|  |
| --- |
|  |
| Income Eligible Multi Family and Public Housing Impact Evaluation ReportEnergy Efficiency Plan: Program Year 2024 (1/1/2024-12/31/2024) |
| Prepared for: Nicor Gas CompanyDRAFTMarch 19, 2025 |
| Prepared by:  |  |
| Fahman KhanEcoMetric Consulting | Swapnil LotakeEcoMetric Consulting | Mike FrischmannEcoMetric Consulting |
|  |  |  |
|  |  |  |  |
| **guidehouse.com** |  |  |  |

**Submitted to:**

Nicor Gas Company

1844 Ferry Road

Naperville, IL 60563

**Submitted by:**

Guidehouse

150 N. Riverside Plaza, Suite 2100

Chicago, IL 60606

**Contact:**

|  |  |  |
| --- | --- | --- |
| Ted Walker Partner 404.602.3463  **ted.walker@guidehouse.com** Charles AmpongAssociate Director608.446.3172**charles.ampong@guidehouse.com** | Jeff Erickson Director 608.616.4962 **jeff.erickson@guidehouse.com** | Laura Agapay-ReadAssociate Director312.583.4178**laura.agapay.read@guidehouse.com** |

Disclaimer: This report was prepared by Guidehouse for Nicor Gas based upon information provided by Nicor Gas and from other sources. Use of this report by any other party for whatever purpose should not, and does not, absolve such party from using due diligence in verifying the report’s contents. Neither Guidehouse nor any of its subsidiaries or affiliates assumes any liability or duty of care to such parties and hereby disclaims any such liability.

Table of Contents

[Introduction 2](#_Toc192782150)

[Multi-Family Income Qualified Retrofits, Healthy Homes, Ameren Nicor, IHWAP, and Assessment 2](#_Toc192782151)

[Program Description 2](#_Toc192782152)

[Program Savings Detail 5](#_Toc192782153)

[Program Savings by Measure 6](#_Toc192782154)

[Impact Analysis Findings and Recommendations 9](#_Toc192782155)

[Public Housing Energy Savings 17](#_Toc192782156)

[Program Description 17](#_Toc192782157)

[Program Savings Detail 18](#_Toc192782158)

[Program Savings by Measure 18](#_Toc192782159)

[Impact Analysis Findings and Recommendations 19](#_Toc192782160)

[Appendix A. Impact Analysis Methodology 21](#_Toc192782161)

[Appendix B. Program Specific Inputs for the Illinois TRC 22](#_Toc192782162)

List of Tables, Figures, and Equations

[Table 1. 2024 Volumetric Findings Detail 2](#_Toc193317946)

[Table 2. 2024 Installed Measure Quantities 3](#_Toc193317947)

[Table 3. 2024 Annual Energy Savings Summary 5](#_Toc193317948)

[Table 4. 2024 Annual Energy Savings by Measure 6](#_Toc193317949)

[Table 5. Verified Gross Savings Parameters 10](#_Toc193317950)

[Table 6. Measure Instances of Pipe Insulation with Inconsistent Length of Pipe 13](#_Toc193317951)

[Table 7. Measure Instances where Savings could not be replicated – Retrofits 15](#_Toc193317952)

[Table 8. Measure Instances where Savings could not be replicated – Ameren Nicor 16](#_Toc193317953)

[Table 9. Measure Instances where Savings could not be replicated – Assessment 17](#_Toc193317954)

[Table 10. Measure Instances where Savings could not be replicated – Healthy Homes 17](#_Toc193317955)

[Table 11. 2024 Volumetric Findings Detail – Public Housing 18](#_Toc193317956)

[Table 12. 2024 Installed Measure Quantities – Public Housing 19](#_Toc193317957)

[Table 13. 2024 Annual Energy Savings Summary – Public Housing 19](#_Toc193317958)

[Table 14. 2024 Annual Energy Savings by Measure – Public Housing 20](#_Toc193317959)

[Table 15. Verified Gross Savings Parameters – Public Housing 20](#_Toc193317960)

[Table B‑1. Verified Cost Effectiveness Inputs 23](#_Toc193317936)

[Table B‑2. Verified Cost Effectiveness Inputs – Public Housing 29](#_Toc193317937)

# Introduction

This report presents the results of the impact evaluation of the Nicor Gas 2024 Multi-Family Income Eligible Program (MFIE) and Public Housing Program (PHA). The report is separated into two sections, the MFIE section includes the Retrofits program, Healthy Homes program, Ameren-Nicor program, Illinois Home Weatherization Assistance Program (IHWAP), and Assessment program. The second section presents results for the PHA program. This report presents a summary of the energy impacts for the total program and is broken out by relevant measure and program structure details. The appendix presents the impact analysis methodology. Program year 2024 covers January 1, 2024 through December 31, 2024.

# Multi-Family Income Eligible Program

# Program Description

The Nicor Gas MFIE Program offers products and energy saving measures for income-qualified customers in multi-family dwellings within the Nicor Gas service territory. The 2024 Retrofits, Healthy Homes, Ameren Nicor, IHWAP and Assessments included direct installation of water heating efficiency measures (faucet aerators, showerheads, shower timer), high efficiency boilers, advanced thermostats, programmable and reprogrammable thermostats, attic insulation, basement insulation, pipe insulation, air sealing, floor insulation, furnace, boiler controls, steam traps, furnace tune-ups, and boiler tune-ups.

The program had 418 participants in 2024 and completed 3,804 projects as shown in the following table.

Table 1. 2024 Volumetric Findings Detail

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Participation | Retrofits | Assessment | Healthy Homes | IHWAP | Ameren- Nicor | Total |
| Participants \* | 337 | 43 | 10 | 5 | 23 | 418 |
| Installed Projects † | 3,717 | 38 | 7 | 1 | 41 | 3,804 |
| Measure Types Installed ‡ | 48 | 15 | 16 | 8 | 17 | 104 |

\* Participants are defined as distinct count of addresses.

† Installed Projects are defined as distinct count of project IDs.

‡ Measure Types Installed are the distinct count of Nicor measure names.

Source: Nicor Gas tracking data and evaluation team analysis.

