Guidehouse

ComEd Savings for Income Eligible Seniors Pilot Impact Evaluation Report

Energy Efficiency / Demand Response Plan: Program Year 2019 (CY2019) (1/1/2019-12/31/2019)

Presented to
ComEd

FINAL

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ComEd CY2019 Savings for Income Eligible Seniors Pilot Impact Evaluation Report

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1. Introduction

This report presents the results of the impact evaluation of ComEd's CY2019 Savings for Income Eligible Seniors Pilot. It includes a summary of the energy and demand impacts for the total pilot broken out by relevant measure and pilot structure details. The appendix provides the impact analysis methodology and details of the Total Resource Cost inputs. CY2019 covers January 1, 2019 through December 31, 2019.

2. Pilot Description

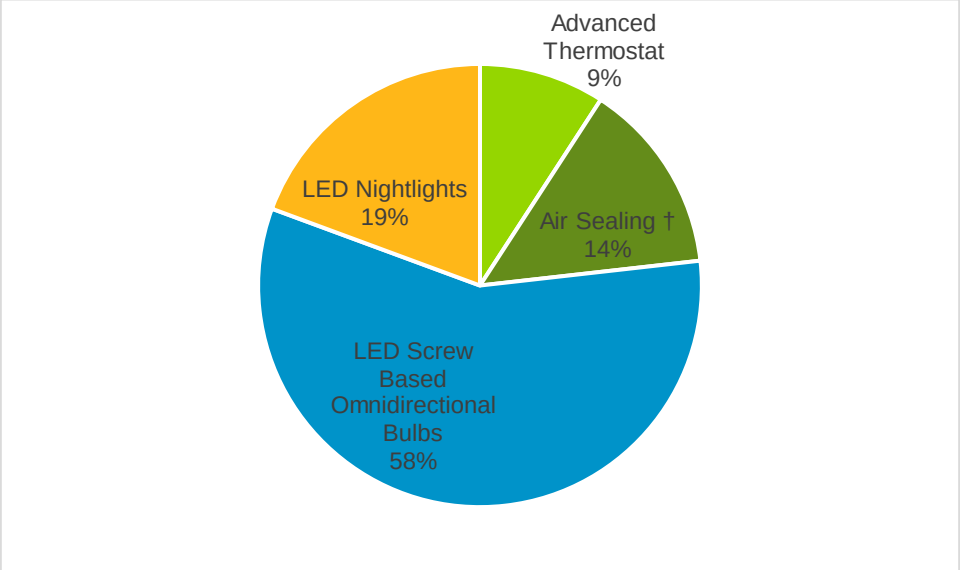
The pilot had 196 participants in CY2019 and distributed four measures as shown in the following table and graph.

Table 2-1. CY2019 Volumetric Findings Detail

Participation	Total
Participants*	196
Total Measures	1,353
Number of Unique Measures	4
Advanced Thermostat	124
Air Sealing	190
LED Screw Based Omnidirectional Bulbs	777
LED Nightlights	262

*Participants are defined as unique utility account numbers
Source: ComEd tracking data and evaluation team analysis

Figure 2-1. Number of Measures Installed by Type



† Value based on number of project installations due to varying units
Source: ComEd tracking data and evaluation team analysis

3. Pilot Savings Detail

Table 3-1 summarizes the incremental energy and demand savings the Savings for Income Eligible Seniors Pilot achieved in CY2019. The gas savings are only those that ComEd may be able to claim, which excludes savings the gas utilities claim, either via joint or non-joint programs and pilots.[1]

