



Elementary Energy Education Impact Evaluation Report

Energy Efficiency Plan: Plan Year 6 (PY6)
(6/1/2016-12/31/2017)

Presented to
Nicor Gas Company

FINAL

August 17, 2018

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1. INTRODUCTION

This report presents the results of the impact evaluation of the joint Commonwealth Edison (ComEd) and Nicor Gas GPY6/EPY9 Elementary Energy Education (EEE) 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. GPY6/EPY9 covers June 1, 2016 through December 31, 2017.

2. PROGRAM DESCRIPTION

This program is offered to schools served by Nicor Gas and an electricity delivery provider other than ComEd (Nicor Gas only) and to schools served by both Nicor Gas and ComEd (“Joint” refers to the utilities’ joint service territory). The program is also offered to schools served jointly by Peoples Gas and ComEd and North Shore Gas and ComEd, however savings from those kits are not included in this report. The EEE program is implemented by Resource Action Programs (RAP) and is branded “SUPER SAVERS.” In GPY6/EPY9, the program targeted fifth grade students in public and private schools that are customers of Nicor Gas and ComEd. Schools received an invitation to participate and register to receive program materials; alternatively, schools could register on the program website to join a waiting list if the program was fully-enrolled when they registered. Schools that previously participated in the program were also invited to participate. The program used a “teacher-lead instruction” program model where the teacher could choose to teach the curriculum over five or ten days and focus on one kit measure per day. After the lesson, students took home a kit that included water conservation measures; instruments to measure water and ambient temperature, as well as water flow rates; CFLs; LEDs; shower timers; and a student survey form where participants reported details of their family’s participation. Teachers were incentivized to have students return the student survey forms with a \$50 mini-grant for each class that completed and returned 80 percent of the forms. RAP based the program’s savings on the installation rate of implemented measures reported in the student survey form against the number of kits that were reported taken home.

The EEE Program’s primary focus is to produce natural gas and electricity savings in the residential sector by motivating fifth grade students and their families to reduce energy consumption from water heating and lighting in their home. Additionally, the EEE program aims to increase participation in other Nicor Gas programs via cross-marketing and increased customer awareness of energy efficiency issues.

The Nicor Gas program had 15,033 participants in GPY6/EPY9 and distributed a total of 135,297 measures (90,198 gas measures and 45,009 electric measures) as shown in the following tables. Since this is a joint program between Nicor Gas and ComEd, the kits distributed as a part of the program also include electric measures such as LEDs and CFLs. Nicor Gas does not claim savings from any electric measures.

Table 2-1. GPY6/EPY9 Volumetric Summary

Participation	Total
Participants †	15,033
Measures Distributed	135,297

Source: Nicor Gas tracking data and Navigant team analysis.

† Participants are defined as anyone who received a kit through the program

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

Table 2-2. GPY6/EPY9 Distributed Measure Quantities

Measure	Quantity Unit	Distributed Quantity
Showerheads	Each	15,033
Kitchen Aerators	Each	15,033
Bathroom Aerators	Each	30,066
CFLs*	Each	9,600
LEDs*	Each	35,499
Water Heater Temperature Setbacks	Each	15,033
Shower Timers	Each	15,033

** Savings not claimed by Nicor Gas*

Source: Nicor Gas tracking data and Navigant team analysis.

3. PROGRAM SAVINGS SUMMARY

Table 3-1 summarizes the energy savings the EEE program achieved in GPY6/EPY9.

Table 3-1. GPY6/EPY9 Annual Energy Savings Summary

Ex Ante Gross Savings (Therms)	Verified Gross RR†	Verified Gross Savings (Therms)	NTGR‡	Verified Net Savings (Therms)
175,887	116%	204,249	1.00	204,249

Source: Nicor Gas tracking data and Navigant team analysis.

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

‡ Net-to-Gross Ratio (NTGR) is the ratio of verified net savings to verified gross savings. The NTGR is a deemed value. Source: Nicor_Gas_GPY6_NTG_Values_2016-02-29_Final.xlsx, which is to be found on the Illinois SAG web site: <http://ilsag.info/net-to-gross-framework.html>.