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

Table 2. 2024 Installed Measure Quantities

| Program Category | Program Path | Measure | Quantity Unit | Installed Quantity |
| --- | --- | --- | --- | --- |
| Multi Family Income Eligible | Retrofits | Attic Insulation | SQ FT | 700,525 |
| Assessment/No Savings | Unit | 699,186 |
| Air Sealing | LN FT | 448,838 |
| Wall Insulation | Unit | 33,356 |
| Pipe Insulation | LN FT | 13,705 |
| Linkageless Boiler Controls for Space Heating | Unit | 3,400 |
| Shower Timer | Unit | 2,299 |
| Low Flow Showerheads (IU) | Unit | 1,697 |
| Low Flow Aerator - Kitchen (IU) | Unit | 1,644 |
| Basement/Sidewall Insulation | Unit | 1,625 |
| Floor Insulation Above Crawlspace | Unit | 1,556 |
| Controls for Domestic Hot Water | Unit | 1,509 |
| Low Flow Aerator - Bathroom (IU) | Unit | 1,146 |
| Programmable Thermostats | Unit | 663 |
| Steam Boiler Averaging Controls | Unit | 431 |
| DHW Pipe Insulation | LN FT | 408 |
| Steam Trap | Unit | 280 |
| Advanced Thermostat | Unit | 246 |
| Boiler Tune Up | Unit | 186 |
| Cover and Gap Sealers for AC | Unit | 117 |
| DHW Boiler Tune Up | Unit | 83 |
| Boiler Reset Controls | Unit | 41 |
| Air Filter Replacement | Unit | 15 |
| Furnace Tune Up | Unit | 7 |
| Reprogrammable Thermostats | Unit | 7 |
| Low Flow Aerator - Bathroom (CA) | Unit | 5 |
| High Efficiency Boiler | Unit | 1 |
| Assessment | Assessment/No Savings | Unit | 38 |
| Air Sealing | Unit | 21 |
| Air Filter Replacement | Unit | 19 |
| Low Flow Showerheads (IU) | Unit | 17 |
| Low Flow Aerator - Bathroom (IU) | Unit | 16 |
| Advanced Thermostat | Unit | 10 |
| Boiler Pipe Insulation | LN FT | 9 |
| DHW Pipe Insulation | LN FT | 9 |
| Low Flow Aerator - Kitchen (IU) | Unit | 6 |
| Programmable Thermostats | Unit | 6 |
| Healthy Homes | Assessment/No Savings | Unit | 26 |
| DHW Pipe Insulation | LN FT | 22 |
| Advanced Thermostat | Unit | 4 |
| Air Sealing | Unit | 3 |
| Air Filter Replacement | Unit | 2 |
| Duct Sealing | Unit | 2 |
| Furnace Tune Up | Unit | 2 |
| Low Flow Aerator - Bathroom (IU) | Unit | 1 |
| Low Flow Aerator - Kitchen (IU) | Unit | 1 |
| Low Flow Showerheads (IU) | Unit | 1 |
| IHWAP | Air Sealing | Unit | 4,439 |
| Assessment/No Savings | Unit | 112 |
| Low Flow Aerator - Bathroom (IU) | Unit | 19 |
| Low Flow Aerator - Kitchen (IU) | Unit | 14 |
| Low Flow Showerheads (IU) | Unit | 4 |
| IE Custom | Unit | 1 |
| Ameren/Nicor | Floor Insulation Above Crawlspace | SQ FT | 5,600 |
| Attic Insulation | SQ FT | 1,600 |
| DHW Pipe Insulation | LN FT | 176 |
| Assessment/No Savings | Unit | 158 |
| Air Sealing | Unit | 86 |
| Duct Sealing | Unit | 37 |
| Low Flow Aerator - Kitchen (IU) | Unit | 33 |
| Furnace Tune Up | Unit | 32 |
| Advanced Thermostat | Unit | 31 |
| Low Flow Aerator - Bathroom (IU) | Unit | 29 |
| Air Filter Replacement | Unit | 27 |
| Low Flow Showerheads (IU) | Unit | 27 |
| Boiler Pipe Insulation | LN FT | 1 |

Source: Nicor Gas tracking data and evaluation team analysis.

# Program Savings Detail

Table 3 summarizes the energy savings the MFIE Program achieved by path in 2024.

Table 3. 2024 Annual Energy Savings Summary

| Program Category | Program Path | Ex Ante Gross Savings (Therms) | Verified Gross RR\* | Verified Gross Savings (Therms | NTG† | NPSO‡ | Verified Net Savings (Therms) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Multi-Family Income Eligible | Retrofits | 682,595  | 102% | 697,590  | 1.00  | N/A  | 697,590 |
| Ameren Nicor | 20,325  | 97% |  19,739  | 1.00  | N/A | 19,739 |
| IHWAP | 3,769  | 100% |  3,769  | 1.00  | N/A | 3,769 |
| Assessment | 1,591  | 98% |  1,552  | 1.00  | N/A | 1,552 |
| Healthy Homes | 1,330  | 102% |  1,355  | 1.00  | N/A | 1,355 |
| **Total**  | **709,610**  | **102%** | **724,005** | **1.00**  |  | **724,005** |

\* 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-2024/> .

Source: Evaluation team analysis.

† NTG, Net to Gross is the deemed value available on the SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2024/>.

‡ Market rate net savings are multiplied by a deemed non-participant spillover (NPSO) factor of 1.048. Do not apply to this program.

Source: Evaluation team analysis.

# Program Savings by Measure

The program includes 30 measures as shown in the following table. The Air Sealing and Controls for Domestic Hot Water measures contributed the most savings.

