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| Elementary Energy Education Kits Impact Evaluation Report  Energy Efficiency Plan: Program Year 2023  (1/1/2023-12/31/2023) | | | | | | | |
| Prepared for:  Nicor Gas Company  DRAFT  March 22, 2024 | | | | | | | |
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# Introduction

This report presents the results of the impact evaluation of the Elementary Energy Education (EEE) Kits program and a summary of the energy impacts for the total program as well as for relevant measure and program structure details. The appendices present the impact analysis methodology and Illinois total resource cost (TRC) inputs. Program year 2023 covers January 1, 2023 through December 31, 2023.

# Program Description

The EEE Kits program is offered jointly to schools served by Nicor Gas and ComEd. Nicor Gas claimed all gas savings and ComEd claimed all the electricity savings from the EEE Income Eligible (IE) and EEE Market Rate (MR)[[1]](#footnote-2) kits sent to the joint utility customers. Nicor Gas also offered this program to schools served by Nicor Gas and an electricity provider other than ComEd (Nicor Gas Only MR Kits). The program had 30,798 participants in 2023 and completed 245,236 projects as shown in the Table 2‑1.

Table 2‑1. 2023 EEE Kits Volumetric Findings Detail

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Participation | Nicor Gas-ComEd Joint IE Kits | Nicor Gas-ComEd Joint MR Kits | Nicor Gas Only Kits | Total |
| Participants \* | 4,943 | 25,281 | 574 | 30,798 |
| Installed Projects † | 39,544 | 202,248 | 3,444 | 245,236 |

\* Participants are defined as the total number of kits distributed.

† Installed Projects are defined as the total quantity of measures distributed.

Source: Nicor 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 EEE Kits Installed Measure Quantities

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Program Category | Program Path | Measure | Quantity Unit | Installed Quantity |
| EEE Kits | Nicor Gas-ComEd Joint IE Kits | Closed Foam Weatherstripping (17' Roll) IE | Ln Ft | 4,943 |
|  |  | Self-Adhesive Door Sweep IE | Each | 4,943 |
|  |  | Shower Timer | Each | 4,943 |
|  |  | Low Flow Showerheads | Each | 4,943 |
|  |  | Low Flow Aerators (Bathroom) | Each | 9,886 |
|  |  | Low Flow Aerators (Kitchen) | Each | 4,943 |
|  |  | Temperature Setback Card | Each | 4,943 |
| EEE Kits | Nicor Gas-ComEd Joint MR Kits | Closed Foam Weatherstripping (17' Roll) MR | Ln Ft | 25,281 |
|  |  | Self-Adhesive Door Sweep MR | Each | 25,281 |
|  |  | Shower Timer | Each | 25,281 |
|  |  | Low Flow Showerheads | Each | 25,281 |
|  |  | Low Flow Aerators (Bathroom) | Each | 50,562 |
|  |  | Low Flow Aerators (Kitchen) | Each | 25,281 |
|  |  | Temperature Setback Card | Each | 25,281 |
| EEE Kits | Nicor Gas Only MR Kits | Shower Timer | Each | 574 |
|  |  | Low Flow Showerheads | Each | 574 |
|  |  | Low Flow Aerators (Bathroom) | Each | 1,148 |
|  |  | Low Flow Aerators (Kitchen) | Each | 574 |
|  |  | Temperature Setback Card | Each | 574 |

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

# Program Savings Detail

Table 3‑1 summarizes the energy savings the EEE Kits Program achieved for each kit type in 2023.

Table 3‑1. 2023 EEE Kits Annual Energy Savings Summary

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Program Category | Program Path | Ex Ante Gross Savings (Therms) | Verified Gross RR\* | Verified Gross Savings (Therms) | NTG† | Verified Net Savings (Therms) |
| **EEE Kits** | Nicor Gas-ComEd Joint IE Kits | 68,554 | 100% | 68,554 | 1.000 | 68,554 |
|  | Nicor Gas-ComEd Joint MR Kits | 367,788 | 100% | 367,788 | 1.048 | 385,442 |
|  | Nicor Gas Only Kits | 3,932 | 100% | 3,932 | 1.048 | 4,121 |
| **Total or Weighted Average** | | **440,275** | **100%** | **440,275** | **1.041** | **458,118** |

\* 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_2023>. The market rate measure NTG values account for a deemed non-participant spillover factor of 0.048 (not applicable to disadvantaged communities designated sites).

