



# Energy-Saving Kits Impact Evaluation Report

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

**Presented to  
Nicor Gas Company**

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***Prepared by:***

**Emma van Beuningen**  
Senior Consultant  
312.573.5602  
[emma.van.beuningen@navigant.com](mailto:emma.van.beuningen@navigant.com)

**Charles Ampong**  
Managing Consultant  
608.497.2336  
[charles.ampong@navigant.com](mailto:charles.ampong@navigant.com)

[www.navigant.com](http://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](mailto:randy.gunn@navigant.com)

Kevin Grabner  
Associate Director  
608.497.2323  
[kevin.grabner@navigant.com](mailto:kevin.grabner@navigant.com)

Laura Agapay-Read  
Managing Consultant  
312.583.4178  
[laura.agapay.read@navigant.com](mailto:laura.agapay.read@navigant.com)

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## 1. INTRODUCTION

This report presents the results of the impact evaluation of the Nicor Gas program year 2018 (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                   |                        |
| <b>Total PY2018</b>  | <b>12,544</b>        |                        |

\* Nicor Gas ex ante tracking data shows a measure quantity of 10,578 kits. We observed the kit with Vendor Project ID NGVT5G2L3M3POQ9Y appears once in the participation file but has a reported measure quantity of 2. Nicor Gas ex ante savings for the project is for one kit distributed. Navigant assigned a measure quantity of 1 kit distributed for this project.

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

Source: Nicor Gas tracking data and Navigant team analysis.

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               |
| <b>Total PY2018</b>     |                  | <b>74,858</b>        |

*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<br>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                           |
| <b>Total PY2018*</b> | <b>283,378</b>                 | <b>100%</b>        | <b>283,407</b>                  | <b>NA</b>                        | <b>247,156</b>                |

\*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.

Source: Nicor Gas tracking data and Navigant team analysis.

### 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                        |
| <b>Total PY2018*</b>    | <b>283,378</b>                 | <b>100%</b>        | <b>283,407</b>                  | <b>NA</b> | <b>247,156</b>                |

\* 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.

Source: Nicor Gas tracking data and Navigant team analysis.

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                         |
| <b>Total GPY2018*</b>       | <b>74,858</b>   | <b>283,378</b>                 | <b>100%</b>        | <b>283,407</b>                  | <b>NA</b> | <b>247,156</b>                |

\* 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.

Source: Nicor Gas tracking data and Navigant team analysis.

## 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                                    |

\* 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>.

Source: Nicor Gas tracking data and Navigant team analysis.

The evaluation team observed that Vendor Project ID NGVT5G2L3M3POQ9Y appeared once in the participation file but showed a quantity of two “Kit 2” measures in the Nicor Gas tracking data. The ex ante energy savings reported by Nicor Gas shows savings for one kit. Nicor Gas investigated the project and confirms that the correct measure quantity is one kit. Navigant counted verified savings for a quantity of one kit for this project.



## 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.<sup>1</sup>

## 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                        |
| <b>Total</b>                      |       | <b>74,858</b> |                               | <b>283,378</b>                  | <b>283,407</b>                  | <b>247,156</b>                |

\* 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.

Source: Nicor Gas tracking data and Navigant team analysis.

<sup>1</sup> 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.