Table 4. 2024 Annual Energy Savings by Measure

| Program Path | Savings Category | Ex Ante Gross Savings (Therms) | Verified Gross RR\* | Verified Gross Savings (Therms) | NTG† | NSPO‡ | Verified Net Savings (Therms) |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Air Sealing | 189,082 | 100% | 189,533 | 1.00 | N/A | 189,533 |
|  | Controls for Domestic Hot Water | 94,614 | 100% | 94,614 | 1.00 | N/A | 94,614 |
|  | Pipe Insulation | 91,749 | 96% | 87,781 | 1.00 | N/A | 87,781 |
|  | Attic Insulation | 71,105 | 98% | 69,505 | 1.00 | N/A | 69,505 |
|  | Boiler Tune Up | 54,997 | 100% | 54,996 | 1.00 | N/A | 54,996 |
| Retrofit | Steam Trap | 40,319 | 135% | 54,612 | 1.00 | N/A | 54,612 |
|  | Programmable Thermostats | 26,833 | 100% | 26,864 | 1.00 | N/A | 26,864 |
|  | Steam Boiler Averaging Controls | 26,329 | 100% | 26,329 | 1.00 | N/A | 26,329 |
|  | Boiler Reset Controls | 21,481 | 100% | 21,481 | 1.00 | N/A | 21,481 |
|  | Low Flow Showerheads (IU) | 20,984 | 100% | 20,980 | 1.00 | N/A | 20,980 |
|  | DHW Boiler Tune Up | 6,810 | 202% | 13,748 | 1.00 | N/A | 13,748 |
|  | Advanced Thermostat | 11,551 | 100% | 11,551 | 1.00 | N/A | 11,551 |
|  | Shower Timer | 8,722 | 100% | 8,722 | 1.00 | N/A | 8,722 |
|  | Low Flow Aerator - Kitchen (IU) | 4,637 | 100% | 4,637 | 1.00 | N/A | 4,637 |
|  | Linkageless Boiler Controls for Space Heating | 2,302 | 100% | 2,302 | 1.00 | N/A | 2,302 |
|  | DHW Pipe Insulation | 1,945 | 100% | 1,954 | 1.00 | N/A | 1,954 |
|  | Low Flow Aerator - Bathroom (IU) | 1,957 | 99% | 1,937 | 1.00 | N/A | 1,937 |
|  | Wall Insulation | 1,869 | 103% | 1,930 | 1.00 | N/A | 1,930 |
|  | Basement/Sidewall Insulation | 1,140 | 100% | 1,140 | 1.00 | N/A | 1,140 |
|  | High Efficiency Boiler | 2,133 | 48% | 1,016 | 1.00 | N/A | 1,016 |
|  | Cover and Gap Sealers for AC | 838 | 100% | 838 | 1.00 | N/A | 838 |
|  | Furnace Tune Up | 500 | 84% | 422 | 1.00 | N/A | 422 |
|  | Reprogrammable Thermostats | 330 | 100% | 330 | 1.00 | N/A | 330 |
|  | Floor Insulation Above Crawlspace | 182 | 100% | 182 | 1.00 | N/A | 182 |
|  | Air Filter Replacement | 151 | 100% | 151 | 1.00 | N/A | 151 |
|  | Low Flow Aerator - Bathroom (CA) | 34 | 100% | 34 | 1.00 | N/A | 34 |
|  | ***Retrofits Subtotal*** | ***682,595*** | ***102%*** | ***697,590*** | ***1.00*** |  | ***697,590*** |
|  | Duct Sealing | 10,893 | 96% | 10,449 | 1.00 | N/A | 10,449 |
| Ameren Nicor | Air Sealing | 3,903 | 101% | 3,937 | 1.00 | N/A | 3,937 |
|  | Furnace Tune Up | 1,827 | 95% | 1,741 | 1.00 | N/A | 1,741 |
|  | Advanced Thermostat | 1,665 | 100% | 1,665 | 1.00 | N/A | 1,665 |
|  | Floor Insulation Above Crawlspace | 795 | 100% | 795 | 1.00 | N/A | 795 |
|  | DHW Pipe Insulation | 366 | 100% | 366 | 1.00 | N/A | 366 |
|  | Low Flow Aerator - Kitchen (IU) | 243 | 100% | 243 | 1.00 | N/A | 243 |
|  | Attic Insulation | 298 | 66% | 198 | 1.00 | N/A | 198 |
|  | Air Filter Replacement | 181 | 106% | 191 | 1.00 | N/A | 191 |
|  | Low Flow Showerheads (IU) | 109 | 100% | 109 | 1.00 | N/A | 109 |
|  | Low Flow Aerator - Bathroom (IU) | 43 | 100% | 43 | 1.00 | N/A | 43 |
|  | Boiler Pipe Insulation | 3 | 62% | 2 | 1.00 | N/A | 2 |
|  | ***Ameren Nicor Subtotal*** | ***20,325*** | ***97%*** | ***19,739*** | ***1.00*** |  | ***19,739*** |
|  | Air Sealing | 2,403 | 100% | 2,403 | 1.00 | N/A | 2,403 |
|  | IE Custom | 1,178 | 100% | 1,178 | 1.00 | N/A | 1,178 |
|  | Low Flow Aerator - Kitchen (IU) | 123 | 100% | 123 | 1.00 | N/A | 123 |
| IHWAP | Low Flow Aerator - Bathroom (IU) | 34 | 100% | 34 | 1.00 | N/A | 34 |
|  | Low Flow Showerheads (IU) | 31 | 100% | 31 | 1.00 | N/A | 31 |
|  | ***IHWAP Subtotal*** | ***3,769*** | ***100%*** | ***3,769*** | ***1.00*** |  | ***3,769*** |
|  | *Advanced Thermostat* | *731* | *100%* | *731* | *1.00* | N/A | *731* |
| Assessment | Programmable Thermostats | 332 | 87% | 290 | 1.00 | N/A | 290 |
|  | Low Flow Showerheads (IU) | 161 | 97% | 157 | 1.00 | N/A | 157 |
|  | Air Sealing | 154 | 100% | 154 | 1.00 | N/A | 154 |
|  | Air Filter Replacement | 150 | 100% | 149 | 1.00 | N/A | 149 |
|  | Low Flow Aerator - Kitchen (IU) | 25 | 100% | 25 | 1.00 | N/A | 25 |
|  | Boiler Pipe Insulation | 4 | 502% | 20 | 1.00 | N/A | 20 |
|  | DHW Pipe Insulation | 17 | 100% | 17 | 1.00 | N/A | 17 |
|  | Low Flow Aerator - Bathroom (IU) | 17 | 57% | 10 | 1.00 | N/A | 10 |
|  | ***Assessment Subtotal*** | ***1,591*** | ***98%*** | ***1,552*** | ***1.00*** | N/A | ***1,552*** |
|  | Air Sealing | 496 | 100% | 496 | 1.00 | N/A | 496 |
|  | Duct Sealing | 369 | 113% | 417 | 1.00 | N/A | 417 |
|  | Advanced Thermostat | 267 | 100% | 267 | 1.00 | N/A | 267 |
|  | Furnace Tune Up | 119 | 81% | 97 | 1.00 | N/A | 97 |
|  | DHW Pipe Insulation | 46 | 100% | 46 | 1.00 | N/A | 46 |
| Healthy Homes | Air Filter Replacement | 16 | 100% | 16 | 1.00 | N/A | 16 |
|  | Low Flow Aerator - Kitchen (IU) | 9 | 100% | 9 | 1.00 | N/A | 9 |
|  | Low Flow Showerheads (IU) | 6 | 100% | 6 | 1.00 | N/A | 6 |
|  | Low Flow Aerator - Bathroom (IU) | 3 | 100% | 3 | 1.00 | N/A | 3 |
|  | ***Healthy Homes Subtotal*** | ***1,330*** | ***102%*** | ***1,355*** | ***1.00*** |  | ***1,355*** |
| ***Total***  | **709,610** | **102%** | **724,005** | **1.00** |  | **724,005** |

Source: Evaluation team analysis.

## Impact Analysis Findings and Recommendations

## Impact Parameter Estimates

Table 5 shows the unit Therm savings and realization rate findings by measure from our review. The realization rate is the ratio of the verified savings to the ex ante savings. Following the table, we provide findings and recommendations, including a discussion of all measures with realization rates above or below 100%. Appendix A provides a description of the impact analysis methodology.