Table 3-1. CY2019 Total Annual Incremental Electric Savings

Savings Category	Energy Savings (kWh)	Non-Coincident Demand Savings (kW)	Summer Peak* Demand Savings (kW)
Electricity			
Ex Ante Gross Savings	211,058	NR	18
Program Gross Realization Rate	0.34	NA	1.00
Verified Gross Savings	71,251	91	18
Program Net-to-Gross Ratio (NTG)	1.00	1.00	1.00
Verified Net Savings	71,251	91	18
Converted from Gas†			
Ex Ante Gross Savings	383,008	NA	NA
Program Gross Realization Rate	0.95	NA	NA
Verified Gross Savings	363,981	NA	NA
Program Net-to-Gross Ratio (NTG)	1.00	NA	NA
Verified Net Savings	363,981	NA	NA
Total Electric Plus Gas			
Ex Ante Gross Savings	594,066	NR	18
Program Gross Realization Rate	0.73	NA	1.00
Verified Gross Savings	435,233	91	18
Program Net-to-Gross Ratio (NTG)	1.00	1.00	1.00

NR = Not reported (refers a piece of data that was not reported, i.e., non-coincident demand savings)
NA = Not applicable (refers a piece of data cannot be produced or does not apply)
* The coincident summer peak period is defined as 1:00-5:00 p.m. Central Prevailing Time on non-holiday weekdays, June through August.
† Gas savings converted to kWh by multiplying therms * 29.31 (which is based on 100,000 Btu/therm and 3,412 Btu/kWh). The evaluation will determine which gas savings will be converted to kWh and counted toward ComEd's electric savings goal while producing the portfolio-wide Summary Report. According to Section 8-103B(b-25) of the Illinois Public Utilities Act, "In no event shall more than 10% of each year's applicable annual incremental goal as defined in paragraph (7) of subsection (g) of this Section be met through savings of fuels other than electricity."
Source: ComEd tracking data and evaluation team analysis

4. Cumulative Persisting Annual Savings

Table 4-1 to Table 4-3 and Figure 4-1 show the measure-specific and total verified gross savings for the Savings for Income Eligible Seniors Pilot and the cumulative persisting annual savings (CPAS) for the measures installed in CY2019. The electric CPAS across all measures installed in 2019 is 71,251 kWh (Table 4-1). The CY2019 gas contribution to CPAS (converted to equivalent electricity) is 363,981kWh (Table 4-2). Adding the gas and electric contributions produces 435,233 kWh of total CY2019 contribution to CPAS (Table 4-3).

[1] The evaluation will determine which gas savings will be counted toward the goal while producing the portfolio-wide Summary Report.

The “historic” rows in the table are the CPAS contribution back to CY2018. Since this is a pilot and CY2019 is the first year of implementation, there were no CPAS contributions in CY2018.

Table 4-1. Cumulative Persisting Annual Savings (CPAS) –Electric

End Use Type	Research Category	EUL	CY2019 Verified Gross Savings (kWh)	NTG*	Lifetime Net Savings (kWh)†	Verified Net kWh Savings 2018	2019	2020	2021	2022	2023	2024	2025	2026
HVAC	Advanced Thermostat	11.0	25,778	1.00	283,558		25,778	25,778	25,778	25,778	25,778	25,778	25,778	25,778
Shell	Air Sealing	20.0	6,814	1.00	136,273		6,814	6,814	6,814	6,814	6,814	6,814	6,814	6,814
Lighting	LED Screw Based Omnidirectional Bulbs	10.0	30,964	1.00	198,841		30,964	30,964	17,114	17,114	17,114	17,114	17,114	17,114
Lighting	LED Nightlights	8.0	7,696	1.00	69,260		7,696	7,696	7,696	7,696	7,696	7,696	7,696	7,696
CY2019 Program Total Electric Contribution to CPAS			71,251		687,932		71,251	71,251	57,401	57,401	57,401	57,401	57,401	57,401
Historic Program Total Electric Contribution to CPAS‡						-	-	-	-	-	-	-	-	-
Program Total Electric CPAS						-	71,251	71,251	57,401	57,401	57,401	57,401	57,401	57,401
CY2019 Program Incremental Expiring Electric Savings§								-	13,850	-	-	-	-	-
Historic Program Incremental Expiring Electric Savings‡§							-	-	-	-	-	-	-	-
Program Total Incremental Expiring Electric Savings§							-	-	13,850	-	-	-	-	-