4. PROGRAM SAVINGS BY MEASURE

The Nicor Gas EEE kit includes six measures overall. The measures are distributed in both single and multi-family homes; the table below shows the verified savings for each measure broken down by household type. The showerhead and kitchen aerator measures contributed the most savings.

Table 4-1. GPY6/EPY9 Annual Energy Savings by Measure

Research Category	Ex Ante Gross Savings (Therms)	Verified Gross RR†	Verified Gross Savings (Therms)	NTGR‡	Verified Net Savings (Therms)
Showerhead (1.5 GPM) - Single Family	104,320	123%	84,579	1.00	84,579
Showerhead (1.5 GPM) - Multi-family			43,426	1.00	43,426
Kitchen Aerator (1.5 GPM) - Single Family	49,212	99%	33,992	1.00	33,992
Kitchen Aerator (1.5 GPM) - Multi-family			14,625	1.00	14,625
Bathroom Aerator (1.0 GPM) Installed one - Single Family	12,193	90%	3,132	1.00	3,132
Bathroom Aerator (1.0 GPM) Installed one - Multi-family			2,387	1.00	2,387
Bathroom Aerator (1.0 GPM) Installed Both - Single Family			3,456	1.00	3,456
Bathroom Aerator (1.0 GPM) Installed Both - Multi-family			1,984	1.00	1,984
Water Heater Temperature Setback Gas – Single Family	10,162	32%	2,390	1.00	2,390
Water Heater Temperature Setback Gas - Multi-family			833	1.00	833
Shower Timer Install - Single Family	NA	NA	10,754	1.00	10,754
Shower Timer Install - Multi-family			2,690	1.00	2,690
Total	175,887	116%	204,249	1.00	204,249

Source: Nicor Gas tracking data and Navigant team analysis.

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

‡ Net-to-Gross Ratio (NTGR) is the ratio of verified net savings to verified gross savings. The NTGR is a deemed value. Source: Nicor_Gas_GPY6_NTG_Values_2016-02-29_Final.xlsx, which is to be found on the Illinois SAG web site: <http://ilsag.info/net-to-gross-framework.html>.

5. IMPACT ANALYSIS FINDINGS AND RECOMMENDATIONS

The verified savings calculation for each measure is based on the energy savings algorithms deemed by the IL TRM v5.0 along with custom inputs calculated using the student survey responses of students who received energy efficiency kits.

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. Appendix 1. Impact Analysis Methodology 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)
Showerhead (1.5 GPM) - Single Family	Each	6.94	5.63	123%	IL TRM v5.0 Section 5.4.5* and Student Survey data provided by RAP
Showerhead (1.5 GPM) - Multi-family	Each		2.89		
Kitchen Aerator (1.5 GPM) - Single Family	Each	3.27	2.26	99%	IL TRM v5.0 Section 5.4.4 and Student Survey data provided by RAP
Kitchen Aerator (1.5 GPM) - Multi-family	Each		0.97		
Bathroom Aerator (1.0 GPM) Installed one - Single Family	Each	0.81	0.21	90%	IL TRM v5.0 Section 5.4.4 and Student Survey data provided by RAP
Bathroom Aerator (1.0 GPM) Installed one - Multi-family	Each		0.16		
Bathroom Aerator (1.0 GPM) Installed Both - Single Family	Each		0.23		
Bathroom Aerator (1.0 GPM) Installed Both - Multi-family	Each		0.13		
Water Heater Temperature Setback Gas - Single	Each	0.68	0.16	32%	IL TRM v5.0 Section 5.4.6 and Student Survey data provided by RAP
Water Heater Temperature Setback Gas - Multi-family	Each		0.06		
Shower Timer Install - Single Family	Each	NR†	0.72	NA	IL TRM v6.0 Section 5.4.9 and Student Survey data provided by RAP
Shower Timer Install - Multi-family	Each		0.18		
Total Kit Savings	Each	11.70	10.42	88%	

* State of Illinois Technical Reference Manual version 5.0 from <http://www.ilsag.info/technical-reference-manual.html>.