Table 5. 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, v12.0†, Section 5.3.16 and PTD\* |
| Air Filter Replacement | Unit |  Varies  |  Varies  | 101% | Illinois TRM, v12.0†, Section 5.3.21 and PTD\* |
| Air Sealing | LN FT |  Varies  |  Varies  | 101% | Illinois TRM, v12.0†, Section 5.6.1 and PTD\* |
| Attic Insulation | SQ FT |  Varies  |  Varies  | 97% | Illinois TRM, v12.0†, Section 5.6.5 and PTD\* |
| Basement/Sidewall Insulation | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 5.6.2 and PTD\* |
| Boiler Pipe Insulation | LN FT |  Varies  |  Varies  | 318% | Illinois TRM, v12.0†, Section 5.3.2 and PTD\* |
| Boiler Reset Controls | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 4.4.4 and PTD\* |
| Boiler Tune Up | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 4.4.2 and PTD\* |
| Controls for Domestic Hot Water | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 4.3.8 and PTD\* |
| Cover and Gap Sealers for AC | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 4.4.38 and PTD\* |
| DHW Boiler Tune Up | Unit |  Varies  |  Varies  | 202% | Illinois TRM, v12.0†, Section 4.3.10 and PTD\* |
| DHW Pipe Insulation | LN FT |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 5.4.1 and PTD\* |
| Duct Sealing | Unit |  Varies  |  Varies  | 96% | Illinois TRM, v12.0†, Section 5.3.4 and PTD\* |
| Floor Insulation Above Crawlspace | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 5.6.3 and PTD\* |
| Furnace Tune Up | Unit |  Varies  |  Varies  | 83% | Illinois TRM, v12.0†, Section 5.3.13 and PTD\* |
| High Efficiency Boiler | Unit |  2,133  |  1,015  | 48% | Illinois TRM, v12.0†, Section 4.4.10 and PTD\* |
| Linkageless Boiler Controls for Space Heating | Unit |  0.68  |  0.68  | 100% | Illinois TRM, v12.0†, Section 4.4.21 and PTD\* |
| Low Flow Aerator - Bathroom (CA) | Unit |  6.77  |  6.77  | 100% | Illinois TRM, v12.0†, Section 4.3.2 and PTD\* |
| Low Flow Aerator - Bathroom (IU) | Unit |  Varies  |  Varies  | 99% | Illinois TRM, v12.0†, Section 5.4.4 and PTD\* |
| Low Flow Aerator - Kitchen (IU) | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 5.4.4 and PTD\* |
| Low Flow Showerheads (IU) | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 5.4.5 and PTD\* |
| Pipe Insulation | LN FT |  Varies  |  Varies  | 96% | Illinois TRM, v12.0†, Section 4.4.14 and PTD\* |
| Programmable Thermostats | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 5.3.11 and PTD\* |
| Reprogrammable Thermostats | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 5.3.11 and PTD\* |
| Shower Timer | Unit |  3.79  |  3.79  | 100% | Illinois TRM, v12.0†, Section 5.4.9 and PTD\* |
| Steam Boiler Averaging Controls | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 4.4.36 and PTD\* |
| Steam Trap | Unit |  Varies  |  Varies  | 135% | Illinois TRM, v12.0†, Section 4.4.16 and PTD\* |
| Wall Insulation | Unit |  Varies  |  Varies  | 103% | Illinois TRM, v12.0†, Section 5.6.4 and PTD\* |

\* Program Tracking Data (PTD) provided by Nicor Gas, extract dated January 30, 2025.

† State of Illinois Technical Reference Manual version 12.0 from <http://www.ilsag.info/technical-reference-manual.html>.

## Findings and Recommendations

The evaluation team developed findings and recommendations based on the 2024 evaluation. The findings and recommendations are organized by path type in the following sections.

#### Retrofits

1. For five out of 186 instances for *Boiler Tune Up – MF IE* measure, tracking data reported zero Therms savings. The evaluation team assigned zero savings to these measures. The measure IDs associated with this finding are:
	1. Include additional notes in the tracking data to describe the circumstance that led to reporting zero savings for any measures.
2. For two (MEA-2024.08.06-746304, MEA-2024.09.13-772316) out of 1,068 instances of the *Low Flow Aerator – Bath (DI) MF-IU* measure, the ex-ante calculations referenced section 4.3.2, Low Flow Faucet Aerators of the Volume 2 of IL TRM, to calculate savings. This section is applicable when the aerator is installed in the common areas of a multifamily building. However, the measure name indicates that the aerator is located inside a unit (IU). Accordingly, the evaluation team used section 5.4.4, Low Flow Faucet Aerators of the Volume 3 of IL TRM, to calculate verified savings, consistent with the "Inside-Unit" location specified in the measure name. This measure accounts for 0.28% of Retrofit component’s verified gross Therms savings and the impact of this adjustment resulted in a RR of 99% for this measure.
	1. Use appropriate section of the IL TRM to calculate savings, consistent with the measure name.
3. Ex ante calculations for various instances of *Pipe Insulation* measures used Length of Pipe inputs which were inconsistent to the reported values in the tracking data. The evaluation team calculated verified savings using the reported Length of Pipe. The overall Pipe Insulation measure accounts for 12.58% of Retrofit component’s verified gross Therms savings and the impact of this adjustment resulted in a RR of 96% for this measure. The details of the reported Length of Pipe and Length of Pipe used by ex-ante calculations along with number of impacted instances are provided in the table below.

Table 6. Measure Instances of Pipe Insulation with Inconsistent Length of Pipe

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Measure Name | Ex Ante Length of Pipe | Reported Length of Pipe | Impacted Instances | Measure IDs of Impacted Instances | Total Number of Instances | Percentage of Impacted Instances |
| Pipe Insulation, DHW Large >2" | 1 | 1.26 | 2 | MEA-2024.04.11-682800MEA-2024.07.31-743437 | 2 | 100% |
| Pipe Insulation, DHW Medium 1.26-2" | 1 | 1.26 | 5 | MEA-2024.04.11-682801MEA-2024.06.04-717393MEA-2024.07.31-743438MEA-2024.07.31-743439MEA-2024.08.06-745775 | 9 | 55% |
| Pipe Insulation, DHW Small <=1.25" | 1 | 1.26 | 1 | MEA-2024.11.06-801345 | 37 | 3% |
| Pipe Insulation, HW Medium 2.1" to 4" | 1 | 1.26 | 1 | MEA-2024.11.06-801366 | 19 | 5% |
| Pipe Insulation, Steam Large 5.1" to 8" | 2.05 | 1 | 3 | MEA-2024.08.12-757537MEA-2024.10.08-784078MEA-2024.10.08-784082 | 13 | 23% |
| Pipe Insulation, Steam Med 2.1" to 5" | 11.26 | 1.261 | 13 | MEA-2024.08.19-761037MEA-2024.08.12-757538MEA-2024.10.08-784080MEA-2024.10.08-784084 | 1515 | 7%20% |
| Pipe Insulation, Steam Med Fitting | 2.05 | 1 | 3 | MEA-2024.07.31-743451 | 11 | 27% |
| Pipe Insulation, Steam Small 1" to 2" | 2.781 | 11.26 | 11 | MEA-2024.07.02-731771MEA-2024.08.19-761038 | 1414 | 7%7% |
| Pipe Insulation, X-Large >8" | 2.44 | 1 | 1 | MEA-2024.10.08-784081 | 2 | 50% |

Source: Evaluation team analysis.