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
HVAC	Advanced Thermostat	25,778	25,778	25,778										
Shell	Air Sealing	6,814	6,814	6,814	6,814	6,814	6,814	6,814	6,814	6,814	6,814	6,814	6,814	
Lighting	LED Screw Based Omnidirectional Bulbs	17,114	17,114											
Lighting	LED Nightlights	7,696												
CY2019 Program Total Electric Contribution to CPAS		57,401	49,706	32,592	6,814	6,814	6,814	6,814	6,814	6,814	6,814	6,814	6,814	-
Historic Program Total Electric Contribution to CPAS‡		-	-	-	-	-	-	-	-	-	-	-	-	-
Program Total Electric CPAS		57,401	49,706	32,592	6,814	6,814	6,814	6,814	6,814	6,814	6,814	6,814	6,814	-
CY2019 Program Incremental Expiring Electric Savings§		-	7,696	17,114	25,778	-	-	-	-	-	-	-	-	6,814
Historic Program Incremental Expiring Electric Savings‡§		-	-	-	-	-	-	-	-	-	-	-	-	-
Program Total Incremental Expiring Electric Savings§		-	7,696	17,114	25,778	-	-	-	-	-	-	-	-	6,814

Note: The green highlighted cell shows pilot total first year electric savings. The gray cells are blank, indicating values irrelevant to the CY2019 contribution to CPAS.
* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
† Lifetime savings are the sum of CPAS savings through the EUL.
‡ Historical savings go back to CY2018
§ Expiring savings are equal to CPAS Y_{n-1} - CPAS Y_n
Source: Evaluation team analysis

Table 4-2. Cumulative Persisting Annual Savings (CPAS) – Gas

End Use Type	Research Category	EUL	CY2019 Verified Gross Savings (Therms)	NTG*	Lifetime Net Savings (Therms)†	Verified Net Therms Savings 2018	2019	2020	2021	2022	2023	2024	2025	2026
HVAC	Advanced Thermostat	11.0	8,156	1.00	89,717		8,156	8,156	8,156	8,156	8,156	8,156	8,156	8,156
Shell	Air Sealing	20.0	4,262	1.00	85,245		4,262	4,262	4,262	4,262	4,262	4,262	4,262	4,262
Lighting	LED Screw Based Omnidirectional Bulbs	10.0		1.00										
Lighting	LED Nightlights	8.0		1.00										
CY2019 Program Total Gas Contribution to CPAS (Therms)			12,418		174,962		12,418	12,418	12,418	12,418	12,418	12,418	12,418	12,418
CY2019 Program Total Gas Contribution to CPAS (kWh Equivalent)‡							363,981	363,981	363,981	363,981	363,981	363,981	363,981	363,981
Historic Program Total Gas Contribution to CPAS (kWh Equivalent)‡§						-	-	-	-	-	-	-	-	-
Program Total Gas CPAS (kWh Equivalent)‡						-	363,981	363,981	363,981	363,981	363,981	363,981	363,981	363,981
CY2019 Program Incremental Expiring Gas Savings (Therms)||								-	-	-	-	-	-	-
CY2019 Program Incremental Expiring Gas Savings (kWh Equivalent)‡||								-	-	-	-	-	-	-
Historic Program Incremental Expiring Gas Savings (kWh Equivalent)‡§||							-	-	-	-	-	-	-	-
Program Total Incremental Expiring Gas Savings (kWh Equivalent)‡||							-	-	-	-	-	-	-	-