† Not Reported

Nicor Gas used custom inputs to calculate the ex ante savings based on Navigant’s GPY1/EPY4 calculations while the evaluation used custom inputs to calculate the verified savings based on the latest GPY6/EPY9 student survey responses provided by RAP. These custom inputs differ significantly between GPY1/EPY4 and GPY6/EPY9 leading to large discrepancies in the realization rates for most measures. A comparison of the custom inputs used in the ex ante and ex post analysis along with the algorithms deemed by the IL TRM v5.0 are highlighted in Appendix 1. Impact Analysis Methodology.

The ex ante calculations assume that all the program participants have natural gas fired domestic hot water systems. This is not an appropriate assumption since both ComEd and Nicor Gas customers are eligible to participate in this program.

Recommendation 1. For ex ante savings calculation inputs, the TRM should be used for the split of electric versus gas water heater fuel type, and the student survey should be used for other custom inputs.¹

However, for verified savings calculations for program year 2018, Navigant will review the findings from the student survey form (received by January 30, 2019). The student survey form for the 2018/19 school year was updated to show students how to identify water heater fuel type and to include a "Can't identify" option. Navigant will also analyze the distribution of participating schools in ComEd's territory before finalizing the gas versus electric DHW fuel split for the 2018 program year verified savings calculations.

Nicor Gas assumed that the in-service rate (ISR) for participants who installed a single bathroom aerator and those who installed both bathroom aerators is the same (0.3); however, Navigant found that the GPY6/EPY9 student survey responses indicate otherwise. The ISRs from this survey are shown in the table below.

Table 5-2. Bathroom Aerator ISRs

Measure Name	ISR (Single Family)	ISR (Multi-family)
Bathroom Aerator (1.0 GPM) Installed One	0.232	0.282
Bathroom Aerator (1.0 GPM) Installed Both	0.128	0.117

Source: Nicor Gas tracking data and Navigant team analysis.

Recommendation 2. We recommend using the most recent student survey data to calculate ISR values for participants that installed just one of the two aerators provided in the kits and the participants that installed both.

Both single family (SF) and multi-family (MF) households are eligible to participate in the EEE program, and savings of each measure differs for SF and MF households. The ex ante calculations assume the same input parameters for SF and MF households.

Recommendation 3. To increase the accuracy of the ex ante savings estimates, Navigant recommends calculating the ex ante savings separately for SF and MF households and using a SF-MF split for estimating the overall ex ante savings for all the measures included in the energy efficiency kits. Navigant recommends an ex ante SF-MF split based on most recent student survey data.

The energy savings for the "Shower Timer Install" measure is not included in the ex ante analysis.

Recommendation 4. Navigant recommends using the IL TRM v6.0 to estimate the ex ante energy savings for the "Shower Timer Install" measure.

¹ Navigant has observed that the student self-reported responses, which in GPY6/EPY9 indicated a proportion of natural gas water heating at 64 percent for Nicor Gas, indicate a proportion of natural gas water heating significantly lower than rigorous studies supporting the Illinois TRM and Illinois utility baseline and potential studies. For example, based on a detailed mail survey adjusted with site visit findings, Opinion Dynamics found the proportion of natural gas water heating was 91 percent among all single family and multi-family respondents with valid responses, and found that 15 percent answered: "Don't know" while 3 percent gave no answer (40 percent of multi-family survey participants answered "Don't know" or gave no answer), (Opinion Dynamics Corporation, *COMED RESIDENTIAL SATURATION/END USE, MARKET PENETRATION & BEHAVIORAL STUDY*, April 2013). Thus, Navigant used the TRM version 5.0 statistics for water heating fuel split for the GPY6/EPY9 evaluations: 84 percent gas water heating and 16 percent electric water heating. TRM version 6.0 specifies the same split values as version 5.0.

