



Energy Saving Kits Impact Evaluation Report

Energy Efficiency Plan: Plan Year 2021
(1/1/2021-12/31/2021)

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Nicor Gas Company

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1. Introduction

This report presents the results of the impact evaluation of the Nicor Gas 2021 Energy Saving Kits (ESK) program. It presents a summary of the energy impacts for the total program and broken out by relevant measure and program structure details. The appendix presents the impact analysis methodology. Program year 2021 covers January 1, 2021, through December 31, 2021.

2. Program Description

The Nicor Gas ESK Program provides hot water and weatherization efficiency measures that reduce customer natural gas consumption. The offering targets customers through direct email, outreach events, targeted emails, Nicor Gas Energy Efficiency Program website promotions, and through financial heating assistance intake centers. The kits are free and are available to all Nicor Gas single family (SF) and multi-family (MF) residential customers upon request. There are three kit versions containing water saving measure combinations (abbreviated Kit 1, Kit 2 and Kit 3). A fourth kit combination (Kit 4) includes weatherization gas space heating reduction measures. The weatherization measures include outlet and switch gasket covers, foam tape weatherstripping, v-seal weatherstripping, a self-adhesive door sweep, and a roll of rope caulk. Table 2-1 describes the composition of the kits. Customers may request one of either Kit 1, Kit 2, or Kit 3 plus up to two of Kit 4.

The program had 23,360 participants in 2021 and distributed 46,185 kits, as shown in Table 2-1.

Table 2-1. 2021 Volumetric Summary

Kit	Quantity Distributed	Measure Composition*
Kit 1	1,144	1 SH, 2 BA, 1 KA, 1 ST
Kit 1 MF	186	
Kit 2	8,697	2 SH, 2 BA, 1 KA, 1 ST
Kit 2 MF	1,259	
Kit 3	693	1 SH, 1 BA, 1 KA, 1 ST
Kit 3 MF	103	
Kit 4	30,170	12 OSC, 17' FTW, 17' VSW, 1 DS, 30' RC
Kit 4 MF	3,933	
Total	46,185	

* SH = Showerhead, KA = Kitchen Aerator, BA = Bath Aerator, ST = Shower Timer, OSC = Outlet or Switch Cover, FTW = Foam Tape Weatherstrip, VSW = V-Seal Weatherstrip, DS = Door Sweep, RC = Rope Caulk

Source: Nicor Gas tracking data and Guidehouse team analysis.

Table 2-2 summarizes the verified energy savings installed measure quantities.

Table 2-2. 2021 Installed Measure Quantities

Measure	Quantity Unit	Quantity
Kitchen Aerator	Each	12,082
Showerhead	Each	22,038
Shower Timer	Each	12,082
Outlet Cover	Each	409,236
Foam Tape	Feet	579,751
V-Seal	Feet	579,751
Door Sweep	Each	34,103
Rope Caulk	Feet	1,023,090

Source: Nicor Gas tracking data and Guidehouse team analysis.

3. Savings Summary

Table 3-1 summarizes the ESK program energy savings by kit and home type. Most 2021 program savings came from single-family and multi-family Kit 4 installations.

Table 3-1. 2021 Annual Energy Savings Summary

Program Offering	Ex Ante Gross Savings (Therms)*	Verified Gross RR†	Verified Gross Savings (Therms)	NTG‡	Verified Net Savings (Therms)
Kit 1	18,956	100%	18,957	1.00	18,957
Kit 1 MF	3,342	100%	3,560	1.00	3,560
Kit 2	209,337	100%	209,307	1.00	209,307
Kit 2 MF	36,498	100%	36,503	1.00	36,503
Kit 3	11,081	100%	11,079	1.00	11,079
Kit 3 MF	1,863	100%	1,863	1.00	1,863
Kit 4	1,070,769	100%	1,070,704	0.84	899,392
Kit 4 MF	139,582	100%	139,578	0.84	117,246
Total or Weighted Average	1,491,428	100%	1,491,552	0.87	1,297,906

* Ex ante savings reported in the tracking data and in Table 3-1 are claimed at the kit level so ex ante savings presented at the measure level in subsequent tables below do not sum exactly to the program total due to rounding differences. Table 3-1 ex ante savings by kit differs by 123 therms compared with ex ante savings by measure shown in other tables in the report.

† Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings. Minor differences in the per kit savings, due to rounding, cause the minor differences in ex ante and verified gross savings.

‡ Net-to-Gross (NTG) is the ratio of verified net savings to verified gross savings. The NTG is a deemed value. Source: Illinois SAG web site: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2021/>
Source: Nicor Gas tracking data and Guidehouse team analysis.