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
HVAC	Advanced Thermostat	8,156	8,156	8,156										
Shell	Air Sealing	4,262	4,262	4,262	4,262	4,262	4,262	4,262	4,262	4,262	4,262	4,262	4,262	
Lighting	LED Screw Based Omnidirectional Bulbs													
Lighting	LED Nightlights													
CY2019 Program Total Gas Contribution to CPAS (Therms)		12,418	12,418	12,418	4,262	4,262	4,262	4,262	4,262	4,262	4,262	4,262	4,262	-
CY2019 Program Total Gas Contribution to CPAS (kWh Equivalent)‡		363,981	363,981	363,981	124,926	124,926	124,926	124,926	124,926	124,926	124,926	124,926	124,926	
Historic Program Total Gas Contribution to CPAS (kWh Equivalent)‡§		-	-	-	-	-	-	-	-	-	-	-	-	-
Program Total Gas CPAS (kWh Equivalent)‡		363,981	363,981	363,981	124,926	124,926	124,926	124,926	124,926	124,926	124,926	124,926	124,926	-
CY2019 Program Incremental Expiring Gas Savings (Therms)||		-	-	-	8,156	-	-	-	-	-	-	-	-	4,262
CY2019 Program Incremental Expiring Gas Savings (kWh Equivalent)‡||		-	-	-	239,055	-	-	-	-	-	-	-	-	124,926
Historic Program Incremental Expiring Gas Savings (kWh Equivalent)‡§||		-	-	-	-	-	-	-	-	-	-	-	-	-
Program Total Incremental Expiring Gas Savings (kWh Equivalent)‡||		-	-	-	239,055	-	-	-	-	-	-	-	-	124,926

Note: The green highlighted cell shows pilot total first year gas savings in kWh equivalents. The gray cells are blank, indicating no values or do not contribute to calculating CPAS in CY2019.

* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.

† Lifetime savings are the sum of CPAS savings through the EUL.

‡ kWh equivalent savings are calculated by multiplying therm savings by 29.31.

§ Historic savings go back to CY2018.

|| Incremental expiring savings are equal to CPAS Yn-1 - CPAS Y_n.

Source: Evaluation team analysis

Table 4-3. Cumulative Persisting Annual Savings (CPAS) – Total

End Use Type	Research Category	EUL	CY2019 Verified Gross Savings (kWh)	NTG*	Lifetime Net Savings (kWh)†	Verified Net kWh Savings (Including Those Converted from Gas Savings) 2018	2019	2020	2021	2022	2023	2024	2025	2026
HVAC	Advanced Thermostat	11.0	264,833	1.00	2,913,167		264,833	264,833	264,833	264,833	264,833	264,833	264,833	264,833
Shell	Air Sealing	20.0	131,740	1.00	2,634,791		131,740	131,740	131,740	131,740	131,740	131,740	131,740	131,740
Lighting	LED Screw Based Omnidirectiona	10.0	30,964	1.00	198,841		30,964	30,964	17,114	17,114	17,114	17,114	17,114	17,114
Lighting	LED Nightlights	8.0	7,696	1.00	69,260		7,696	7,696	7,696	7,696	7,696	7,696	7,696	7,696
CY2019 Program Total Contribution to CPAS			435,233		5,816,059	-	435,233	435,233	421,383	421,383	421,383	421,383	421,383	421,383
Historic Program Total Contribution to CPAS‡						-	-	-	-	-	-	-	-	-
Program Total CPAS						-	435,233	435,233	421,383	421,383	421,383	421,383	421,383	421,383
CY2019 Program Incremental Expiring Savings§								-	13,850	-	-	-	-	-
Historic Program Incremental Expiring Savings‡§							-	-	-	-	-	-	-	-
Program Total Incremental Expiring Savings§							-	-	13,850	-	-	-	-	-