1. For one (MEA-2024.09.13-772419) out of nine instances for the measure *Pipe Insulation, DHW Medium 1.26-2"*, ex ante calculations used Equivalent Full Load Hours as 1,782 hours, corresponding to Multi-family Mid-Rise building. However, tracking data reported Equivalent Full Load Hours as 8,766 hours. The evaluation team used algorithm inputs reported in the tracking data to calculate verified savings. *Pipe Insulation, DHW Medium 1.26-2"* accounts for 0.45% of Retrofit component’s verified gross Therms savings and the impact of this adjustment resulted in a RR of 125% for this measure.
2. For one (MEA-2024.09.13-772357) out of 19 instances for the measure *Pipe Insulation, HW Medium 2.1" to 4"*, ex ante calculations were based on a Heat Loss from Bare Pipe of 175.6 Btu/hr-ft, Heat Loss from Insulated Pipe of 29.75 Btu/hr-ft, and Equivalent Full Load Hours of 4,963 hours. However, tracking data reported Heat Loss from Bare Pipe as 35.888 Btu/hr-ft, Heat Loss from Insulated Pipe as 8.778 Btu/hr-ft and Equivalent Full Load Hours as 8,766 hours. For calculating verified savings, the evaluation team used the data reported in the program data. *Pipe Insulation, HW Medium 2.1" to 4"* accounts for 0.85% of Retrofit component’s verified gross Therms savings and the impact of this adjustment resulted in a RR of 99% for this measure.
3. For one (MEA-2024.02.08-648022) out of 36 instances for the measure *Pipe Insulation, HW Small*, ex ante calculations used Heat Loss from Bare Pipe as 90.662 Btu/hr-ft and Heat Loss from Insulated Pipe as 18.849 Btu/hr-ft. However, tracking data reported Heat Loss from Bare Pipe as 35.888 Btu/hr-ft and Heat Loss from Insulated Pipe as 8.778 Btu/hr-ft. The evaluation team used algorithm inputs reported in the program data to calculate verified savings. *Pipe Insulation, HW Small* accounts for 1.15% of Retrofit component’s verified gross Therms savings and the impact of this resulted in a RR of 99% for this measure.
4. For all the five instances for the measure *Wall Insulation*, ex ante calculations used Efficiency of Heating System as 72% consistent with IL TRM v12.0. However, tracking data reported Efficiency of Heating System as 69.7%. The evaluation team used algorithm inputs reported in the program data to calculate verified savings. This measure accounts for 0.28% of Retrofit component’s verified gross Therms savings and the impact of this adjustment resulted in a RR of 103% for this measure.
5. For 11 out of 105 instances for the *Attic Insulation* measure, ex ante calculations used HDD as 5,230, applicable to Rockford climate zone. However, tracking data reported HDD as 4,798, corresponding to Chicago climate zone. This measure accounts for 9.96% of the Retrofit component’s verified gross Therms savings and the combined impact of the adjustments in findings 8 and 9 resulted in a RR of 98% for this measure.
6. For one (MEA-2024.09.23-776011) out of 105 instances for the *Attic Insulation* measure, ex ante calculations used pre-R-value of 0. However, tracking data reported pre-R-value of 14. The evaluation team used algorithm inputs reported in the program data to calculate verified savings. This measure accounts for 9.96% of the Retrofit component’s verified gross Therms savings and the combined impact of the adjustments in findings 8 and 9 resulted in a RR of 98% for this measure.
7. For the only instance for the measure *Non-Condensing Boilers, >85%*, ex ante calculations used baseline Boiler efficiency as 80%. However, tracking data reported baseline Boiler efficiency as 84%. The evaluation team used algorithm inputs reported in the program data to calculate verified savings. This measure accounts for 0.15% of Retrofit component’s verified gross Therms savings and the impact of this resulted in a RR of 48% for this measure.
8. For the following measures and their instances, the evaluation team was unable to determine the exact reason for the discrepancy between reported and verified savings. The evaluation team used algorithm inputs reported in the program data to calculate verified savings.

Table 7. Measure Instances where Savings could not be replicated – Retrofits

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Measure Name | Impacted Instances | Measure IDs of Impacted Instances | Total Number of Instances | Percentage of Impacted Instances | Share of Verified Gross Savings | Measure Realization Rate |
| Pipe Insulation, HW Small | 2 | MEA-2024.02.08-648022MEA-2024.11.06-803776 | 36 | 8% | 1.15% | 99% |
| Steam Trap - MF, IE | 2 | MEA-2024.06.24-727737MEA-2024.06.24-727736 | 11 | 18% | 7.83% | 135% |
| Furnace Tune Up | 6 | MEA-2024.05.23-711698MEA-2024.05.23-711697MEA-2024.10.29-795720MEA-2024.10.29-795721MEA-2024.10.29-795719MEA-2024.11.12-807172 | 6 | 100% | 0.06% | 84% |

Source: Evaluation team analysis.

* 1. For each measure for findings 3-11, ensure that savings are calculated based on the inputs recorded in the program tracking data.

#### Ameren Nicor

1. For nine out of 27 instances for the measure *Air Filter Replacement*, ex ante calculations used Furnace Heating Load as 861, corresponding to Springfield climate zone. However, for these instances, tracking data reported Furnace Heating Load as 1,005, corresponding to Chicago climate zone. The evaluation team used algorithm inputs reported in the program data to calculate verified savings. This measure accounts for 0.97% of Ameren Nicor component’s verified gross Therms savings and the impact of this resulted in an RR of 106% for this measure.
2. For the following measures and their instances, the evaluation team was unable to determine the exact reason for the discrepancy between reported and verified savings. The evaluation team used algorithm inputs reported in the program data to calculate verified savings.

Table 8. Measure Instances where Savings could not be replicated – Ameren Nicor

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Measure Name | Impacted Instances | Total Number of Instances | Percentage of Instances | Share of Verified Gross | Measure Realization Rate |
| Duct Sealing | 19 | 37 | 51% | 52.93% | 96% |
| Furnace Tune-Up | 32 | 32 | 100% | 8.82% | 95% |
| Boiler Pipe Insulation | 1 | 1 | 100% | 0.01% | 62% |

Source: Evaluation team analysis.

* 1. For each measure in findings 12 and 13, ensure that savings are calculated based on the inputs recorded in the program tracking data.
1. For two (MEA-2024.08.13-757970 and MEA-2024.08.13-757988) out of 41 instances for the *Air Sealing* measure, ex ante calculations used Adjustment for fossil heating savings and IE Net Correction as 76% and 110%, applicable for Air sealing along with attic insulation installations. The measure name states only Air Sealing and does not include Attic Insulation installations. The evaluation team used Adjustment for fossil heating savings and IE Net Correction as 100%, corresponding to only air sealing without attic insulation installations. This measure accounts for 18.5% of Ameren Nicor component’s verified gross Therms savings and the impact of this adjustment resulted in a RR of 101% for this measure.
	1. For Air sealing without attic insulation, do not apply adjustment for fossil heating and IE Net Correction factors.
2. For all the two instances of *Attic Insulation* measure, ex ante calculations did not consider a minimum R-value of 3 for uninsulated assemblies in pre-install and post-install R-values. The evaluation team considered a minimum R-value of 3 to calculate verified savings consistent with IL TRM v12.0. This measure accounts for 1.00% of Ameren Nicor component’s verified gross Therms savings and the impact of this resulted in a RR of 66% for this measure.
	1. Consider a minimum R-value of 3 for uninsulated assemblies in Pre-install and post-install R-values.