6. APPENDIX 1. IMPACT ANALYSIS METHODOLOGY

Navigant determined verified gross savings for each program measure by:

1. Reviewing the savings algorithm inputs in the measure workbook for agreement with the TRM or evaluation research for non-deemed measures.
2. Validating that the savings algorithm was applied correctly.
3. Cross-checking per-unit savings values in the tracking data with the verified values in the measure workbook or in Navigant's calculations if the workbook did not agree with the TRM.
4. Multiplying the verified per-unit savings value by the quantity reported in the tracking data.

This section highlights the equations used to calculate the ex post therm savings for each measure and a comparison of input values used by Navigant and the implementation contractor.

Equation 1. Low Flow Showerheads Savings Equation and Inputs, IL TRM v5.0 Section 5.4.5

$$\Delta Therms = \%FossilDHW * ((GPM_base * L_base - GPM_low * L_low) * Household * SPCD * 365.25 / SPH) * EPG_gas * ISR * quantity * \%SF_MF$$

Where:

<i>%FossilDHW</i>	= proportion of water heating supplied by Natural Gas heating
<i>GPM_base</i>	= Flow rate of the baseline showerhead
<i>GPM_low</i>	= As-used flow rate of the low-flow showerhead
<i>L_base</i>	= Shower length in minutes with baseline showerhead
<i>L_low</i>	= Shower length in minutes with low-flow showerhead
<i>Household</i>	= Average number of people per household
<i>SPCD</i>	= Showers Per Capita Per Day
<i>365.25</i>	= Days per year, on average.
<i>SPH</i>	= Showerheads Per Household
<i>EPG_gas</i>	= Energy per gallon of Hot water supplied by gas
<i>ISR</i>	= In service rate of showerhead
<i>%SF_MF</i>	= percentage of SF or MF homes in the student survey responses
<i>quantity</i>	= total number of kits distributed in GPY6/EPY9

Table 6-1. Low Flow Showerheads - Custom and Deemed Values Comparison

Value, Navigant	Value, Nicor Gas	Variable	Source	Deemed/ Custom	Discrepancy?
0.84	1.00	%FossilDHW	IL TRM 5.4.5	Deemed	Yes
2.35	2.35	GPM_base	IL TRM 5.4.5	Deemed	-
1.5	1.50	GPM_low	Specifications	Custom	-
7.8	7.80	L_base	IL TRM 5.4.5	Deemed	-
7.8	7.80	L_low	IL TRM 5.4.5	Deemed	-
365.25	365.25	days/year	IL TRM 5.4.5	Deemed	-
4.842	4.74	Household SF	Survey - HCU2	Custom	Yes
4.745	4.74	Household MF	Survey - HCU2	Custom	Yes
0.600	0.60	SPCD	IL TRM 5.4.5	Deemed	-
1.79	1.79	SPH SF	IL TRM 5.4.5	Deemed	-
1.30	1.79	SPH MF	IL TRM 5.4.5	Deemed	Yes
0.005	0.005	EPG_Gas_SF	IL TRM 5.4.5	Deemed	-
0.006	0.005	EPG_Gas_MF	IL TRM 5.4.5	Deemed	Yes
0.439	0.36	ISR SF	Survey - HA1	Custom	Yes
0.494	0.36	ISR MF	Survey - HA1	Custom	Yes
0.775	NA	%SF	Survey - HCU1	Custom	Yes
0.225	NA	%MF	Survey - HCU1	Custom	Yes

Source: Nicor Gas tracking data and Navigant team analysis.

Equation 2. Low Flow Faucet Aerators Savings Equation and Inputs, IL TRM v5.0 Section 5.4.4

$$\Delta Therms = \%FossilDHW * ((GPM_base * L_base - GPM_low * L_low) * Household * 365.25 * DF / FPH) * EPG_gas * ISR * \%SF_MF * quantity$$

Where:

