Guidehouse

ComEd Income Eligible Program Design 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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Prepared by:

Sagar Deo
Guidehouse

Kristina Crandall
Guidehouse

www.guidehouse.com

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Submitted to:

ComEd
2011 Swift Drive
Oak Brook, IL 60523

Submitted by:

Guidehouse (which acquired Navigant in 2019)
150 N. Riverside Plaza, Suite 2100
Chicago, IL 60606

Contact:

Randy Gunn, Partner	Jeff Erickson, Director	Patricia Plympton
312.583.5714	608.616.4962	202.253.9356
randy.gunn@guidehouse.com	jeff.erickson@guidehouse.com	patricia.plympton@guidehouse.com

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1. Introduction

This report presents the results of the impact evaluation of ComEd's CY2019 Income Eligible Program Design (IEPD) Pilot. It includes a summary of the energy and demand impacts for the 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

ComEd launched the IEPD Pilot to determine if engaging new income eligible market providers and trade allies would catalyze greater program participation and reduce program delivery costs. The aim of this pilot is to define a framework for scalable program delivery through dedicated market providers and trade allies to create deeper savings, improved delivery and lower delivery costs for the income eligible weatherization offering.

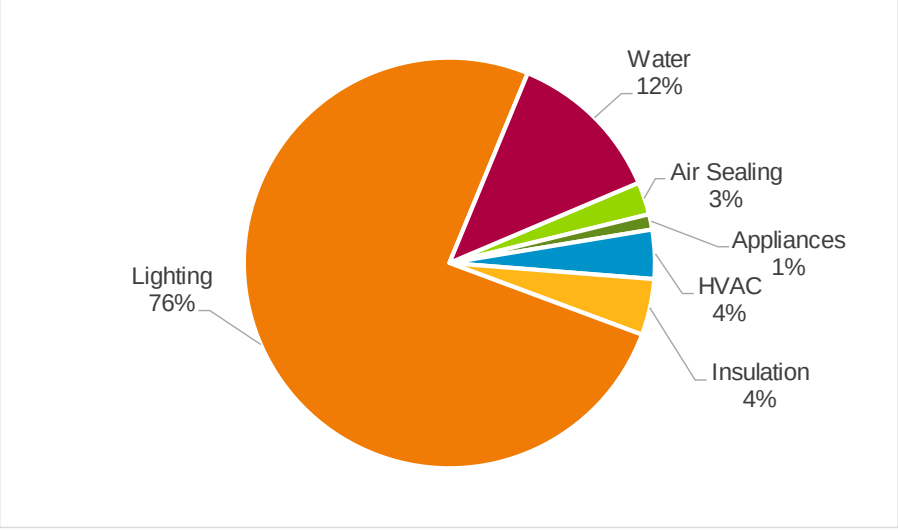
The pilot had 79 participants in CY2019 and distributed 491 measures as shown in the following table and graph. These 491 measures were divided into 45 retrofit types and are presented under six main research categories.

Table 2-1. CY2019 Volumetric Findings Detail

Participation	Program Design Pilot
Participants*	78
Installed Projects†	107
Total Measures	1,243

* Participants are defined as unique ComEd account numbers
† Installed projects are defined as unique Project IDs
Source: ComEd tracking data and evaluation team analysis

Figure 2-1. Number of Measures Installed by Type



Source: ComEd tracking data and evaluation team analysis

3. Pilot Savings Detail

Table 3-1 summarizes the incremental energy and demand savings the IEPD 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.[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	70,708	NR†	20.35
Program Gross Realization Rate	0.96	NA	0.96
Verified Gross Savings	68,220	83	19.54
Program Net-to-Gross Ratio (NTG)	1.00	1.00	1.00
Verified Net Savings	68,220	83	20
Converted from Gas†			
Ex Ante Gross Savings	340,802	NA	NA
Program Gross Realization Rate	1.00	NA	NA
Verified Gross Savings	340,084	NA	NA
Program Net-to-Gross Ratio (NTG)	1.00	NA	NA
Verified Net Savings	340,084	NA	NA
Total Electric Plus Gas			
Ex Ante Gross Savings	411,510	NR†	20.35
Program Gross Realization Rate	0.99	NA	0.96
Verified Gross Savings	408,304	83	19.54
Program Net-to-Gross Ratio (NTG)	1.00	1.00	1.00
Verified Net Savings	408,304	83	19.54

NR = Not reported (refers to a piece of data that was not reported, i.e., non-coincident demand savings)
NA = Not applicable (refers to a piece of data that 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 IEPD Pilot and the cumulative persisting annual savings (CPAS) for the measures installed in CY2019. The electric CPAS across all measures installed in 2019 is 68,220 kWh (Table 4-1). The CY2019 gas contribution to CPAS (converted to equivalent electricity) is 340,0846,013,289 kWh (Table 4-2). Adding

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

the gas and electric contributions produces 408,304 kWh of total CY2019 contribution to CPAS (Table 4-3). The Pilot is new for CY2019 and “historic” rows in each table (i.e., the CPAS contribution back to CY2018) are presented as zero.