Source: Guidehouse evaluation team analysis.

# Program Savings by Measure

The EEE Kits Joint program (IE and MR) includes seven measures and the EEE Kits Gas Only program includes five measures as shown in Table 4‑1. The closed foam weatherstripping and door sweep measures contributed the most savings for Joint kit types. The shower timer and low flow showerhead measures contributed the most savings for Gas Only kit types.

Table 4‑1. 2023 EEE Kits Annual Energy Savings by Measure

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Program Category | Program Path | Savings Category | Ex Ante Gross Savings (Therms) | Verified Gross RR\* | Verified Gross Savings (Therms) | NTG† | Verified Net Savings (Therms) |
| **EEE Kits** | Nicor Gas-ComEd Joint IE Kits | Closed Foam Weatherstripping (17' Roll) IE | 18,432 | 100% | 18,432 | 1.00 | 18,432 |
|  |  | Self-Adhesive Door Sweep IE | 16,258 | 100% | 16,258 | 1.00 | 16,258 |
|  |  | Shower Timer | 15,610 | 100% | 15,610 | 1.00 | 15,610 |
|  |  | Low Flow Showerheads | 12,036 | 100% | 12,036 | 1.00 | 12,036 |
|  |  | Low Flow Aerators (Bathroom) | 2,373 | 100% | 2,373 | 1.00 | 2,373 |
|  |  | Low Flow Aerators (Kitchen) | 1,967 | 100% | 1,967 | 1.00 | 1,967 |
|  |  | Temperature Setback Card | 1,878 | 100% | 1,878 | 1.00 | 1,878 |
|  | ***Nicor Gas-ComEd Joint IE Kits Subtotal*** | | ***68,554*** | ***100%*** | ***68,554*** | ***1.00*** | ***68,554*** |
| **EEE Kits** | Nicor Gas-ComEd Joint MR Kits | Closed Foam Weatherstripping (17' Roll) MR | 103,399 | 100% | 103,399 | 1.048 | 108,362 |
|  |  | Self-Adhesive Door Sweep MR | 91,189 | 100% | 91,189 | 1.048 | 95,566 |
|  |  | Shower Timer | 79,837 | 100% | 79,837 | 1.048 | 83,670 |
|  |  | Low Flow Showerheads | 61,559 | 100% | 61,559 | 1.048 | 64,514 |
|  |  | Low Flow Aerators (Bathroom) | 12,135 | 100% | 12,135 | 1.048 | 12,717 |
|  |  | Low Flow Aerators (Kitchen) | 10,062 | 100% | 10,062 | 1.048 | 10,545 |
|  |  | Temperature Setback Card | 9,607 | 100% | 9,607 | 1.048 | 10,068 |
|  | ***Nicor Gas-ComEd Joint MR Kits Subtotal*** | | ***367,788*** | ***100%*** | ***367,788*** | ***1.048*** | ***385,442*** |
| **EEE Kits** | Nicor Gas Only Kits | Shower Timer | 1,813 | 100% | 1,813 | 1.048 | 1,900 |
|  |  | Low Flow Showerheads | 1,398 | 100% | 1,398 | 1.048 | 1,465 |
|  |  | Low Flow Aerators (Bathroom) | 276 | 100% | 276 | 1.048 | 289 |
|  |  | Low Flow Aerators (Kitchen) | 228 | 100% | 228 | 1.048 | 239 |
|  |  | Temperature Setback Card | 218 | 100% | 218 | 1.048 | 229 |
|  | ***Nicor Gas Only Kits Subtotal*** | | ***3,932*** | ***100%*** | ***3,932*** | ***1.048*** | ***4,121*** |
| **Total or Weighted Average** | | | **440,275** | **100%** | **440,275** | **1.041** | **458,118** |

\* 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_2023>. The market rate measure NTG values account for a deemed non-participant spillover factor of 0.048 (not applicable to disadvantaged communities designated sites).