- %FossilDHW* = proportion of water heating supplied by Natural Gas heating
- GPM_base* = Average flow rate, in gallons per minute, of the baseline faucet
- GPM_low* = Average flow rate, in gallons per minute, of the low-flow faucet aerator
- L_base* = Average baseline daily length faucet use per capita for faucet of interest in minutes
- L_low* = Average retrofit daily length faucet use per capita for faucet of interest in minutes
- Household* = Average number of people per household
- 365.25* = Days per year, on average.
- DF* = Drain Factor
- FPH* = Faucets Per Household
- EPG_gas* = Energy per gallon of Hot water supplied by gas
- ISR* = In service rate of aerator
- %SF_MF* = percentage of SF or MF homes in the student survey responses
- quantity* = total number of kits in GPY6/EPY9

Table 6-2. Low Flow Kitchen Aerators - Custom and Deemed Values Comparison

Value, Navigant	Value, Nicor Gas	Variable	Source	Deemed/ Custom	Discrepancy?
0.84	1.00	%FossilDHW	IL TRM 5.4.4	Deemed	Yes
1.39	1.39	GPM_base	IL TRM 5.4.4	Deemed	-
0.94	0.94	GPM_low	Specifications	Deemed	-
4.5	4.50	L_base	IL TRM 5.4.4	Deemed	-
4.5	4.50	L_low	IL TRM 5.4.4	Deemed	-
365.25	365.25	days/year	IL TRM 5.4.4	Deemed	-
4.842	4.74	Household SF	Survey - HCU2	Custom	Yes
4.745	4.74	Household MF	Survey - HCU2	Custom	Yes
0.75	0.75	DF	IL TRM 5.4.4	Deemed	-
1	1.00	KFPH	IL TRM 5.4.4	Deemed	-
0.00415	0.00415	EPG_Gas_SF	IL TRM 5.4.4	Deemed	-
0.005	0.00415	EPG_Gas_MF	IL TRM 5.4.4	Deemed	Yes
0.312	0.30	ISR SF	Survey - HA2	Custom	Yes
0.404	0.30	ISR MF	Survey - HA2	Custom	Yes
0.775	NA	%SF	Survey - HCU1	Custom	Yes
0.225	NA	%MF	Survey - HCU1	Custom	Yes

Source: Nicor Gas tracking data and Navigant team analysis.

Table 6-3. Low Flow Bathroom Aerators - Custom and Deemed Values Comparison

Value, Navigant	Value, Nicor Gas	Variable	Source	Deemed/ Custom	Discrepancy?
0.84	1.00	%FossilDHW	IL TRM 5.4.4	Deemed	Yes
1.39	1.39	GPM_base	IL TRM 5.4.4	Deemed	-
0.94	0.94	GPM_low	Specifications	Deemed	-
1.6	1.60	L_base	IL TRM 5.4.4	Deemed	-
1.6	1.60	L_low	IL TRM 5.4.4	Deemed	-
365.25	365.25	days/year	IL TRM 5.4.4	Deemed	-
4.842	4.74	Household SF	Survey - HCU2	Custom	Yes
4.745	4.74	Household MF	Survey - HCU2	Custom	Yes
0.9	0.90	DF	IL TRM 5.4.4	Deemed	-
2.83	2.83	BFPH_SF	IL TRM 5.4.3	Deemed	-
1.5	2.83	BFPH_MF	IL TRM 5.4.4	Deemed	Yes
0.00341	0.00341	EPG_Gas_SF	IL TRM 5.4.4	Deemed	-
0.004	0.00341	EPG_Gas_MF	IL TRM 5.4.4	Deemed	Yes
0.232	0.30	ISR Installed 1 SF	Survey - HA2	Custom	Yes
0.282	0.30	ISR Installed 1 SF	Survey - HA2	Custom	Yes
0.128	0.30	ISR Installed 2 SF	Survey - HA2	Custom	Yes
0.117	0.30	ISR Installed 2 MF	Survey - HA2	Custom	Yes
0.775	NA	%SF	Survey - HCU1	Custom	Yes
0.225	NA	%MF	Survey - HCU1	Custom	Yes

Source: Nicor Gas tracking data and Navigant team analysis.