Guidehouse applied the Illinois Technical Reference Manual (TRM) deemed EISA baseline adjustment for LED lamps starting in 2021, except for specialty lamps which have a baseline shift starting in 2024.

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
Shell	Air Sealing	20.0	8,991	1.00	164,660		8,991	8,991	8,991	8,991	8,991	8,991	8,991	8,991
Shell	Insulation: Attic	20.0	4,829	1.00	91,944		4,829	4,829	4,829	4,829	4,829	4,829	4,829	4,829
Shell	Insulation: Band Joist	20.0	448	1.00	8,143		448	448	448	448	448	448	448	448
Shell	Insulation: Crawl Space	20.0	38	1.00	737		38	38	38	38	38	38	38	38
Shell	Insulation: Dense Pack	20.0	1,832	1.00	34,406		1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832
Shell	Insulation: Foundation	20.0	790	1.00	14,694		790	790	790	790	790	790	790	790
Shell	Insulation: Injection Foam	20.0	6,998	1.00	131,398		6,998	6,998	6,998	6,998	6,998	6,998	6,998	6,998
Consumer Electronics	Advanced Power Strip	7.0	1,067	1.00	7,466		1,067	1,067	1,067	1,067	1,067	1,067	1,067	
HVAC	Bathroom Fan	19.0	776	1.00	14,741		776	776	776	776	776	776	776	776
HVAC	Programmable Thermostat	8.0	115	1.00	917		115	115	115	115	115	115	115	115
HVAC	Advanced Thermostat	11.0	3,318	1.00	36,495		3,318	3,318	3,318	3,318	3,318	3,318	3,318	3,318
Water	Gas Pipe Insulation	15.0	-	1.00	-		-							
Lighting	LED: Exterior	6.1	3,753	1.00	13,384		3,753	3,753	1,434	1,434	1,434	1,434	143	
Lighting	LED: Interior Omnidirectional	10.0	16,635	1.00	70,803		16,635	16,635	4,692	4,692	4,692	4,692	4,692	4,692
Lighting	LED: Interior Specialty	10.0	15,534	1.00	87,282		15,534	15,534	15,534	15,534	15,534	1,922	1,922	1,922
Hot Water	Bathroom Aerator	10.0	68	1.00	678		68	68	68	68	68	68	68	68
Hot Water	Kitchen Aerator	10.0	159	1.00	1,595		159	159	159	159	159	159	159	159
Hot Water	Showerhead	10.0	2,871	1.00	28,708		2,871	2,871	2,871	2,871	2,871	2,871	2,871	2,871
CY2019 Program Total Electric Contribution to CPAS			68,220		708,050		68,220	68,220	53,957	53,957	53,957	40,345	39,055	37,845
Historic Program Total Electric Contribution to CPAS‡														
Program Total Electric CPAS							68,220	68,220	53,957	53,957	53,957	40,345	39,055	37,845
CY2019 Program Incremental Expiring Electric Savings§								-	14,263	-	-	13,612	1,290	1,210
Historic Program Incremental Expiring Electric Savings‡§							-	-	-	-	-	-	-	-
Program Total Incremental Expiring Electric Savings§							-	-	14,263	-	-	13,612	1,290	1,210

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Shell	Air Sealing	8,991	8,991	7,475	7,475	7,475	7,475	7,475	7,475	7,475	7,475	7,475	7,475
Shell	Insulation: Attic	4,829	4,829	4,365	4,365	4,365	4,365	4,365	4,365	4,365	4,365	4,365	4,365
Shell	Insulation: Band Joist	448	448	366	366	366	366	366	366	366	366	366	366
Shell	Insulation: Crawl Space	38	38	36	36	36	36	36	36	36	36	36	36
Shell	Insulation: Dense Pack	1,832	1,832	1,609	1,609	1,609	1,609	1,609	1,609	1,609	1,609	1,609	1,609
Shell	Insulation: Foundation	790	790	679	679	679	679	679	679	679	679	679	679
Shell	Insulation: Injection Foam	6,998	6,998	6,142	6,142	6,142	6,142	6,142	6,142	6,142	6,142	6,142	6,142
Consumer Electronics	Advanced Power Strip												
HVAC	Bathroom Fan	776	776	776	776	776	776	776	776	776	776	776	
HVAC	Programmable Thermostat												
HVAC	Advanced Thermostat	3,318	3,318	3,318									
Water	Gas Pipe Insulation												
Lighting	LED: Exterior												
Lighting	LED: Interior Omnidirectional	4,692	4,692										
Lighting	LED: Interior Specialty	1,922	1,922										
Hot Water	Bathroom Aerator	68	68										
Hot Water	Kitchen Aerator	159	159										
Hot Water	Showerhead	2,871	2,871										
CY2019 Program Total Electric Contribution to CPAS		37,730	37,730	24,767	21,449	21,449	21,449	21,449	21,449	21,449	21,449	21,449	20,673
Historic Program Total Electric Contribution to CPAS‡													
Program Total Electric CPAS		37,730	37,730	24,767	21,449	21,449	21,449	21,449	21,449	21,449	21,449	21,449	20,673
CY2019 Program Incremental Expiring Electric Savings§		115	-	12,964	3,318	-	-	-	-	-	-	-	776
Historic Program Incremental Expiring Electric Savings‡§		-	-	-	-	-	-	-	-	-	-	-	-
Program Total Incremental Expiring Electric Savings§		115	-	12,964	3,318	-	-	-	-	-	-	-	776