4. Program Savings by Measure Category

The program includes nine measure types, as shown in Table 4-1. Weatherization measures (Kit 4) contributed the most 2021 savings, with Rope Caulk being the largest single measure (369,565 annual gross therms). V-Seals and Foam Tape provided the second most gas savings (245,332 gross therms each).

Table 4-1. 2021 Annual Energy Savings by Measure Category- Program Total

Research Category	Ex Ante Gross Savings (Therms)	Verified Gross RR	Verified Gross Savings (Therms)	NTG	Verified Net Savings (Therms)
Bath Aerator	15,046	100%	15,046	1.00	15,046
Kitchen Aerator	62,973	100%	62,973	1.00	62,973
Showerhead	158,720	100%	158,720	1.00	158,720
Shower Timer	44,530	100%	44,530	1.00	44,530
Gaskets	133,869	100%	133,869	0.84	112,450
Foam Tape	245,332	100%	245,332	0.84	206,079
V-Seal	245,332	100%	245,332	0.84	206,079
Door Sweep	216,185	100%	216,185	0.84	181,595
Rope Caulk	369,565	100%	369,565	0.84	310,434
Total or Weighted Average	1,491,552	100%	1,491,552	0.87	1,297,906

Source: Nicor Gas tracking data and Guidehouse team analysis.

Table 4-2 provides additional details of the measure savings based on kit type.

Table 4-2. 2021 Annual Energy Savings Measure Detail

Research Category	Quantity Distributed	Ex Ante Gross Savings (Therms)	Verified Gross RR	Verified Gross Savings (Therms)	NTG	Verified Net Savings (Therms)
Bath Aerators SF	20,375	11,897	100%	11,897	1.00	11,897
Bath Aerators MF	2,993	3,149	100%	3,149	1.00	3,149
Kitchen Aerators SF	10,534	55,211	100%	55,211	1.00	55,211
Kitchen Aerators MF	1,548	7,762	100%	7,762	1.00	7,762
Showerhead x1 SF	1837	11,857	100%	11,857	1.00	11,857
Showerhead x1 MF	289	2,452	100%	2,452	1.00	2,452
Showerhead x2 SF	17394	121,326	100%	121,326	1.00	121,326
Showerhead x2 MF	2,518	23,085	100%	23,085	1.00	23,085
Shower Timer SF	10534	39,052	100%	39,052	1.00	39,052
Shower Timer MF	1,548	5,478	100%	5,478	1.00	5,478
Gaskets	409,236	133,869	100%	133,869	0.84	112,450
Foam Tape	579,751	245,332	100%	245,332	0.84	206,079
V-Seal	579,751	245,332	100%	245,332	0.84	206,079
Door Sweep	34,103	216,185	100%	216,185	0.84	181,595
Rope Caulk	1,023,090	369,565	100%	369,565	0.84	310,434
Total or Average	2,695,501	1,491,552	100%	1,491,552	0.87	1,297,906

Source: Nicor Gas tracking data and Guidehouse team analysis.

5. Impact Analysis Findings and Recommendations

The Guidehouse team determined verified gross savings for each measure by conducting a tracking system review. Calculated verified gross savings applied Illinois TRM v9.0 methodology including inputs and formulas. The evaluation team's verified gross savings calculation uses non-rounded input values for per-kit unit therm savings. In contrast, Nicor Gas rounds ex ante per-kit gross savings to two digits after the decimal point. These rounding differences cause minor differences in total therms for the program (typically less than 0.1%) are not Nicor Gas calculation errors.

5.1 Impact Parameter Estimates

Table 5-1 shows the reviewed unit therm savings and realization rate findings by measure. The realization rate is the ratio of the verified savings to the ex ante savings. The evaluation team determined that all ex ante savings estimates used by Nicor Gas were consistent with Illinois TRM v9.0 methodology. Measures for Kits 1 – 3 have different unit savings according to SF/MF building type.

Table 5-1. Verified Gross Savings Parameters

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	Realization Rate	Data Source(s)
Bath Aerators SF	Each	0.58	0.58	100%	Illinois TRM, v9.0*, Section 5.4.4 and Nicor Gas Program Tracking Data (PTD†)
Bath Aerators MF	Each	1.05	1.05	100%	Illinois TRM, v9.0, Section 5.4.4 and PTD
Kitchen Aerators SF	Each	5.24	5.24	100%	Illinois TRM, v9.0, Section 5.4.4 and PTD
Kitchen Aerators MF	Each	5.01	5.01	100%	Illinois TRM, v9.0, Section 5.4.4 and PTD
Showerhead x 1 SF	Each	6.45	6.45	100%	Illinois TRM, v9.0, Section 5.4.5 and PTD
Showerhead x 1 MF	Each	8.48	8.48	100%	Illinois TRM, v9.0, Section 5.4.5 and PTD
Showerhead x 2 SF	Each	6.98	6.98	100%	Illinois TRM, v9.0, Section 5.4.5 and PTD
Showerhead x 2 MF	Each	9.17	9.17	100%	Illinois TRM, v9.0, Section 5.4.5 and PTD
Shower Timer SF	Each	3.11	3.11	100%	Illinois TRM, v9.0, Section 5.4.9 and PTD
Shower Timer MF	Each	2.97	2.97	100%	Illinois TRM, v9.0, Section 5.4.9 and PTD
Gaskets	Each	0.27	0.27	100%	Illinois TRM, v9.0, Section 5.6.1 and PTD