#### Assessment

1. For the following measures and their instances, the evaluation team was unable to determine the exact reason for the discrepancy between reported and verified savings. The evaluation team used algorithm inputs reported in the program data to calculate verified savings.

Table 9. Measure Instances where Savings could not be replicated – Assessment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Measure Name | Impacted Instances | Measure IDs of Impacted Instances | Total Number of Instances | Percentage of Instances | Share of Verified Gross Therms | Measure Realization Rate |
| Programmable Thermostat (DI) | 1 | MEA-2024.03.22-668167 | 5 | 20% | 18.56% | 87% |
| Boiler Pipe Insulation | 1 | MEA-2024.03.22-668165 | 1 | 100% | 1.25 | 502% |

Source: Evaluation team analysis.

* 1. For each measure, ensure that savings are calculated based on the inputs recorded in the program tracking data.

#### Healthy Homes

1. The evaluation team was unable to determine the discrepancy between reported and verified savings for duct sealing and furnace tune-up measures. The evaluation team used algorithm inputs reported in the program data to calculate verified savings.

Table 10. Measure Instances where Savings could not be replicated – Healthy Homes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Measure Name | Impacted Instances | Total Number of Instances | Percentage of Instances | Share of Verified Gross Therms | Measure Realization Rate |
| Duct Sealing | 2 | 2 | 100% | 30.77% | 113% |
| Furnace Tune Up | 2 | 2 | 100% | 7.14% | 81% |

Source: Evaluation team analysis.

* 1. For each measure, ensure that savings are calculated based on the inputs recorded in the program tracking data.

#

# Public Housing Energy Savings

## Program Description

The Public Housing Energy Savings (PHES) Program works with public housing authorities (PHAs) in ComEd, Nicor Gas, Peoples Gas (PGL), and North Shore Gas (NSG) territories to achieve electric and gas savings. The PHAs themselves are the program participants, though the residents of the properties are directly affected by the program through in-unit and common area upgrades. Gas savings opportunities included both heating and water heating equipment upgrades and envelope measures (attic insulation, air sealing, and air filter replacement). The program also included gas saving direct install measures, such as boiler and furnace tune up, and water measure like shower timer.

The program had 24 participants in 2024 and completed 100 projects as shown in Table 11.

Table 11. 2024 Volumetric Findings Detail – Public Housing

|  |  |
| --- | --- |
| Participation | Public Housing Energy Savings |
| Participants \* | 24 |
| Installed Projects † | 100 |
| Measure Types Installed ‡ | 8 |

\* Participants are defined as distinct count of addresses.

† Installed Projects are defined as distinct count of project IDs.

‡ Measure Types Installed are the distinct count of Nicor measure names.

Source: Nicor Gas tracking data and evaluation team analysis.

Table 12 summarizes the installed measure quantities that are the basis for verified energy savings.

Table 12. 2024 Installed Measure Quantities – Public Housing

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Program Category | Program Path | Measure | Quantity Unit | Installed Quantity |
| **Multi-Family Income Eligible** | Public Housing | Assessment/No Savings | Unit | 239,485 |
| Attic Insulation | SQ FT | 106,326 |
| Air Sealing | LN FT | 63,794 |
| Furnace Tune Up | Unit | 228 |
| Air Filter Replacement | Unit | 71 |
| Shower Timer | Unit | 48 |
| Boiler Tune Up | Unit | 8 |

Source: Nicor Gas tracking data and evaluation team analysis.

## Program Savings Detail

Table 13 summarizes the energy savings achieved by Public Housing Program in 2024.

Table 13. 2024 Annual Energy Savings Summary – Public Housing

| Program Category | Program Path | Ex Ante Gross Savings (Therms) | Verified Gross RR\* | Verified Gross Savings (Therms | NTG† | NSPO‡ | Verified Net Savings (Therms) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Multi-Family Income Eligible** | Public Housing |  46,527  | 96% |  44,851  |  1.00  |  N/A  |  44,851  |

\* 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/ntg.

Source: Evaluation team analysis.

† NTG, Net to Gross is the deemed value available on the SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2024/>.

‡ The non-IE market rate net savings are multiplied by a residential non-participant spillover (NPSO) factor of 1.048.

Source: Evaluation team analysis.

## Program Savings by Measure

The program includes seven measures as shown in the following table. The Air Sealing and Furnace Tune Up measures of the Public Housing path contributed the most savings.

Table 14. 2024 Annual Energy Savings by Measure – Public Housing

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Program Category | Program Path | Savings Category | Ex Ante Gross Savings (Therms) | Verified Gross RR\* | Verified Gross Savings (Therms) | NTG† | NSPO‡ | Verified Net Savings (Therms) |
| **Multi-Family Income Eligible** | Public Housing | Air Sealing |  25,565  | 104% |  26,538  |  1.00  |  N/A  |  26,538  |
| Furnace Tune Up |  10,239  | 80% |  8,241  |  1.00  | N/A  |  8,241  |
| Attic Insulation |  7,855  | 92% |  7,204  |  1.00  | N/A  |  7,204  |
| Boiler Tune Up |  1,972  | 100% |  1,972  |  1.00  | N/A  |  1,972  |
| Air Filter Replacement |  714  | 100% |  714  |  1.00  | N/A  |  714  |
| Shower Timer |  182  | 100% |  182  |  1.00  | N/A  |  182  |
| **Total**  |  **46,527**  | **96%** |  **44,851**  |  **1.00**  |  |  **44,851**  |

\* 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/ntg.

Source: Evaluation team analysis.

† NTG, Net to Gross is the deemed value available on the SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2024/>.

‡ The non-IE market rate net savings are multiplied by a residential non-participant spillover (NPSO) factor of 1.048.

Source: Evaluation team analysis.

## Impact Analysis Findings and Recommendations

## Impact Parameter Estimates

Table 15 shows the unit Therm savings and realization rate findings by measure from our review. The realization rate is the ratio of the verified savings to the ex-ante savings. Following the table, we provide findings and recommendations, including discussion of all measures with realization rates above or below 100%. Appendix A provides a description of the impact analysis methodology.

Table 15. Verified Gross Savings Parameters – Public Housing

| Measure | Unit Basis | Ex Ante Gross (therms/unit) | Verified Gross (therms/unit) | Realization Rate | Data Source(s) |
| --- | --- | --- | --- | --- | --- |
| Air Filter Replacement | Unit |  Varies  |  Varies  | 101% | Illinois TRM, v12.0†, Section 5.3.21 and PTD\* |
| Air Sealing | LN FT |  Varies  |  Varies  | 101% | Illinois TRM, v12.0†, Section 5.6.1 and PTD\* |
| Assessment/No Savings | Unit |  -  |  -  | - | - |
| Attic Insulation | SQ FT |  Varies  |  Varies  | 97% | Illinois TRM, v12.0†, Section 5.6.5 and PTD\* |
| Boiler Tune Up | Unit |  Varies  |  Varies  | 100% | Illinois TRM, v12.0†, Section 4.4.2 and PTD\* |
| Furnace Tune Up | Unit |  Varies  |  Varies  | 83% | Illinois TRM, v12.0†, Section 5.3.13 and PTD\* |
| Shower Timer | Unit |  3.79  |  3.79  | 100% | Illinois TRM, v12.0†, Section 5.4.9 and PTD\* |

\* Program Tracking Data (PTD) provided by Nicor Gas, extract dated January 30, 2025.

