



Energy-Saving Kits Impact Evaluation Report

Energy Efficiency Plan: Plan Year 2018 (PY2018)
(1/1/2018-12/31/2018)

Presented to
Nicor Gas Company

DRAFT

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Prepared by:

Emma van Beuningen
Senior Consultant
312.573.5602
emma.van.beuningen@navigant.com

Charles Ampong
Managing Consultant
608.497.2336
charles.ampong@navigant.com

www.navigant.com

Submitted to:

Nicor Gas Company
1844 Ferry Road
Naperville, IL 60563

Submitted by:

Navigant Consulting, Inc.
150 North Riverside
Suite 2100
Chicago, IL 60606
Phone 312.583.5700

Contact:

Randy Gunn
Managing Director
312.583.5714
randy.gunn@navigant.com

Kevin Grabner
Associate Director
608.497.2323
kevin.grabner@navigant.com

Laura Agapay-Read
Managing Consultant
312.583.4178
laura.agapay.read@navigant.com

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1. INTRODUCTION

This report presents the results of the impact evaluation of the Nicor Gas PY2018 Energy-Saving Kits program, a free product offering available under the Nicor Gas energySMART brand. 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. PY2018 covers January 1, 2018 through December 31, 2018.

2. PROGRAM DESCRIPTION

Nicor Gas plans to continue distributing Energy Saving Kits (ESK) during 2018-2021. The kits are free and include low-flow showerheads (1 or 2 per kit), kitchen aerators, shower timers and bathroom aerators (1 or 2 per kit). These low-flow devices conserve hot water and therefore save the natural gas needed to heat the water. The option of only one bathroom aerator is new and based on Navigant’s PY5 evaluation recommendation to eliminate the waste of a percentage of bathroom aerators for those participants who do not need two. Also new to the ESK offering, beginning in 2018, is a shower timer that will further contribute to therm savings. The ESKs are free to all Nicor Gas residential customers who choose to request a kit. Further, the offering will target customers through direct email, outreach events, targeted emails, energySMART website promotions, and through financial heating assistance intake centers.

The program delivered 12,544 kits in PY2018, which consisted of 74,858 measures as shown in the following tables.

Table 2-1. PY2018 Volumetric Summary

Kit Type	Distributed Quantity	Measure Composition
Kit 1 Single Family	152	1 SH, 2 BA, 1 KA, 1 ST
Kit 1 Multifamily	22	
Kit 2 Single Family*	10,577	2 SH, 2 BA, 1 KA, 1 ST
Kit 2 Multifamily	1,677	
Kit 3 Single Family	96	1 SH, 1 BA, 1 KA, 1 ST
Kit 3 Multifamily	20	
Total PY2018	12,544	

Source: Nicor Gas tracking data and Navigant team analysis.

* Nicor Gas ex ante tracking data shows 10,578 kits. We observed the kit with Vendor Project ID NGVT5G2L3M3POQ9Y reported a quantity of 2, while Nicor Gas ex ante savings for the project is consistent with one kit distributed. Navigant assigned a quantity of 1 kit distributed.

SH = showerhead, BA = bathroom aerator, KA = kitchen aerator, ST = shower timer.

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

Table 2-2. PY2018 Distributed Measure Quantities

Measure	Unit of Quantity	Distributed Quantity
Kitchen Faucet Aerator	Unit	12,544
Bathroom Faucet Aerator	Unit	24,972
Showerhead	Unit	24,798
Shower Timer	Unit	12,544
Total PY2018		74,858

Source: Nicor Gas tracking data and Navigant team analysis.

3. PROGRAM SAVINGS SUMMARY

Table 3-1 summarizes the energy savings the Kits program achieved by path in PY2018.

Table 3-1. PY2018 Annual Energy Savings Summary

Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR†	Verified Gross Savings (Therms)	NTG‡	Verified Net Savings (Therms)
Kit 1 SF	2,269	100%	2,269		2,019
Kit 1 MF	384	100%	384		341
Kit 2 SF	233,857	100%	233,895	Aerators = 1.00 Others = 0.84	204,012
Kit 2 MF	45,145	100%	45,137		39,267
Kit 3 SF	1,389	100%	1,389		1,228
Kit 3 MF	333	100%	333		293
Total PY2018*	283,378	100%	283,407	NA	247,156

Source: Nicor Gas tracking data and Navigant team analysis.

*Sum of Verified Net Savings by kit type does not equal the total due to rounding.

† Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings. Minor differences between ex ante gross therms and verified gross therms for Kit 2 SF and Kit 2 MF are due to differences in rounding of per unit savings.

‡ Net-to-Gross Ratio (NTG) is the ratio of verified net savings to verified gross savings. The NTG is a deemed value. Source: Nicor Gas GPY7 NTG Values 2017-03-01 Final Faucet Aerator Correction 2019-03-20.xlsx, which is to be found on the Illinois SAG web site: <http://ilsag.info/net-to-gross-framework.html>. The corrected NTG for aerators is 1.00 and the NTG is 0.84 for all other measures.

4. PROGRAM SAVINGS BY MEASURE

The program includes three measure types as shown in the following table. The showerheads and shower timers contributed the most savings.

Table 4-1. PY2018 Annual Energy Savings by Measure

Measure	Ex Ante Gross Savings (Therms)	Verified Gross RR†	Verified Gross Savings (Therms)	NTG‡	Verified Net Savings (Therms)
Kitchen Faucet Aerator	44,093	100%	44,093	1.00	44,093
Bathroom Faucet Aerator	12,747	100%	12,747	1.00	12,747
Showerhead	180,354	100%	180,354	0.84	151,497
Shower Timer	46,214	100%	46,214	0.84	38,820
Total PY2018*	283,378	100%	283,407	NA	247,156

Source: Nicor Gas tracking data and Navigant team analysis.

* The sum of ex ante gross measure savings does not equal the ex ante total savings because Nicor Gas reports energy savings per kit, not measure. The reported savings value per kit is rounding to two decimal places and causes a slight discrepancy compared with calculations at the measure level.

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

‡ Net-to-Gross Ratio (NTG) is the ratio of verified net savings to verified gross savings. The NTG is a deemed value. Source: Nicor Gas GPY7 NTG Values 2017-03-01 Final Faucet Aerator Correction 2019-03-20.xlsx, which is to be found on the Illinois SAG web site: <http://ilsag.info/net-to-gross-framework.html>. The corrected NTG for aerators is 1.00 and the NTG is 0.84 for all other measures.

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

Table 4-2. PY2018 Annual Energy Savings by Measure Detail

Measure	Units Delivered	Ex Ante Gross Savings (Therms)	Verified Gross RR†	Verified Gross Savings (Therms)	NTG‡	Verified Net Savings (Therms)
Kitchen Faucet Aerators SF	10,825	38,278	100%	38,278	1.00	38,278
Kitchen Faucet Aerators MF	1,719	5,815	100%	5,815	1.00	5,815
Bathroom Faucet Aerators SF	21,554	9,914	100%	9,914	1.00	9,914
Bathroom Faucet Aerators MF	3,418	2,833	100%	2,833	1.00	2,833
Showerhead SF Kit 1 and 3	248	1,678	100%	1,678	0.84	1,410
Showerhead MF Kit 1	42	374	100%	374	0.84	314
Showerhead SF Kit 2	21,154	147,553	100%	147,553	0.84	123,944
Showerhead MF Kit 2	3,354	30,749	100%	30,749	0.84	25,830
Shower Timer SF	10,825	40,131	100%	40,131	0.84	33,710
Shower Timer MF	1,719	6,083	100%	6,083	0.84	5,110
Total GPY2018*	74,858	283,378	100%	283,407	NA	247,156

Source: Nicor Gas tracking data and Navigant team analysis.

* The sum of ex ante gross measure savings does not equal the ex ante total savings because Nicor Gas reports energy savings per kit, not measure. The reported savings value per kit is rounding to two decimal places and causes a slight discrepancy compared with calculations at the measure level.

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

‡ Net-to-Gross Ratio (NTG) is the ratio of verified net savings to verified gross savings. The NTG is a deemed value. Source: Nicor Gas GPY7 NTG Values 2017-03-01 Final Faucet Aerator Correction 2019-03-20.xlsx, which is to be found on the Illinois SAG web site: <http://ilsag.info/net-to-gross-framework.html>. The corrected NTG for aerators is 1.00 and the NTG is 0.84 for all other measures.