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
HVAC	Advanced Thermostat	264,833	264,833	264,833										
Shell	Air Sealing	131,740	131,740	131,740	131,740	131,740	131,740	131,740	131,740	131,740	131,740	131,740	131,740	
Lighting	LED Screw Based Omnidirectiona	17,114	17,114											
Lighting	LED Nightlights	7,696												
CY2019 Program Total Contribution to CPAS		421,383	413,687	396,573	131,740	131,740	131,740	131,740	131,740	131,740	131,740	131,740	131,740	-
Historic Program Total Contribution to CPAS‡		-	-	-	-	-	-	-	-	-	-	-	-	-
Program Total CPAS		421,383	413,687	396,573	131,740	131,740	131,740	131,740	131,740	131,740	131,740	131,740	131,740	-
CY2019 Program Incremental Expiring Savings§		-	7,696	17,114	264,833	-	-	-	-	-	-	-	-	131,740
Historic Program Incremental Expiring Savings‡§		-	-	-	-	-	-	-	-	-	-	-	-	-
Program Total Incremental Expiring Savings§		-	7,696	17,114	264,833	-	-	-	-	-	-	-	-	131,740

Note: The green highlighted cell shows pilot total first year electric savings (including direct electric savings and those converted from gas). The gray cells are blank, indicating no values or do not contribute to calculating CPAS in CY2019.

* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.

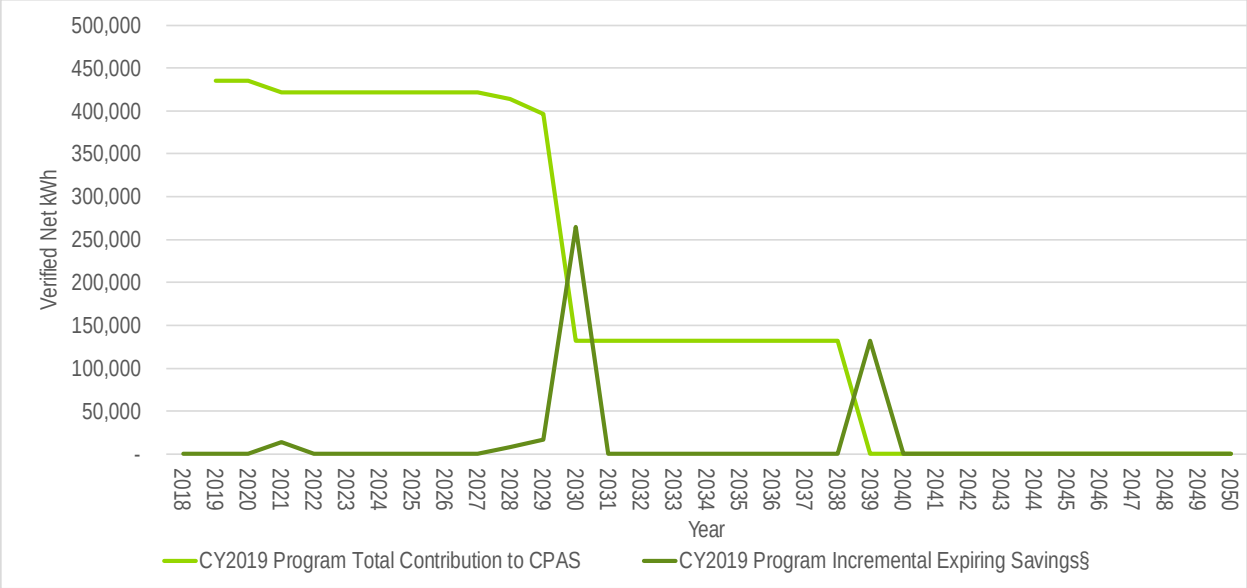
† Lifetime savings are the sum of CPAS savings through the EUL.

‡ Historic savings go back to CY2018.

§ Incremental expiring savings are equal to CPAS Y_{n-1} - CPAS Y_n

Source: Evaluation team analysis

Figure 4-1. Cumulative Persisting Annual Savings



* Expiring savings are equal to CPAS Y_{n-1} - CPAS Y_n
Source: Evaluation team analysis

5. Pilot Savings by Measure

The pilot includes advanced thermostat, air sealing, and lighting measures as shown in the following tables. The advanced thermostat and air sealing measures contributed the most savings.

