



# Multi-Family Income Qualified Program Savings Evaluation Report

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

Presented to  
Nicor Gas

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## 1. INTRODUCTION

This report presents the results of the impact evaluation of the Nicor Gas 2018 Multi-Family Income Qualified Program. The program includes the Illinois Home Weatherization Assistance Program (IHWAP) and the Kits 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. The 2018 program covers January 1, 2018 through December 31, 2018.

## 2. PROGRAM DESCRIPTION

The IHWAP provided energy efficiency upgrades to income qualified customers in the Nicor Gas service territory. In 2018, the IHWAP was jointly administered by ComEd, Peoples Gas and North Shore Gas (PGL/NSG), and Nicor Gas, with Resource Innovations implementing the program. The 2018 natural gas measures for the IHWAP included showerheads, bathroom aerators, kitchen aerators, advanced thermostats, and pipe insulation. The IHWAP also provided free energy savings kits, which included low-flow showerheads (SH, one or two per kit), kitchen aerators (KA), shower timers (ST), and bathroom aerators (BA, two per kit).

This report focuses solely on the natural gas savings from the programs for Nicor Gas. Savings for other utilities are included in separate evaluation reports delivered to respective utilities.

The programs had completed 318 project installations and had 317 participants in 2018 as shown in the following table.

**Table 2-1. 2018 Volumetric Summary**

Participation	IHWAP	Kits	Total
Participants*	6	311	317
Installed Projects†	7	311	318

\* Unique participants defined by customer address

† Unique Installed Projects defined by Vendor Project IDs

Source: Nicor Gas tracking data and Navigant team analysis.

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

**Table 2-2. 2018 Installed Measure Quantities**

Program Path	End Use Type	Measure	Quantity Unit	Installed Quantity
IHWAP	Hot Water	HW Pipe Insulation	Linear Feet	40
	Hot Water	Showerhead	Each	6
	HVAC	Advanced Thermostat – Manual Baseline	Each	4
	Hot Water	Bathroom Aerator	Each	5
	Hot Water	Kitchen Aerator	Each	3
	HVAC	Advanced Thermostat – Programmable Baseline	Each	1
Kits	Hot Water	Kit 1 (1 SH, 2 BA, 1 KA, 1 ST)	Each	53
	Hot Water	Kit 2 (2 SH, 2 BA, 1 KA, 1 ST)	Each	258

Source: Nicor Gas tracking data and Navigant team analysis.

### 3. PROGRAM SAVINGS SUMMARY

Table 3-1 summarizes the energy savings the Multi-Family Income Qualified Program achieved by path in 2018.

**Table 3-1. 2018 Annual Energy Savings Summary**

Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
IHWAP	432	95%	410	1.00	410
Kits	7,871	100%	7,870	1.00	7,870
<b>Total</b>	<b>8,303</b>	<b>100%</b>	<b>8,280</b>	<b>1.00</b>	<b>8,280</b>

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

† Net-to-Gross (NTG) is the ratio of verified net savings to verified gross savings. The NTG is a deemed value. Source:

[http://ilsagfiles.org/SAG\\_files/NTG/2017\\_NTG\\_Meetings/Final/Nicor\\_Gas\\_20182018\\_NTG\\_Values\\_2017-03-01\\_Final.xlsx](http://ilsagfiles.org/SAG_files/NTG/2017_NTG_Meetings/Final/Nicor_Gas_20182018_NTG_Values_2017-03-01_Final.xlsx) which is to be found on the Illinois SAG web site: <http://ilsag.info/net-to-gross-framework.html>.

Source: Nicor Gas tracking data and Navigant team analysis.

## 4. PROGRAM SAVINGS BY MEASURE

The Multi-Family Income Qualified Program includes the eight measures shown in the following table. The IHWAP measures that contributed the most savings were advanced thermostat (manual baseline), and showerhead at 56 percent and 19 percent of overall savings, respectively. The verified gross realization rate for the programs combined is 100 percent.

**Table 4-1. 2018 Annual Energy Savings by Measure**

Program Path	Research Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
IHWAP	HW Pipe Insulation	44	100%	44	1.00	44
	Showerhead	69	113%	78	1.00	78
	Advanced Thermostat – Manual Baseline	261	88%	230	1.00	230
	Bathroom Aerator	6	110%	6	1.00	6
	Kitchen Aerator	16	97%	15	1.00	15
	Advanced Thermostat – Programmable Baseline	37	100%	37	1.00	37
Kits	Kit 1 (1 SH, 2 BA, 1 KA, 1 ST)	926	100%	926	1.00	926
	Kit 2 (2 SH, 2 BA, 1 KA, 1 ST)	6,945	100%	6,944	1.00	6,944
<b>Total</b>		<b>8,303</b>	<b>100%</b>	<b>8,280</b>	<b>1.00</b>	<b>8,280</b>

\* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings. The Realization Rate shown is based on non-rounded therm savings and may not reflect the rounded therm savings shown in the table due to the small savings for some measures.

† Net-to-Gross (NTG) is the ratio of verified net savings to verified gross savings. The NTG is a deemed value. Source: [http://ilsagfiles.org/SAG\\_files/NTG/2017\\_NTG\\_Meetings/Final/Nicor\\_Gas\\_20182018\\_NTG\\_Values\\_2017-03-01\\_Final.xlsx](http://ilsagfiles.org/SAG_files/NTG/2017_NTG_Meetings/Final/Nicor_Gas_20182018_NTG_Values_2017-03-01_Final.xlsx) which is to be found on the Illinois SAG web site: <http://ilsag.info/net-to-gross-framework.html>. Source: Nicor Gas tracking data and Navigant team analysis.