† State of Illinois Technical Reference Manual version 12.0 from <http://www.ilsag.info/technical-reference-manual.html>.

‡ Project files and monthly billing data provided by Nicor Gas. Where conducted, on-site or telephone interview data collected by Guidehouse.

### *Findings and Recommendations*

1. For five out of six instances for the measure *Air Sealing*, ex ante calculations used Adjustment for fossil heating savings as 76%, applicable when calculating savings using Blower Door Test methodology. However, the program data reported that the methodology used for calculating savings is Prescriptive Infiltration Reduction methodology. The evaluation team used Adjustment for fossil heating savings as 80%, corresponding to Prescriptive Infiltration Reduction methodology to calculate verified savings. This measure accounts for 59.17% of Public Housing component’s verified gross Therms savings and the impact of this resulted in an RR of 104% for this measure.
	1. Use input parameter values consistent with the calculation methodology.
2. For four out of six instances for the measure Attic Insulation, ex ante calculations did not consider a Minimum R-value of 3 for uninsulated assemblies in Pre-install and post-install R-values. Tracking data reported Efficiency of Heating system as 72%. However, ex ante calculations used Efficiency of heating system as 76%. The evaluation team considered a Minimum R-value of 3 for uninsulated assemblies in Pre-install and post-install R-values, and a reported Efficiency of Heating system as 72%. This measure accounts for 16.06% of Public Housing component’s verified gross Therms savings and the impact of this resulted in an RR of 92% for this measure.
3. For all the measure instances of *Furnace Tune Up*, the evaluation team was unable to determine the exact reason for the discrepancy between reported and verified savings. The evaluation team used algorithm inputs reported in the program data to calculate verified savings. This measure accounts for 18.37% of Public Housing component’s verified gross Therms savings and the impact of this adjustment resulted in a RR of 80% for this measure.
	1. For each measure in findings 19 and 20, ensure that savings are calculated based on the inputs recorded in the program tracking data.

# *Appendix A. 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 v12.0 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 v12.0.
* 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 an NTG ratio. In Program Year 2024, 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 v12.0 and the final 2024 tracking data.

# *Appendix B. Program Specific Inputs for the Illinois TRC*

***Income Eligible Multi Family***

Table B‑1 shows the Total Resource Cost (TRC) cost-effectiveness analysis inputs available at the time of producing this impact evaluation report. Additional required cost data (e.g., measure costs, program level incentive and non-incentive costs) are not included in this table and will be provided to 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. Verified Cost Effectiveness Inputs