Equation 3. Water Heater Temperature Setback Savings Equation and Inputs, IL TRM v5.0 Section 5.4.6

$$\Delta Therms = (U * A * (T_{pre} - T_{post}) * Hours) / (100,000 * RE_{gas}) * ISR * \%FossilDHW * \%SF_{MF} * quantity$$

Where:

- U* = Overall heat transfer coefficient of tank (Btu/Hr-°F-ft²)
- A* = Surface area of storage tank (square feet)
- T_{pre}* = Actual hot water setpoint prior to adjustment
- T_{post}* = Actual new hot water setpoint, which may not be lower than 120 degrees
- RE_{gas}* = Recovery efficiency of gas water heater
- ISR* = In service rate of showerhead
- % FossilDHW* = proportion of water heating supplied by Natural Gas heating
- Quantity* = total number of kits distributed in GPY6/EPY9
- %SF_{MF}* = percentage of SF or MF homes in the student survey responses
- 100,000* = Converts Btus to Therms (btu/Therm)

Table 6-4. Water Heater Temperature Setback - Custom and Deemed Values Comparison

Value, Navigant	Value, Nicor Gas	Variable	Source	Deemed/ Custom	Discrepancy?
0.083	0.083	U (Overall heat transfer coefficient of tank)	IL TRM 5.4.6	Deemed	-
24.99	24.99	A (Square feet) Surface area of storage tank	IL TRM 5.4.6	Deemed	-
5.99	10.0	(Tpre-Tpost)_SF	Survey - HA13and14	Custom	Yes
5.25	10.0	(Tpre-Tpost)_MF	Survey - HA13and15	Custom	Yes
8766	8766	Hours	IL TRM 5.4.6	Deemed	-
0.78	0.78	RE_gas_SF	IL TRM 5.4.6	Deemed	-
0.67	0.78	RE_gas_MF	IL TRM 5.4.6	Deemed	Yes
0.18	0.29	ISR_SF	Survey - HA12	Custom	Yes
0.21	0.29	ISR_MF	Survey - HA12	Custom	Yes
0.77	NA	%SF	Survey - HCU1	Custom	Yes
0.23	NA	%MF	Survey - HCU1	Custom	Yes
0.84	1.00	%FossilDHW	IL TRM 5.4.6	Deemed	Yes

Source: Nicor Gas tracking data and Navigant team analysis.

Equation 4. Shower Timer Equation and Inputs, IL TRM v6.0 Section 5.4.9

$$\Delta \text{Therms} = \% \text{FossilDHW} * \text{GPM} * (L_{\text{base}} - L_{\text{timer}}) * \text{Household} * \text{Days/yr} * \text{SPCD} * \text{UsageFactor} * \text{EPG}_{\text{Gas}} * \% \text{SF}_{\text{MF}} * \text{quantity}$$

Where:

- % FossilDHW* = Proportion of water heating supplied by Natural Gas heating
- GPM* = Flow rate of showerhead as used
- L_base* = Number of minutes in shower without a shower timer
- L_timer* = Number of minutes in shower after shower timer
- Household* = Number in household using timer
- Days/yr* = 365.25
- SPCD* = Showers Per Capita Per Day
- UsageFactor* = How often each participant is using shower timer
- EPG_Gas* = Energy per gallon of Hot water supplied by gas
- %SF_MF* = percentage of SF or MF homes in the student survey responses
- quantity* = total number of kits distributed in GPY6/EPY9

The savings for the shower timer measure should include a time adjustment for the participants that start the shower timer when they get into the shower instead of starting it when they turn on the water. The TRM assumption for baseline shower length of 7.8 minutes is based on metered data that used a starting point of initial water flow through the showerhead. The time adjustment is time added to the length of shower with the timer for those who first start the timer when they get into the shower, so that the length of shower has a starting point consistent with the TRM assumption. The L_timer value is calculated using the responses from the following questions:

- HA9.* After the Shower Timer is up, how much longer do you shower?
- HA10.* Do you start the shower timer when you turn on the water or when you get into the shower?

