58,045** | **1.00** | **58,045** |

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

† A deemed value. Available on the SAG web site: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2023/>.

Source: People’s Gas tracking data and Guidehouse team analysis.

## Impact Analysis Findings and Recommendations

### Impact Parameter Estimates

Table 3‑5 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 gross ex ante savings. Following Table 3‑5are findings and recommendations, including discussion of all measures with realization rates more or less than 100 percent. Appendix A provides a description of the impact analysis methodology.

Table 3‑5. 2023 PHES Program Verified Gross Savings Parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Measure | Unit Basis | Ex Ante Gross (therms/unit) | Verified Gross (therms/unit) | Realization Rate | Data Source(s) |
| Boiler Tune Up | Unit | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 4.4.2 and PTD\* |
| Covers and Gap Sealers for Room AC | Unit | Varies | Varies | 100% | Illinois TRM, v11.0†, Section 4.4.38 and PTD\* |

\* Program Tracking Data (PTD) provided by Peoples Gas and North Shore Gas; extract dated January 30, 2024.

† State of Illinois Technical Reference Manual version 11.0 from <http://www.ilsag.info/technical-reference-manual.html>.

### Findings and Recommendations

**Finding 8.** For two out of three instances for the AC Cover and Gap Sealer measure, the program data did not report Number of Floors, needed to determine the deemed savings, consistent with the IL-TRM. The evaluation team back calculated the number of floors to replicate the ex ante savings.

**Recommendation 8.** Ensure that all the algorithm inputs are reported in the program data for this measure.

##### Impact Analysis Methodology

The evaluation team used the same impact methodology for each component. Verified gross savings were determined for each program measure by:

* Reviewing the savings algorithm inputs in the measure workbook for agreement with the IL-TRM v11.0 and IL-TRM Errata, where applicable.
* Validating the savings algorithm was applied correctly.
* Cross-checking per-unit savings values in the program tracking data with the verified values in the measure workbook or in Guidehouse’s calculations if the workbook did not agree with the IL-TRM v11.0.
* Multiplying the verified per-unit savings value by the quantity reported in the tracking data. The team calculated verified net savings by multiplying the verified gross savings estimates by a NTG ratio. In Program Year 2023, NTG estimates used to calculate the net verified savings were based on past evaluation research and defined by a consensus process through the Illinois SAG.
* Guidehouse sourced methodologies and assumptions from the Illinois IL-TRM v11.0 and the final 2023 tracking data.

For the custom projects, an in-depth application review was performed by a Guidehouse engineer to assess the engineering methods, parameters, and assumptions used to generate all ex ante impact estimates. The evaluator reviewed project documentation in application forms and supporting documentation from the applicant. Table A-1 provides a summary of M&V results for the custom projects reviewed by Guidehouse.

Table A‑1. 2023 MFIE Program Custom Project Summary – IHWAP

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Work Order IDs | Measure Description | Ex Ante Gross Savings (therms) | Verified Gross RR\* | Verified Gross Savings (therms) | Summary of Adjustment |
| WO-4955482 | AC Cover and Gap Sealer | 7,171 | 22% | 1,593 | -The evaluation team leveraged the algorithms from Section 5.6.3 of the IL-TRM, and building specific assumptions based on a review of the tracking and supplemental data provided. It was not clear from the tracking data where the differences in savings originated. |

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

##### Program Specific Inputs for the Illinois TRC

###### Income Eligible and IHWAP Program

Table B‑1 and Table B‑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 Table B‑1 and Table B‑2 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 B‑1. 2023 MFIE Program Verified Cost Effectiveness Inputs – PGL