5. IMPACT ANALYSIS FINDINGS AND RECOMMENDATIONS

Table 5-1 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. This table shows the measure savings based on the kit 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)
Kitchen Faucet Aerators SF	Each	3.54	3.54	100%	Nicor Gas Program Tracking Data (PTD), Illinois TRM, v6.0†, Section 5.4.4
Kitchen Faucet Aerators MF	Each	3.38	3.38	100%	PTD, Illinois TRM, v6.0, Section 5.4.4
Bathroom Faucet Aerators SF	Each	0.46	0.46	100%	PTD, Illinois TRM, v6.0, Section 5.4.4
Bathroom Faucet Aerators MF	Each	0.83	0.83	100%	PTD, Illinois TRM, v6.0, Section 5.4.4
Showerhead SF Kit 1 and 3	Each	6.77	6.77	100%	PTD, Illinois TRM, v6.0, Section 5.4.5
Showerhead MF Kit 1	Each	8.89	8.89	100%	PTD, Illinois TRM, v6.0, Section 5.4.5
Showerhead SF Kit 2	Each	6.98	6.98	100%	PTD, Illinois TRM, v6.0, Section 5.4.5
Showerhead MF Kit 2	Each	9.17	9.17	100%	PTD, Illinois TRM, v6.0, Section 5.4.5
Shower Timer SF	Each	3.71	3.71	100%	PTD, Illinois TRM, v6.0, Section 5.4.9
Shower Timer MF	Each	3.54	3.54	100%	PTD, Illinois TRM, v6.0, Section 5.4.9

Source: Nicor Gas tracking data and Navigant team analysis.

* Per unit savings values are shown rounded to two-digits. Navigant’s verified savings calculation uses non-rounded values.

† State of Illinois Technical Reference Manual version 6.0 from <http://www.ilsag.info/technical-reference-manual.html>.

The evaluation team has developed recommendations based on findings from the PY2018 evaluation, as follows:

Finding 1. Vendor Project ID NGVT5G2L3M3POQ9Y shows a quantity of two “Kit 2” measures in the Nicor Gas tracking data, but the ex ante energy savings reported by Nicor Gas only includes savings for one kit. Navigant counted verified savings for a quantity of one kit for this project.

Recommendation 1. Nicor Gas should investigate the cause of the quantity discrepancy on Vendor Project ID NGVT5G2L3M3POQ9Y.

6. APPENDIX 1. IMPACT ANALYSIS METHODOLOGY

6.1 Verified Gross Program Savings Analysis Approach

Navigant determined verified gross savings for each program measure by conducting a tracking system review. Navigant used the Illinois TRM Version 6.0 methodology to calculate verified gross savings. Navigant’s verified gross savings calculation uses non-rounded input values for per-kit unit therm savings, whereas Nicor Gas ex ante per-kit gross savings is rounded to two digits after the decimal point. These rounding differences may cause very minor differences in total therms for the program (less than 0.1%) and are not an error by Nicor Gas.

6.2 Verified Net Program Savings Analysis Approach

Navigant calculated verified net energy savings by multiplying the verified gross savings estimates by a net-to-gross ratio (NTG). In PY2018, the NTG estimates used to calculate the net verified savings were based on past evaluation research and defined by a consensus process through SAG, as documented in a spreadsheet.¹

7. APPENDIX 2. PROGRAM-SPECIFIC INPUTS FOR THE ILLINOIS TRC

The Total Resource Cost (TRC) variable table only includes cost-effectiveness analysis inputs available at the time of finalizing this PY2018 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 evaluation later. Detail in this table (e.g., EULs) other than final PY2018 savings and program data are subject to change and are not final.

Table 7-1. Total Resource Cost Savings Summary

Research Category (e.g., Measure)	Units	Quantity	Effective Useful Life (years)	Ex Ante Gross Savings (therms)*	Verified Gross Savings (therms)	Verified Net Savings (therms)
Kitchen Faucet Aerator	Each	12,544	9	44,093	44,093	44,093
Bathroom Faucet Aerator	Each	24,972	9	12,747	12,747	12,747
Showerhead	Each	24,798	10	180,354	180,354	151,497
Shower Timer	Each	12,544	2	46,214	46,214	38,820
Total		74,858		283,378	283,407	247,156

Source: Nicor Gas tracking data and Navigant team analysis.

* The sum of ex ante gross measure savings does not equal the ex ante total savings because Nicor Gas reports energy savings per kit, not measure. The reported savings value per kit is rounding to two decimal places and causes a slight discrepancy compared with calculations at the measure level. The TRC calculations are performed on a measure-level basis.

¹ Source: Nicor Gas GPY7 NTG Values 2017-03-01 Final Faucet Aerator Correction 2019-03-20.xlsx, which is to be found on the IL SAG web site here: <http://ilsag.info/net-to-gross-framework.html>. The NTG corrected for aerators is 1.00 and the NTG is 0.84 for all other measures.