To demonstrate the calculation approach, Navigant received the following responses for Nicor Gas participants from the two L_timer questions above:

Table 6-5. Shower Timer Question HA9 Student Survey Responses

HA9 Responses	% of responses SF	% of responses MF
Shower is turned off right away	29.38%	27.34%
One minute longer	25.41%	24.59%
Two minutes longer	19.29%	17.73%
Three minutes longer	25.91%	30.34%

Source: Student survey responses and Navigant analysis.

Table 6-6. Shower Timer Question HA10 Student Survey Responses

HA10 Responses	Added Time Adjustment	% of responses SF	% of responses MF
When I turn on the water	0	39.81%	39.01%
When I get into the shower	1.63 ²	60.19%	60.99%

Source: Student survey responses and Navigant analysis.

Therefore,

$$L_timer_SF = 5 \text{ minutes} + (0*29.38\% + 1*25.41\% + 2*19.29\% + 3*25.91\%) + (0*39.81\% + 1.63*60.19\%) = 7.40$$

$$L_timer_MF = 5 \text{ minutes} + (0*27.34\% + 1*24.59\% + 2*17.73\% + 3*30.34\%) + (0*39.01\% + 1.63*60.99\%) = 7.50$$

² Sum of the following sources: Hot water waste time (0.89 minutes); "IL TRM v 5.0 section 5.4.8", and time taken for hot water to arrive at the shower (0.74 minutes); "PG&E Work Paper PGECODHW113".

Table 6-7. Shower Timer Custom and Deemed Values Comparison

Value, Navigant	Value, Nicor Gas	Variable	Source	Deemed/ Custom	Discrepancy?
0.84	NR	%FossilDHW	IL TRM 5.4.9 (v6)	Deemed	NA
1.98	NR	GPM_SF	Survey - HA1	Custom	NA
1.93	NR	GPM_MF	Survey - HA1	Custom	NA
7.80	NR	L_base	IL TRM 5.4.9 (v6)	Deemed	NA
7.40	NR	L_timer_SF	Survey - HA9, HA10	Custom	NA
2.86	NR	Household_SF	Survey - HA8	Custom	NA
0.44	NR	UsageFactor_SF	Survey - HA7	Custom	NA
7.50	NR	L_timer_MF	Survey - HA9, HA10	Custom	NA
3.07	NR	Household_MF	Survey - HA8	Custom	NA
0.42	NR	UsageFactor_MF	Survey - HA7	Custom	NA
0.77	NR	%SF	Survey - HCU3	Custom	NA
0.23	NR	%MF	Survey - HCU4	Custom	NA
365.25	NR	Days/yr	IL TRM 5.4.9 (v6)	Deemed	NA
0.60	NR	SPCD	IL TRM 5.4.9 (v6)	Deemed	NA
0.01	NR	EPG_Gas_SF	IL TRM 5.4.9 (v6)	Deemed	NA
0.01	NR	EPG_Gas_MF	IL TRM 5.4.9 (v6)	Deemed	NA

Source: Nicor Gas tracking data and Navigant team analysis.

7. APPENDIX 2. TOTAL RESOURCE COST DETAIL

Table 7-1, the Total Resource Cost (TRC) variable table, only includes cost-effectiveness analysis inputs available at the time of finalizing the GPY6/EPY9 EEE 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. Detail in this table (e.g., EULs), other than final GPY6/EPY9 savings and program data, are subject to change and are not final.

Table 7-1. Total Resource Cost Savings Summary for Nicor Gas

Measure/Project	Units	Distributed Quantity	Effective Useful Life	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
Showerheads	Each	15,033	10	104,320	128,006	128,006
Kitchen Aerator (1.5 GPM)	Each	15,033	9	49,212	48,617	48,617
Bathroom Aerator (1.0 GPM)	Each	30,066	9	12,193	10,959	10,959
13-watt CFL	Each	9,600	4	NA	NA	NA
9.0-watt LED	Each	35,499	10	NA	NA	NA
Water Heater Temperature Set Back	Each	15,033	2	10,162	3,223	3,223
Shower Timer Install	Each	15,033	2*	NA	13,444	13,444

*EUL from IL TRM v6.0, all others from TRM v5.0.

Source: Nicor Gas tracking data and Navigant team analysis.