| Program Category | Program Path | Savings Category | DAC Project\* | Units |  Quantity  |  Effective Useful Life  | Early Replacement Flag |  Verified Gross Annual Water Savings (Gallons)  |  Ex Ante Gross Savings (Therms)  |  Verified Gross Savings (Therms)  |  Verified Net Savings (Therms)  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Multi Family Income Eligible** | Retrofits | Air Sealing | FALSE | LN FT |  448,838  |  20.0  | NO |  -  |  189,082  |  189,533  |  189,533  |
| Controls for Domestic Hot Water | FALSE | Unit |  1,509  |  15.0  | NO |  -  |  94,614  |  94,614  |  94,614  |
| Pipe Insulation | FALSE | LN FT |  13,705  |  15.0  | NO |  -  |  91,749  |  87,781  |  87,781  |
| Attic Insulation | FALSE | SQ FT |  700,525  |  20.0  | NO |  -  |  71,105  |  69,505  |  69,505  |
| Boiler Tune Up | FALSE | Unit |  186  |  3.0  | NO |  -  |  54,997  |  54,996  |  54,996  |
| Steam Trap | FALSE | Unit |  280  |  6.0  | NO |  385,816  |  40,319  |  54,612  |  54,612  |
| Programmable Thermostats | FALSE | Unit |  663  |  8.0  | NO |  -  |  26,833  |  26,864  |  26,864  |
| Steam Boiler Averaging Controls | FALSE | Unit |  431  |  20.0  | NO |  -  |  26,329  |  26,329  |  26,329  |
| Boiler Reset Controls | FALSE | Unit |  41  |  16.0  | NO |  -  |  21,481  |  21,481  |  21,481  |
| Low Flow Showerheads (IU) | FALSE | Unit |  1,697  |  10.0  | NO |  3,330,169  |  20,984  |  20,980  |  20,980  |
| DHW Boiler Tune Up | FALSE | Unit |  83  |  3.0  | NO |  -  |  6,810  |  13,748  |  13,748  |
| Advanced Thermostat | FALSE | Unit |  246  |  11.0  | NO |  -  |  11,551  |  11,551  |  11,551  |
| Shower Timer | FALSE | Unit |  2,299  |  2.0  | NO |  1,395,515  |  8,722  |  8,722  |  8,722  |
| Low Flow Aerator - Kitchen (IU) | FALSE | Unit |  1,644  |  10.0  | NO |  874,927  |  4,637  |  4,637  |  4,637  |
| Linkageless Boiler Controls for Space Heating | FALSE | Unit |  3,400  |  16.0  | NO |  -  |  2,302  |  2,302  |  2,302  |
| DHW Pipe Insulation | FALSE | LN FT |  408  |  15.0  | NO |  -  |  1,945  |  1,954  |  1,954  |
| Low Flow Aerator - Bathroom (IU) | FALSE | Unit |  1,146  |  10.0  | NO |  440,123  |  1,957  |  1,937  |  1,937  |
| Wall Insulation | FALSE | Unit |  33,356  |  20.0  | NO |  -  |  1,869  |  1,930  |  1,930  |
| Basement/Sidewall Insulation | FALSE | Unit |  1,625  |  20.0  | NO |  -  |  1,140  |  1,140  |  1,140  |
| High Efficiency Boiler | FALSE | Unit |  1  |  16.5  | NO |  -  |  2,133  |  1,016  |  1,016  |
| Cover and Gap Sealers for AC | FALSE | Unit |  117  |  5.0  | NO |  -  |  838  |  838  |  838  |
| Furnace Tune Up | FALSE | Unit |  7  |  3.0  | NO |  -  |  500  |  422  |  422  |
| Reprogrammable Thermostats | FALSE | Unit |  7  |  8.0  | NO |  -  |  330  |  330  |  330  |
| Floor Insulation Above Crawlspace | FALSE | Unit |  1,556  |  20.0  | NO |  -  |  182  |  182  |  182  |
| Air Filter Replacement | FALSE | Unit |  15  |  3.0  | NO |  -  |  151  |  151  |  151  |
| Low Flow Aerator - Bathroom (CA) | FALSE | Unit |  5  |  10.0  | NO |  7,689  |  34  |  34  |  34  |
| Ameren Nicor | Duct Sealing | FALSE | Unit |  37  |  20.0  | NO |  -  |  10,893  |  10,449  |  10,449  |
| Air Sealing | FALSE | LN FT |  86  |  20.0  | NO |  -  |  3,903  |  3,937  |  3,937  |
| Furnace Tune Up | FALSE | Unit |  32  |  3.0  | NO |  -  |  1,827  |  1,741  |  1,741  |
| Advanced Thermostat | FALSE | Unit |  31  |  11.0  | NO |  -  |  1,665  |  1,665  |  1,665  |
| Floor Insulation Above Crawlspace | FALSE | Unit |  5,600  |  20.0  | NO |  -  |  795  |  795  |  795  |
| DHW Pipe Insulation | FALSE | LN FT |  176  |  15.0  | NO |  -  |  366  |  366  |  366  |
| Low Flow Aerator - Kitchen (IU) | FALSE | Unit |  33  |  10.0  | NO |  45,880  |  243  |  243  |  243  |
| Attic Insulation | FALSE | SQ FT |  1,600  |  20.0  | NO |  -  |  298  |  198  |  198  |
| Air Filter Replacement | FALSE | Unit |  27  |  3.0  | NO |  -  |  181  |  191  |  191  |
| Low Flow Showerheads (IU) | FALSE | Unit |  27  |  10.0  | NO |  17,299  |  109  |  109  |  109  |
| Low Flow Aerator - Bathroom (IU) | FALSE | Unit |  29  |  10.0  | NO |  9,812  |  43  |  43  |  43  |
| Boiler Pipe Insulation | FALSE | LN FT |  1  |  15.0  | NO |  -  |  3  |  2  |  2  |
| IHWAP | Air Sealing | FALSE | LN FT |  4,439  |  20.0  | NO |  -  |  2,403  |  2,403  |  2,403  |
| IE Custom | FALSE | Unit |  1  |  15.0  | NO |  -  |  1,178  |  1,178  |  1,178  |
| Low Flow Aerator - Kitchen (IU) | FALSE | Unit |  14  |  10.0  | NO |  23,256  |  123  |  123  |  123  |
| Low Flow Aerator - Bathroom (IU) | FALSE | Unit |  19  |  10.0  | NO |  7,677  |  34  |  34  |  34  |
| Low Flow Showerheads (IU) | FALSE | Unit |  4  |  10.0  | NO |  4,847  |  31  |  31  |  31  |
| Assessment | Advanced Thermostat | FALSE | Unit |  10  |  11.0  | NO |  -  |  731  |  731  |  731  |
| Programmable Thermostats | FALSE | Unit |  6  |  8.0  | NO |  -  |  332  |  290  |  290  |
| Low Flow Showerheads (IU) | FALSE | Unit |  17  |  10.0  | NO |  29,025  |  161  |  157  |  157  |
| Air Sealing | FALSE | LN FT |  21  |  20.0  | NO |  -  |  154  |  154  |  154  |
| Air Filter Replacement | FALSE | Unit |  19  |  3.0  | NO |  -  |  150  |  149  |  149  |
| Low Flow Aerator - Kitchen (IU) | FALSE | Unit |  6  |  10.0  | NO |  5,537  |  25  |  25  |  25  |
| Boiler Pipe Insulation | FALSE | LN FT |  9  |  15.0  | NO |  -  |  4  |  20  |  20  |
| DHW Pipe Insulation | FALSE | LN FT |  9  |  15.0  | NO |  -  |  17  |  17  |  17  |
| Low Flow Aerator - Bathroom (IU) | FALSE | Unit |  16  |  10.0  | NO |  2,549  |  17  |  10  |  10  |
| Healthy Homes | Air Sealing | FALSE | LN FT |  3  |  20.0  | NO |  -  |  496  |  496  |  496  |
| Duct Sealing | FALSE | Unit |  2  |  20.0  | NO |  -  |  369  |  417  |  417  |
| Advanced Thermostat | FALSE | Unit |  4  |  11.0  | NO |  -  |  267  |  267  |  267  |
| Furnace Tune Up | FALSE | Unit |  2  |  3.0  | NO |  -  |  119  |  97  |  97  |
| DHW Pipe Insulation | FALSE | LN FT |  22  | 15.0  | NO | -  | 46  | 46  | 46  |
| Air Filter Replacement | FALSE | Unit | 2  | 3.0  | NO | -  | 16  | 16  | 16  |
| Low Flow Aerator - Kitchen (IU) | FALSE | Unit | 1  | 10.0  | NO | 1,661  | 9  | 9  | 9  |
| Low Flow Showerheads (IU) | FALSE | Unit | 1  | 10.0  | NO | 909  | 6  | 6  | 6  |
| Low Flow Aerator - Bathroom (IU) | FALSE | Unit | 1  | 10.0  | NO | 577  | 3  | 3  | 3  |
| **Total or Weighted Average** |  |  |  | **14.6** |  | **6,583,268**  | **709,610**  | **724,005**  | **724,005**  |

Source: Evaluation team analysis.

***Public Housing Energy Savings***

Table B‑2 shows the Total Resource Cost (TRC) cost-effectiveness analysis inputs available at the time of producing this impact evaluation report. Additional required cost data (e.g., measure costs, program level incentive and non-incentive costs) are not included in this table and will be provided to 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‑2. Verified Cost Effectiveness Inputs – Public Housing

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Program Category | Program Path | Savings Category | DAC Project\* | Units |  Quantity  |  Effective Useful Life  | Early Replacement Flag |  Verified Gross Annual Water Savings (Gallons)  |  Ex Ante Gross Savings (Therms)  |  Verified Gross Savings (Therms)  |  Verified Net Savings (Therms)  |
| **Multi Family Income Eligible** | **Public Housing** | Air Sealing | FALSE | LN FT | 63,794  |  20.0  | NO | -  | 25,565  | 26,538  | 26,538  |
| Furnace Tune Up | FALSE | Unit | 228  |  3.0  | NO | -  | 10,239  | 8,241  | 8,241  |
| Attic Insulation | FALSE | SQ FT | 106,326  |  20.0  | NO | -  | 7,855  | 7,204  | 7,204  |
| Boiler Tune Up | FALSE | Unit | 8  |  3.0  | NO | -  | 1,972  | 1,972  | 1,972  |
| Air Filter Replacement | FALSE | Unit | 71  |  3.0  | NO | -  | 714  | 714  | 714  |
| Shower Timer | FALSE | Unit | 48  |  2.0  | NO | 29,138  | 182  | 182  | 182  |
| **Total or Weighted Average** |  |  |  | **15.8**  |  | **29,138**  | **46,527**  | **44,851**  | **44,851**  |

*Source: Evaluation team analysis.*