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

# Impact Analysis Findings and Recommendations

The EEE Kits program achieved a 100% realization rate (RR) for 2023. The ex ante savings matched the verified savings for each measure and all the kit types.

## 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 Table 5‑1 are 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 5‑1. EEE Kits Verified Gross Savings Parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Measure | Unit Basis | Ex Ante Gross (therms/unit) | Verified Gross (therms/unit) | Realization Rate | Data Source(s) |
| Closed Foam Weatherstripping (17' Roll) IE | Ln Ft | 3.73 | 3.73 | 100% | Illinois TRM, v11.0†, Section 5.6.1 and PTD\* |
| Self-Adhesive Door Sweep IE | Each | 3.29 | 3.29 | 100% | Illinois TRM, v11.0, Section 5.6.1 and PTD |
| Closed Foam Weatherstripping (17' Roll) MR | Ln Ft | 4.09 | 4.09 | 100% | Illinois TRM, v11.0, Section 5.6.1 and PTD |
| Self-Adhesive Door Sweep MR | Each | 3.61 | 3.61 | 100% | Illinois TRM, v11.0, Section 5.6.1 and PTD |
| Shower Timer | Each | 3.16 | 3.16 | 100% | Illinois TRM, v11.0, Section 5.4.9 and PTD |
| Low Flow Showerheads | Each | 2.44 | 2.44 | 100% | Illinois TRM, v11.0, Section 5.4.5 and PTD |
| Low Flow Aerators (Bathroom) | Each | 0.24 | 0.24 | 100% | Illinois TRM, v11.0, Section 5.4.4. and PTD |
| Low Flow Aerators (Kitchen) | Each | 0.40 | 0.40 | 100% | Illinois TRM, v11.0, Section 5.4.4 and PTD |
| Temperature Setback Card | Each | 0.38 | 0.38 | 100% | Illinois TRM, v11.0, Section 5.4.6 and PTD |

\* Program Tracking Data (PTD) provided by Nicor 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

The overall RR for therms savings was 100%. The evaluation team verified all measure savings and did not find any discrepancies with the savings for the EEE Kits program. There are no findings and recommendations based on the evaluation of the 2023 program activity.

##### Impact Analysis Methodology

The evaluation team verified unit savings for each program measure using the impact algorithm sources found in the Illinois Statewide Technical Reference Manual v11.0 (IL-TRM)[[2]](#footnote-3). Table A‑1 presents the key parameters and the references used in the verified gross and net savings calculations.

Table A‑1. EEE Kits Impact Parameters

|  |  |  |
| --- | --- | --- |
| Gross Savings Input Parameters | Deemed Input Parameters | Source\* |
| Closed Foam Weatherstripping (17' Roll) | ADJRxAirsealing, ISR, %FossilHeat, Δtherms\_wx | IL-TRM, v11.0, Section 5.6.1 |
| Self-Adhesive Door Sweep | ADJRxAirsealing, ISR, %FossilHeat, Δtherms\_sweep | IL-TRM, v11.0, Section 5.6.1 |
| Shower Timer | L\_base, Showers per capita per day (SPCD), GPH, EPG\_gas, %FossilDHW, GPM, L\_timer, Household, Usage Factor, %SF, %MF | IL-TRM, v11.0, Section 5.4.9 |
| Low Flow Showerheads | GPM\_base, GPM\_low, L\_base, L\_low, Showerheads per household (SPH), showers per capita per day (SPCD), EPG\_gas, %FossilDHW, Household, ISR, %SF, %MF | IL-TRM, v11.0, Section 5.4.5 |
| Low Flow Aerators (Bathroom) | GPM\_base, GPM\_low, L\_base, L\_low, faucets per household (FPH), drain factor (DF), EPG\_gas, %FossilDHW, Household, ISR, %SF, %MF | IL-TRM, v11.0, Section 5.4.4 |
| Low Flow Aerators (Kitchen) | GPM\_base, GPM\_low, L\_base, L\_low, faucets per household (FPH), drain factor (DF), EPG\_gas, %FossilDHW, Household, ISR, %SF, %MF | IL-TRM, v11.0, Section 5.4.4 |
| Temperature Setback Card | U (Overall heat transfer coefficient of tank), A (Surface area of storage tank), Tpre, Tpost, Hours, RE\_gas, %FossilDHW, ISR | IL-TRM, v11.0, Section 5.4.6 |

