



Elementary Energy Education Kits Impact Evaluation Report

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

Prepared for:

Nicor Gas Company

FINAL

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Table of Contents

1. Introduction	1
2. Program Description	1
3. Program Savings Detail	2
4. Program Savings by Measure	2
5. Impact Analysis Findings and Recommendations	3
5.1 Impact Parameter Estimates	3
5.2 Findings and Recommendations	4
Appendix A. Impact Analysis Methodology	A-1
Appendix B. Program-Specific Inputs for the Illinois TRC	B-1

List of Tables, Figures, and Equations

Table 2-1. 2022 Volumetric Findings Detail	1
Table 2-2. 2022 Installed Measure Quantities	1
Table 3-1. 2022 Annual Energy Savings Summary	2
Table 4-1. 2022 Annual Energy Savings by Measure	2
Table 5-1. Verified Gross Savings Parameters	3
Table A-1. Impact Parameters	A-1
Table B-1. Verified Cost Effectiveness Inputs	B-1

1. 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 and broken out by relevant measure and program structure details. The appendices present the impact analysis methodology and Illinois total resource cost (TRC) inputs. Program year 2022 covers January 1, 2022 through December 31, 2022.

2. Program Description

The 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 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 Kit). The EEE Kits program distributed 25,107 kits in 2022 which contained 150,642 individual energy efficiency measures.

Table 2-1. 2022 Volumetric Findings Detail

Participation	Nicor Gas - ComEd Joint Kits	Nicor Gas Only Kits	Total
Participation*	24,082	1,025	25,107
Distributed Measures†	144,492	6,150	150,642

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

† Distributed measures is 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. 2022 Installed Measure Quantities

Program Category	Program Path	Measure	Quantity Unit	Installed Quantity
Elementary Education Kits	Nicor Gas – ComEd Joint Kits	Shower Timer	Each	24,082
		Low Flow Showerheads	Each	24,082
		Low Flow Aerators (Bathroom)	Each	48,164
		Low Flow Aerators (Kitchen)	Each	24,082
		Water Heater Temperature Setback	Each	24,082
Elementary Education Kits	Nicor Gas Only Kits	Shower Timer	Each	1,025
		Low Flow Showerheads	Each	1,025
		Low Flow Aerators (Bathroom)	Each	2,050
		Low Flow Aerators (Kitchen)	Each	1,025

Program Category	Program Path	Measure	Quantity Unit	Installed Quantity
		Water Heater Temperature Setback	Each	1,025

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

3. Program Savings Detail

Table 3-1 summarizes the energy savings the EEE Kits program achieved for each kit type in 2022.

Table 3-1. 2022 Annual Energy Savings Summary

Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG [†]	Verified Net Savings (Therms)
Nicor Gas - ComEd Joint Kit	171,343	101%	173,244	1.00	173,244
Nicor Gas Only Kit	10,819	68%	7,374	1.00	7,374
Total or Weighted Average	182,163	99%	180,618	1.00	180,618

* 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-2022/>.

Source: Guidehouse evaluation team analysis.

4. Program Savings by Measure

The EEE Kits program includes four measures as shown in Table 4-1. The shower timer and low flow showerhead measures contributed the most savings for both kit types.

Table 4-1. 2022 Annual Energy Savings by Measure

Program Management	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG [†]	Verified Net Savings (Therms)
Nicor Gas - ComEd Joint Kit	Shower Timer	79,856	100%	79,846	1.00	79,846
	Low Flow Showerheads	61,578	100%	61,576	1.00	61,576
	Low Flow Aerators (Bathroom)	12,137	100%	12,149	1.00	12,149
	Low Flow Aerators (Kitchen)	10,066	100%	10,057	1.00	10,057
	Water Heater Temperature Setback	7,706	125%	9,615	1.00	9,615
Nicor Gas - ComEd Joint Kit Subtotal		171,343	101%	173,244	1.00	173,244

Program Management	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG+	Verified Net Savings (Therms)
Nicor Gas Only Kit	Shower Timer	1,044	325%	3,398	1.00	3,398
	Low Flow Showerheads	5,658	46%	2,621	1.00	2,621
	Low Flow Aerators (Bathroom)	682	76%	517	1.00	517
	Low Flow Aerators (Kitchen)	3,282	13%	428	1.00	428
	Water Heater Temperature Setback	154	266%	409	1.00	409
Nicor Gas Only Kit Subtotal		10,819	68%	7,374	1.00	7,374
Total or Weighted Average		182,163	99%	180,618	1.00	180,618

Note: Subtotals may not sum due to rounding.

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

† A deemed value. Available on the SAG web site: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2022/>.

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

5. Impact Analysis Findings and Recommendations

The following section details the issues that affected realization rates and the recommendations the evaluation team developed based on its findings.