Table 5-1. CY2019 Energy Savings by Measure – Electric

End Use Type	Research Category	Ex Ante Gross Savings (kWh)	Verified Gross Realization Rate	Verified Gross Savings (kWh)	NTG*	Verified Net Savings (kWh)	EUL (years)
HVAC	Advanced Thermostat	121,747	0.21	25,778	1.00	25,778	11.0
Shell	Air Sealing	52,521	0.13	6,814	1.00	6,814	20.0
Lighting	LED Screw Based Omnidirectional Bulbs	29,094	1.06	30,964	1.00	30,964	10.0
Lighting	LED Nightlights	7,696	1.00	7,696	1.00	7,696	8.0
	Total	211,058	0.34	71,251	NA	71,251	NA

NA = Not applicable
* A deemed value. Source: is to be found on the IIllinois SAG web site here: https://www.ilsag.info/ntg_2019.
Source: ComEd tracking data and evaluation team analysis

Table 5-2. CY2019 Non-Coincident Demand Savings by Measure

End Use Type	Research Category	Ex Ante Gross Non-Coincident Demand Reduction (kW)	Verified Gross Realization Rate	Verified Gross Non-Coincident Demand Reduction (kW)	NTG*	Verified Net Non-Coincident Demand Reduction (kW)
HVAC	Advanced Thermostat	NR	NA	61.50	1.00	61.50
Shell	Air Sealing	NR	NA	0.00	1.00	0.00
Lighting	LED Screw Based Omnidirectional Bulbs	NR	NA	29.30	1.00	29.30
Lighting	LED Nightlights	NR	NA	0.00	1.00	0.00
	Total	NA	NA	90.80	NA	90.80

NR = Not reported
NA – Not applicable
* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
Source: ComEd tracking data and evaluation team analysis

Table 5-3. CY2019 Summer Peak Demand Savings by Measure

End Use Type	Research Category	Ex Ante Gross Peak Demand Reduction (kW)	Verified Gross Realization Rate	Verified Gross Peak Demand Reduction (kW)	NTG*	Verified Net Peak Demand Reduction (kW)
HVAC	Advanced Thermostat	14.33	1.00	14.33	1.00	14.33
Shell	Air Sealing	0.00	NA	0.00	1.00	0.00
Lighting	LED Screw Based Omnidirectional Bulbs	3.75	1.00	3.75	1.00	3.75
Lighting	LED Nightlights	0.00	NA	0.00	1.00	0.00
	Total	18.08	1.00	18.08	NA	18.08

NA = Not applicable
* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
Source: ComEd tracking data and evaluation team analysis

Table 5-4. CY2019 Energy Savings by Measure – Gas

End Use Type	Research Category	Ex Ante Gross Savings (Therms)	Verified Gross Realization Rate	Verified Gross Savings (Therms)	NTG*	Verified Net Savings (Therms)	EUL (years)
HVAC	Advanced Thermostat	8,166	1.00	8,156	1.00	8,156	11.0
Shell	Air Sealing	4,906	0.87	4,262	1.00	4,262	20.0
Lighting	LED Screw Based Omnidirectional Bulbs	0	NA	0	1.00	0	10.0
Lighting	LED Nightlights	0	NA	0	1.00	0	8.0
	Total Therms	13,072	0.95	12,418	NA	12,418	NA
	Total kWh Converted From Therms†	383,139	0.95	363,981	NA	363,981	NA

NA = Not applicable
* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
† Gas savings converted to kWh by multiplying therms * 29.31 (which is based on 100,000 Btu/therm and 3,412 Btu/kWh).
Source: ComEd tracking data and evaluation team analysis

Table 5-5. CY2019 Energy Savings by Measure – Total Combining Electricity and Gas

End Use Type	Research Category	Ex Ante Gross Savings (kWh)	Verified Gross Realization Rate	Verified Gross Savings (kWh)	NTG*	Verified Net Savings (kWh)
HVAC	Advanced Thermostat	360,998	0.73	264,833	1.00	264,833
Shell	Air Sealing	196,279	0.67	131,740	1.00	131,740
Lighting	LED Screw Based Omnidirectional Bulbs	29,094	1.06	30,964	1.00	30,964
Lighting	LED Nightlights	7,696	1.00	7,696	1.00	7,696
	Total†	594,066	0.73	435,233	NA	435,233

NA = Not applicable
* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
† The total includes the electric equivalent of the total therms.
Source: ComEd tracking data and evaluation team analysis

6. Impact Analysis Findings and Recommendations

6.1 Impact Parameter Estimates

The lifetime energy and demand savings are estimated by multiplying the verified savings by the effective useful life for each measure.