## 5. IMPACT ANALYSIS FINDINGS AND RECOMMENDATIONS

### 5.1 Parameter Estimates

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. Following the table, we provide findings and recommendations, including discussion of all measures with realization rates above or below 100 percent. Appendix 1 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)
HW Pipe Insulation	Linear Feet	1.10	1.10	100%	Illinois TRM, v6.0† (TRM), Section 5.4.1
Showerhead	Each	Varies	Varies	Varies, Adjusted	TRM Section 5.4.5
Advanced Thermostat – Manual Baseline	Each	Varies	57.49	Varies, Adjusted	TRM Section 5.3.16
Bathroom Aerator	Each	Varies	1.25	Varies, Adjusted	TRM Section 5.4.4
Kitchen Aerator	Each	Varies	5.13	Varies, Adjusted	TRM Section 5.4.4
Advanced Thermostat – Programmable Baseline	Each	36.58	36.58	100%	TRM Section 5.3.16
Kit 1 (1 SH, 2 BA, 1 KA, 1 ST)	Each	17.47	17.47	100%	TRM Section 5.4.4 and TRM Section 5.4.5
Kit 2 (2 SH, 2 BA, 1 KA, 1 ST)	Each	26.92	26.92	100%	TRM Section 5.4.4 and TRM Section 5.4.5

\* Program Tracking Data (PTD) provided by Nicor Gas, extract dated February 5, 2019.

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

Source: Nicor Gas tracking data and Navigant team analysis.

### 5.2 Findings and Recommendations

#### **Bathroom Aerator (Measure ID: MEA-2018.12.18-43556)**

The ex ante savings for this measure are calculated using Household, EPG\_Gas and Faucets per Household (FPH) values valid for the Single Family household type. Navigant calculated the verified savings using values valid for the Multi-Family household type as per the IL TRM v6.0 (Measure 5.4.4).

**Recommendation 1:** Navigant recommends using the Household, EPG\_Gas and FPH values valid for the Multi-Family household type for this program.

#### **Kitchen Aerator (Measure ID: MEA-2019.01.02-46339)**

The ex ante savings for this measure are calculated using Household, EPG\_Gas and In-Service Rate (ISR) values valid for the Single Family household type. Navigant calculated the verified savings using values valid for the Multi-Family household type as per the IL TRM v6.0 (Measure 5.4.4).

**Recommendation 2:** Navigant recommends using the Household, EPG\_Gas and ISR values valid for the Multi-Family household type for this program.

***Showerhead (Measure ID: MEA-2018.12.18-43555 and MEA-2019.01.02-46338)***

The ex ante savings for this measure are calculated using EPG\_Gas and ISR values valid for the Single Family household type. Navigant calculated the verified savings using values valid for the Multi-Family household type as per the IL TRM v6.0 (Measure 5.4.5).

**Recommendation 3:** Navigant recommends using the EPG\_Gas and ISR values valid for the Multi-Family household type for this program.

***Advanced Thermostat - Manual (Measure ID: MEA-2018.12.18-43553)***

The ex ante savings for this measure are calculated using a Household Factor (HF) of 1.00 valid for the Single Family household type. Navigant calculated the verified savings using an HF of 0.65 valid for the Multi-Family household type as per the IL TRM v6.0 (Measure 5.3.16).

**Recommendation 4:** Navigant recommends using the HF value of 0.65 valid for the Multi-Family household type for this program.

## 6. APPENDIX 1. IMPACT ANALYSIS METHODOLOGY

Navigant followed algorithms outlined in the IL TRM v6.0 to calculate verified gross savings for the Income Qualified programs. The evaluation team verified that these algorithms and appropriate deemed input parameters were correctly applied and validated custom parameters that were used. Navigant calculated verified net savings by multiplying verified gross savings by a NTG of 1.00 which is deemed in the IL TRM v6.0.

## 7. APPENDIX 3. PROGRAM-SPECIFIC INPUTS FOR THE ILLINOIS TRC

Table 7-1, the Total Resource Cost (TRC) variable table, only includes cost-effectiveness analysis inputs available at the time of finalizing the 2018 Multi-Family Income Qualified Program impact evaluation report. Additional required cost data (e.g., measure costs, program level incentive and non-incentive costs) are not included in the tables and will be provided to the evaluation team later. Detail in the TRC tables (e.g., EULs), other than final 2018 savings and program data, are subject to change and are not final.

**Table 7-1. Total Resource Cost Savings Summary**

Program Path	Research Category	Units	Quantity	Effective Useful Life*	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
IHWAP	HW Pipe Insulation	Linear Ft.	40	15	44	44	44
	Showerhead	Each	6	10	69	78	78
	Advanced Thermostat – Manual Baseline	Each	4	10	261	230	230
	Bathroom Aerator	Each	5	9	6	6	6
	Kitchen Aerator	Each	3	9	16	15	15
	Advanced Thermostat – Programmable Baseline	Each	1	10	37	37	37
Kits	Kit 1 (1 SH, 2 BA, 1 KA, 1 ST)	Each	53	8	926	926	926
	Kit 2 (2 SH, 2 BA, 1 KA, 1 ST)	Each	258	8	6,945	6,944	6,944
<b>Total</b>			<b>370</b>	<b>NA</b>	<b>8,303</b>	<b>8,280</b>	<b>8,280</b>

\*State of Illinois Technical Reference Manual version 6.0 from <http://www.ilsag.info/technical-reference-manual.html>.  
Source: Nicor Tracking Data and Navigant team analysis.