5.1 Impact Parameter Estimates

Table 5-1 shows the unit therms savings and realization rate findings by measure. 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. Verified Gross Savings Parameters

Measure	Unit Basis	Ex Ante Gross (Therms/unit)	Verified Gross (Therms/unit)	Realization Rate	Data Source(s)
Nicor Gas – ComEd Joint Kit					
Shower Timer	Each	3.32	3.32	100%	Illinois TRM, v10.0†, Section 5.4.9 and PTD*
Low Flow Showerheads	Each	2.56	2.56	100%	Illinois TRM, v10.0, Section 5.4.5 and PTD
Low Flow Aerators (Bathroom)	Each	0.25	0.25	100%	Illinois TRM, v10.0, Section 5.4.4 and PTD
Low Flow Aerators (Kitchen)	Each	0.42	0.42	100%	Illinois TRM, v10.0, Section 5.4.4 and PTD
Water Heater Temperature Setback	Each	0.32	0.40	125%	Illinois TRM, v10.0, Section 5.4.6 and PTD
Nicor Gas Only Kit					

Measure	Unit Basis	Ex Ante Gross (Therms/unit)	Verified Gross (Therms/unit)	Realization Rate	Data Source(s)
Shower Timer	Each	1.02	3.32	325%	Illinois TRM, v10.0, Section 5.4.9 and PTD
Low Flow Showerheads	Each	5.52	2.56	46%	Illinois TRM, v10.0, Section 5.4.5 and PTD
Low Flow Aerators (Bathroom)	Each	0.33	0.25	75%	Illinois TRM, v10.0, Section 5.4.4 and PTD
Low Flow Aerators (Kitchen)	Each	3.20	0.42	13%	Illinois TRM, v10.0, Section 5.4.4 and PTD
Water Heater Temperature Setback	Each	0.15	0.40	266%	Illinois TRM, v10.0, Section 5.4.6 and PTD

* Program Tracking Data (PTD) provided by Nicor Gas, extract dated January 31, 2023.

† State of Illinois Technical Reference Manual version 10.0 from <http://www.ilsag.info/technical-reference-manual.html>.

5.2 Findings and Recommendations

The overall realization rate for the EEE Kits program was 99%. Based on the evaluation of 2022 program activity, the evaluation team developed several findings and recommendations.

Finding 1. The implementation team provided an ex ante calculation spreadsheet showing measure level savings calculations for the Nicor Gas-ComEd Joint Kits, and the Nicor Gas Only Kits. The ex ante were either 7.12 therms/kit for Nicor Gas-ComEd Joint Kits or 10.55 therms/kit for the Nicor Gas Only Kits. The measure level savings for these two kits were not calculated consistently. The Nicor Gas-ComEd Joint Kit ex ante calculations used the default inputs and technical assumptions found in v10 of the IL-TRM. The technical assumptions for the Nicor Gas Only Kits were from student survey data collected during previous program years. The evaluation team updated the Nicor Gas Only Kit savings to be consistent with the TRM default assumptions, as well as the methods for all other utility EEE kits.

Recommendation 1. Utilize the default TRM parameters for calculating the measure and kit-level savings for joint and non-joint EEE kits. This approach will ensure that savings are calculated consistently for the same measures across the program.

Finding 2. There was one change in the tracking data which affected the total number of kits. The Nicor Gas tracking data¹ reported a total of 23,532 kits were distributed in the joint Nicor Gas – ComEd territory, but the tracking data received from ComEd program reported 24,082 kits. The evaluation team used the updated tracking data with the higher quantity of the joint kits (24,082) to develop the verified savings after confirming with Nicor Gas to update the ex ante measure count savings.

Recommendation 2. Coordinate with ComEd to ensure that the tracking data for the EEE Kits program agrees with the total number of joint kits distributed to joint customers with ComEd.

¹ EEE Evaluation Participation Report.xlsx received on 2/2/2023.

Appendix A. 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 v10.0 (IL-TRM)². Table A-1 presents the key parameters and the references used in the verified gross and net savings calculations.

Table A-1. Impact Parameters

Gross Savings Input Parameters	Deemed Input Parameters	Source*
Shower Timer	L_base, Showers per capita per day (SPCD), GPH, EPG_gas, %DHW, GPM, L_timer, Household, Usage Factor, %SF, %MF	IL-TRM, v10.0, 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, %Fossil DHW, Household, ISR, %SF, %MF	IL-TRM, v10.0, 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, %Fossil DHW, Household, ISR, %SF, %MF	IL-TRM, v10.0, 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, %Fossil DHW, Household, ISR, %SF, %MF	IL-TRM, v10.0, Section 5.4.4
Water Heater Temperature Setback	U (Overall heat transfer coefficient of tank), A (Surface area of storage tank), Tpre, Tpost, Hours, RE_gas, %Fossil DHW, ISR	IL-TRM, v10.0, Section 5.4.6

*State of Illinois Technical Reference Manual version 10.0 from <http://www.ilsag.info/technical-reference-manual.html>

² In this report, unless stated otherwise, IL-TRM refers to version 10.0 (v10.0).

Appendix B. Program-Specific Inputs for the Illinois TRC

Table B-1 shows the 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 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 Kit	Shower Timer	Each	24,082	2	79,856	79,846	79,846
	Low Flow Showerheads	Each	24,082	10	61,578	61,576	61,576
	Low Flow Aerators (Bathroom)	Each	48,164	10	12,137	12,149	12,149
	Low Flow Aerators (Kitchen)	Each	24,082	10	10,066	10,057	10,057
	Water Heater Temperature Setback	Each	24,082	2	7,706	9,615	9,615
Nicor Gas Only Kit	Shower Timer	Each	1,025	2	1,044	3,398	3,398
	Low Flow Showerheads	Each	1,025	10	5,658	2,621	2,621
	Low Flow Aerators (Bathroom)	Each	2,050	10	682	517	517
	Low Flow Aerators (Kitchen)	Each	1,025	10	3,282	428	428
	Water Heater Temperature Setback	Each	1,025	2	154	409	409
Total or Weighted Average			150,642	5.9	182,163	180,618	180,618

Note: Totals may not sum due to rounding.

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