The EM&V team conducted research to validate the parameters that were not specified in the IllinoisTRM (TRM). The results are shown in the following table.

Table 6-1. Savings Parameters

Measure	Custom Input Parameters	Deemed Input Parameters	Deemed* Input Data Source
LED Omnidirectional Bulbs	Watts_ee, Watts_base	ISR, Leakage, Hours, WHF_e, WHF_d, CF	TRM v7.0 – Section 5.5.06
Advanced Thermostat	Capacity, SEER, EER	%ElectricHeat, Elec_Heating_Consumption, Heating_Reduction, HF, EFF_ISR, Fe, %AC, FLH, Cooling_Reduction, ISR, Hours, CF, %FossilHeat	TRM v7.0 – Section 5.3.16
Air Sealing	CFM50_existing, CFM50_new	N_heat, HDD, Eff_heat	TRM v7.0 – Section 5.6.01
LED Nightlight	Watts_ee, Watts_base	ISR, Leakage, Hours, WHF_e, WHF_d, CF	TRM v7.0 – Section 5.5.11

* TRM is the State of Illinois Technical Reference Manual version 7.0 from http://www.ilsag.info/technical-reference-manual.html. The NTG values can be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.

6.2 Other Impact Findings and Recommendations

The evaluation team developed several recommendations based on findings from the CY2019 evaluation.

6.2.1 Advanced Thermostat Findings and Recommendations

Finding 1. For advanced thermostat measures, the implementer used a value of 8 for the energy efficiency ratio (EER). Per the TRM v7.0, the deemed value for EER is 7.5 when an actual EER rating is not provided.

Recommendation 1. Guidehouse recommends using the TRM v7.0 deemed value of 7.5 for EER in demand savings calculations or providing the custom EER values for individual participant households which are installing this measure.

Finding 2. For advanced thermostat measures, the ex ante energy and demand savings are calculated with the assumption that participant homes are 100% electrically heated and 97% gas heated. This results in overestimating savings.

Recommendation 2. Since the heating fuel type isn't tracked by the implementer, Guidehouse recommends not making the assumption that the conditioned spaces are both electric and gas heated. The analysis should be done using the Illinois TRM 9TRM) v7.0 deemed assumption of 3% electric heat and 97% gas heat for unknown heating type.

6.2.2 Air Sealing Finding and Recommendation

Finding 3. For air sealing measure, the ex ante energy and demand savings assume that all the spaces are heated using 100% electric heat and 97% gas heat. This assumption leads to double counting of the savings associated with the heating system as the implementer is claiming both kWh and therm savings for the measures installed in the same space type. Guidehouse requested the heating type information as a part of the end of year data request but the IC confirmed that this information was not tracked during the pilot's implementation. Therefore, the verified energy and demand savings were calculated using the assumption that 13% of the homes were electrically heated and the the remaing 87% were gas heated. This spilt is deemed in the TRM v7.0 and is based on the information from the 2010 Residential Energy Consumption Survey (RECS) for Illinois.

Recommendation 3. Guidehouse requests that the implementer collects the participants' heating and cooling type information going forward and include it in the tracking data. Guidehouse also recommends not making the assumption that the conditioned spaces are 100% electric heating and 97% gas heating.

6.2.3 LED Lighting Finding and Recommendation

Finding 4. Ex ante energy savings calculations used hours of use deemed for a "Residential and in-unit Multi Family" installation location, as deemed by the TRM v7.0.