| Program Category | Program Path | Savings Category | Units | Quantity | Effective Useful Life | Ex Ante Gross Savings (Therms) | Verified Gross Savings (Therms) | Verified Net Savings (Therms) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Multi-Family** | Income Eligible | Attic Insulation | Sq Ft | 868,790 | 20 | 425,384 | 417,755 | 417,755 |
| Pipe Insulation | Ln Ft | 188,173 | 15 | 280,390 | 281,169 | 281,169 |
| Steam Traps | Unit | 5,522 | 6 | 189,809 | 189,809 | 189,809 |
| Boiler Tune Up | Unit | 4,549 | 3 | 118,090 | 119,523 | 119,523 |
| On Demand DHW Control | Unit | 1,382 | 15 | 81,134 | 81,134 | 81,134 |
| Steam Pipe Averaging Controls | Unit | 1,216 | 20 | 67,089 | 63,837 | 63,837 |
| High Efficiency Boiler | Unit | 129 | 25 | 64,089 | 64,089 | 64,089 |
| Showerhead (IU) | Unit | 9,563 | 10 | 18,614 | 18,611 | 18,611 |
| Covers and Gap Sealers for Room AC | Unit | 1,274 | 5 | 12,760 | 12,762 | 12,762 |
| Programmable Thermostat | Unit | 1,859 | 16 | 10,244 | 10,244 | 10,244 |
| Shower Timer | Unit | 10,163 | 2 | 6,173 | 6,172 | 6,172 |
| Air Sealing | Ln Ft | 59,410 | 20 | 5,748 | 5,748 | 5,748 |
| Reprogrammable Thermostat | Unit | 690 | 2 | 4,577 | 4,577 | 4,577 |
| Faucet Aerator - Kitchen (IU) | Unit | 7,500 | 10 | 3,134 | 3,134 | 3,134 |
| Boiler Reset Controls | Unit | 3 | 16 | 2,972 | 2,972 | 2,972 |
| Central Water Heater | Unit | 176 | 15 | 1,671 | 1,671 | 1,671 |
| High Efficiency Furnace | MBH | 542 | 20 | 1,663 | 1,663 | 1,663 |
| Water Heater | Unit | 36 | 20 | 1,522 | 1,522 | 1,522 |
| Faucet Aerator - Bathroom (IU) | Unit | 5,831 | 10 | 1,507 | 1,508 | 1,508 |
| Thermostatic Radiator Valve | Unit | 36 | 15 | 1,301 | 1,301 | 1,301 |
| Advanced Thermostat | Unit | 95 | 11 | 1,104 | 1,104 | 1,104 |
| Wall Insulation | Sq Ft | 8,892 | 20 | 234 | 234 | 234 |
| Crawl Space Ceiling Insulation | Sq Ft | 2,120 | 20 | 54 | 54 | 54 |
| IHWAP | Air Sealing | Ln Ft | 25,749 | 20 | 5,748 | 5,748 | 5,748 |
| Custom - Covers and Gap Sealers for AC | Unit | 40 | 5 | 7,171 | 1,593 | 1,593 |
| **Total or Weighted Average** | | |  | **1,203,740** | **14.68** | **1,311,234** | **1,296,987** | **1,296,987** |

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

Table B‑2. 2023 MFIE Program Verified Cost Effectiveness Inputs – NSG

| Program Category | Program Path | Savings Category | Units | Quantity | Effective Useful Life | Ex Ante Gross Savings (Therms) | Verified Gross Savings (Therms) | Verified Net Savings (Therms) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Multi-Family** | Income Eligible | Air Sealing | L Ft | 981,112 | 20 | 407,315 | 407,315 | 407,315 |
| Showerhead (IU) | Unit | 18,133 | 10 | 18,478 | 18,476 | 18,476 |
| Shower Timer (IU) | Unit | 18,531 | 2 | 5,558 | 5,558 | 5,558 |
| Faucet Aerator - Bathroom (IU) | Unit | 18,438 | 10 | 3,386 | 3,387 | 3,387 |
| Pipe Insulation | L Ft | 1,444 | 15 | 2,298 | 3,229 | 3,229 |
| Boiler Tune Up | Unit | 27 | 3 | 2,913 | 2,913 | 2,913 |
| Attic Insulation | S Ft | 7,881 | 20 | 2,896 | 2,581 | 2,581 |
| Faucet Aerator - Kitchen (IU) | Unit | 8,604 | 10 | 1,701 | 1,701 | 1,701 |
| Covers and Gap Sealers for Room AC | Unit | 128 | 5 | 913 | 1,055 | 1,055 |
| Boiler Reset Controls | Unit | 3 | 16 | 872 | 872 | 872 |
| Programmable Thermostat | Unit | 12 | 16 | 60 | 60 | 60 |
| **Total or Weighted Average** | | |  | **1,054,313** | **19.1** | **446,390** | **447,004** | **447,004** |

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

###### Public Housing Energy Savings Program

Table B‑3 shows 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 Table B‑3 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 B‑3. 2023 PHES Program Verified Cost Effectiveness Inputs – PGL

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Program Category | Program Path | Savings Category | Units | Quantity | Effective Useful Life | Ex Ante Gross Savings (Therms) | Verified Gross Savings (Therms) | Verified Net Savings (Therms) |
| **PHES** | Public Housing | Boiler Tune Up | Unit | 40 | 3 | 56,096 | 56,096 | 56,096 |
| Covers and Gap Sealers for Room AC | Unit | 220 | 5 | 1,956 | 1,949 | 1,949 |
| **Total or Weighted Average** | | |  | **260** | **3.1** | **58,052** | **58,045** | **58,045** |

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

1. In this report, unless stated otherwise, IL-TRM refers to version 11.0 (v11.0) [↑](#footnote-ref-2)