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

GPH – Gallons per hour

DHW – Domestic hot water

GPM – Gallons per minute

SF – Single family

MF – Multi family

ISR – In-service rate

Source: Guidehouse evaluation team analysis

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

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. EEE Kits Verified Cost Effectiveness Inputs

| Program Path | Savings Category | Units | | | Quantity | | Effective Useful Life | | Ex Ante Gross Savings (Therms) | Verified Gross Savings (Therms) | Verified Net Savings (Therms) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Nicor Gas-ComEd Joint IE Kits | Closed Foam Weatherstripping (17' Roll) IE | | Ln Ft | | 4,943 | | 20 | | 18,432 | 18,432 | 18,432 |
| Self-Adhesive Door Sweep IE | | Each | | 4,943 | | 20 | | 16,258 | 16,258 | 16,258 |
| Shower Timer | | Each | | 4,943 | | 2 | | 15,610 | 15,610 | 15,610 |
| Low Flow Showerheads | | Each | | 4,943 | | 10 | | 12,036 | 12,036 | 12,036 |
| Low Flow Aerators (Bathroom) | | Each | | 9,886 | | 10 | | 2,373 | 2,373 | 2,373 |
| Low Flow Aerators (Kitchen) | | Each | | 4,943 | | 10 | | 1,967 | 1,967 | 1,967 |
| Temperature Setback Card | | Each | | 4,943 | | 2 | | 1,878 | 1,878 | 1,878 |
| Nicor Gas-ComEd Joint MR Kits | Closed Foam Weatherstripping (17' Roll) MR | | Ln Ft | | 25,281 | | 20 | | 103,399 | 103,399 | 108,362 |
| Self-Adhesive Door Sweep MR | | Each | | 25,281 | | 20 | | 91,189 | 91,189 | 95,566 |
| Shower Timer | | Each | | 25,281 | | 2 | | 79,837 | 79,837 | 83,670 |
| Low Flow Showerheads | | Each | | 25,281 | | 10 | | 61,559 | 61,559 | 64,514 |
| Low Flow Aerators (Bathroom) | | Each | | 50,562 | | 10 | | 12,135 | 12,135 | 12,717 |
| Low Flow Aerators (Kitchen) | | Each | | 25,281 | | 10 | | 10,062 | 10,062 | 10,545 |
| Temperature Setback Card | | Each | | 25,281 | | 2 | | 9,607 | 9,607 | 10,068 |
| Nicor Gas Only Kits | Shower Timer | | Each | | 574 | | 2 | | 1,813 | 1,813 | 1,900 |
| Low Flow Showerheads | | Each | | 574 | | 10 | | 1,398 | 1,398 | 1,465 |
| Low Flow Aerators (Bathroom) | | Each | | 1,148 | | 10 | | 276 | 276 | 289 |
| Low Flow Aerators (Kitchen) | | Each | | 574 | | 10 | | 228 | 228 | 239 |
| Temperature Setback Card | | Each | | 574 | | 2 | | 218 | 218 | 229 |
| **Total or Weighted Average** | | | |  | | **13.2** | | **440,275** | | **440,275** | **458,118** |

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

1. In this report, unless stated otherwise, IE refers to Income Eligible and MR refers to Market Rate. [↑](#footnote-ref-2)
2. Unless stated otherwise, IL-TRM refers to version 11.0 (v11.0). [↑](#footnote-ref-3)