Recommendation 4. Since the installation location of the LED lights is not provided in the tracking data, Guidehouse recommends the energy savings are evaluated using the unknown installation location hours of use value, as deemed by the TRM v7.0.

6.2.4 Climate Zone Designation

Finding 5. The implementer assumed each participant address to be within the Chicago Climate zone when calculating ex ante savings. Upon geo-coding these addresses, the evaluation team discovered that one project is mapped outside of this climate zone.

Recommendation 5. Guidehouse recommends providing zip codes in addition to participant addresses in order to properly designate climate zones in calculations.

7. Appendix 1. Impact Analysis Methodology

Guidehouse determined verified gross savings for each pilot measure by:

1. Reviewing the savings algorithm inputs in the measure workbook for agreement with the TRM v7.0.
2. Validating that the savings algorithms were applied correctly.
3. Cross-checking per-unit savings values in the tracking data with the verified values in the measure workbook or in Guidehouse'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.

Guidehouse calculated verified net energy and demand (coincident peak and overall) savings by multiplying the verified gross savings estimates by a net-to-gross (NTG) ratio. In CY2019, the NTG estimates used to calculate the net verified savings were deemed as one, based on a consensus process through the Illinois Stakeholder Advisory Group (SAG).

Guidehouse used the following documents to verify the per-unit savings for each pilot measure:

- Final CY2019 tracking data: "SIES 2019 Pilot Savings Calculations"

- Final CY2019 measure descriptions: “SIES Measure Descriptions 2019”
- TRM v7.0 for deemed input parameters or secondary evaluation research to verify any custom inputs used in the ex ante calculations
- Implementer Savings Calculations: “ComEd SIES Pilot Savings Calculations_Revised 191219”

8. Appendix 2. Total Resource Cost Detail

Table 8-1 shows the Total Resource Cost (TRC) cost-effectiveness analysis inputs available at the time of finalizing this impact evaluation report. Additional required cost data (e.g., measure costs, pilot level incentive and non-incentive costs) are not included in this table and will be provided to the evaluation team later.

Table 8-1. Total Resource Cost Savings Summary

End Use Type	Research Category	Units	Quantity	EUL (years)*	ER Flag†	Verified Gross Electric Energy Savings (kWh)	Verified Gross Peak Demand Reduction (kW)	Verified Gross Gas Savings (Therms)	Gross Heating Penalty (kWh)	Gross Heating Penalty (Therms)	NTG (kWh)	NTG (kW)	NTG (Therms)	Verified Net Electric Energy Savings (kWh)	Verified Net Peak Demand Reduction (kW)	Verified Net Gas Savings (Therms)	Net Heating Penalty (kWh)	Net Heating Penalty (Therms)
HVAC	Advanced Thermostat	Each	124	11.0	No	25,778	14	8,156	0	0	1.00	1.00	1.00	25,778	14	8,156	0	0
Shell	Air Sealing	Projects	190	20.0	No	6,814	0	4,262	0	0	1.00	1.00	1.00	6,814	0	4,262	0	0
Lighting	LED Screw Based Omnidirectional Bulbs	Each	777	10.0	No	30,964	4	0	0	-603	1.00	1.00	1.00	30,964	4	0	0	-603
Lighting	LED Nightlights	Each	262	8.0	No	7,696	0	0	0	-178	1.00	1.00	1.00	7,696	0	0	0	-178
	Total			11.1		71,251	18	12,418	0	-781	NA	NA	NA	71,251	18	12,418	0	-781

NA = Not applicabgle

* The total of the EUL column is the weighted average measure life (WAML) and is calculated as the sum product of EUL and measure savings divided by total pilot savings.

† Early Replacement (ER) measures are flagged as YES, otherwise a NO is indicated in the column.

‡ The EUL for this measure varies over time. See the CPAS tables (Table 4-1).

Source: ComEd tracking data and evaluation team analysis