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	Realization Rate	Data Source(s)
Foam Tape	Feet	0.36	0.36	100%	Illinois TRM, v9.0, Section 5.6.1 and PTD
V-Seal	Feet	0.36	0.36	100%	Illinois TRM, v9.0, Section 5.6.1 and PTD
Door Sweep	Each	5.32	5.32	100%	Illinois TRM, v9.0, Section 5.6.1 and PTD
Rope Caulk	Feet	0.30	0.30	100%	Illinois TRM, v9.0, Section 5.6.1 and PTD

* State of Illinois Technical Reference Manual version 9.0 from <http://www.ilsag.info/technical-reference-manual.html>.

† Program Tracking Data (PTD) provided by Nicor Gas, extract January 28, 2022.

5.2 Other Findings and Recommendations

Finding 1. Guidehouse verified that the per kit savings were calculated consistent with the appropriate measure algorithms and assumptions from TRM v.9. The overall realization rate for the program was 1.0.

Finding 2. Eight separate vendor project ID's were each linked to six received kits. Guidehouse verified that the customer contact and measure data indicated no more than one Kit 2 and two Kit 4's were sent to any one physical location. Since each group of kits was sent to a different service address, Guidehouse did not make any adjustments to the savings.

Appendix A. Impact Analysis Methodology

Guidehouse determined verified gross savings for each program measure by conducting a tracking system review. Guidehouse checked that measure inputs matched deemed IL TRM (v9.0) inputs and validated custom inputs or adjusted as necessary. To be eligible, an IL TRM measure must meet the physical, operational, and baseline characteristics as defined in the applicable version of the IL TRM.¹ Verified gross realization rates are calculated by dividing the verified gross savings by the ex ante gross savings. In 2021, the NTG estimates used to calculate the net verified savings were based on past evaluation research and defined by a consensus process through the SAG.²

¹ Illinois Statewide Technical Reference Manual for Energy Efficiency Version 9.0 from <http://www.ilsag.info/technical-reference-manual.html>

² Available on the SAG web site: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2021/>

Appendix B. Kit Level Savings

Table B-1 lists the 2021 per kit deemed savings and NTG values.

Table B-1. 2021 Gross Savings and Net-to-Gross Parameters for Kits

Kit Type	Gross Savings Per Kit	Net Savings Per Kit	NTG Per Kit
Kit 1	16.57	16.57	1.00
Kit 1 MF	19.14	19.14	1.00
Kit 2	24.07	24.07	1.00
Kit 2 MF	28.99	28.99	1.00
Kit 3	15.99	15.99	1.00
Kit 3 MF	18.09	18.09	1.00
Kit 4	35.49	29.81	0.84
Kit 4 MF	35.49	29.81	0.84

Source: Nicor Gas tracking data and Guidehouse team analysis.

Appendix C. Program-Specific Illinois TRC Inputs

Table C-1 shows the 2021 kit program Total Resource Cost (TRC) cost-effectiveness analysis inputs. 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.

Table C-1. Total Resource Cost Savings Summary

Program	Research Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (Therms)*	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
ESK	Bath Aerator	Each	23,368	10.0	15,046	15,046	15,046
ESK	Kitchen Aerator	Each	12,082	10.0	62,973	62,973	62,973
ESK	Showerhead	Each	22,038	10.0	158,720	158,720	158,720
ESK	Shower Timer	Each	12,082	2.0	44,530	44,530	44,530
ESK	Gaskets	Each	409,236	20.0	133,869	133,869	112,450
ESK	Foam Tape	Feet	579,751	20.0	245,332	245,332	206,079
ESK	V-Seal	Feet	579,751	20.0	245,332	245,332	206,079
ESK	Door Sweep	Each	34,103	20.0	216,185	216,185	181,595
ESK	Rope Caulk	Feet	1,023,090	20.0	369,565	369,565	310,434
Total or Weighted Average			2,695,501	17.9	1,491,552	1,491,552	1,297,906

* Note ex ante gross therms calculated at the measure level do not sum exactly as the ex ante kit level gross therms reported in the tracking data and in Table 3-1 (123 therms lower) due to rounding differences.

Source: Nicor Gas tracking data and Guidehouse team analysis.