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
§ Incremental 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
Shell	Air Sealing	20.0	2,422	1.00	47,012		2,422	2,422	2,422	2,422	2,422	2,422	2,422	2,422
Shell	Insulation: Attic	20.0	2,086	1.00	42,109		2,086	2,086	2,086	2,086	2,086	2,086	2,086	2,086
Shell	Insulation: Band Joist	20.0	210	1.00	4,082		210	210	210	210	210	210	210	210
Shell	Insulation: Crawl Space	20.0	26	1.00	532		26	26	26	26	26	26	26	26
Shell	Insulation: Dense Pack	20.0	832	1.00	16,204		832	832	832	832	832	832	832	832
Shell	Insulation: Foundation	20.0	387	1.00	7,560		387	387	387	387	387	387	387	387
Shell	Insulation: Injection Foam	20.0	3,139	1.00	61,130		3,139	3,139	3,139	3,139	3,139	3,139	3,139	3,139
Consumer Electronics	Advanced Power Strip	7.0	-	1.00	-		-							
HVAC	Bathroom Fan	19.0	-	1.00	-		-							
HVAC	Programmable Thermostat	8.0	125	1.00	997		125	125	125	125	125	125	125	125
HVAC	Advanced Thermostat	11.0	1,503	1.00	16,538		1,503	1,503	1,503	1,503	1,503	1,503	1,503	1,503
Water	Gas Pipe Insulation	15.0	56	1.00	837		56	56	56	56	56	56	56	56
Lighting	LED: Exterior	6.1	-	1.00	-		-							
Lighting	LED: Interior Omnidirectional	10.0	-	1.00	-		-							
Lighting	LED: Interior Specialty	10.0	-	1.00	-		-							
Hot Water	Bathroom Aerator	10.0	31	1.00	314		31	31	31	31	31	31	31	31
Hot Water	Kitchen Aerator	10.0	74	1.00	742		74	74	74	74	74	74	74	74
Hot Water	Showerhead	10.0	710	1.00	7,104		710	710	710	710	710	710	710	710
CY2019 Program Total Gas Contribution to CPAS (Therms)			11,603		205,162		11,603	11,603	11,603	11,603	11,603	11,603	11,603	11,603
CY2019 Program Total Gas Contribution to CPAS (kWh Equivalent)‡					6,013,289		340,084	340,084	340,084	340,084	340,084	340,084	340,084	340,084
Historic Program Total Gas Contribution to CPAS (kWh Equivalent)‡§						-	-							
Program Total Gas CPAS (kWh Equivalent)‡						-	340,084	340,084	340,084	340,084	340,084	340,084	340,084	340,084
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
Shell	Air Sealing	2,422	2,422	2,279	2,279	2,279	2,279	2,279	2,279	2,279	2,279	2,279	2,279
Shell	Insulation: Attic	2,086	2,086	2,125	2,125	2,125	2,125	2,125	2,125	2,125	2,125	2,125	2,125
Shell	Insulation: Band Joist	210	210	198	198	198	198	198	198	198	198	198	198
Shell	Insulation: Crawl Space	26	26	27	27	27	27	27	27	27	27	27	27
Shell	Insulation: Dense Pack	832	832	788	788	788	788	788	788	788	788	788	788
Shell	Insulation: Foundation	387	387	369	369	369	369	369	369	369	369	369	369
Shell	Insulation: Injection Foam	3,139	3,139	2,974	2,974	2,974	2,974	2,974	2,974	2,974	2,974	2,974	2,974
Consumer Electronics	Advanced Power Strip												
HVAC	Bathroom Fan												
HVAC	Programmable Thermostat												
HVAC	Advanced Thermostat	1,503	1,503	1,503									
Water	Gas Pipe Insulation	56	56	56	56	56	56	56					
Lighting	LED: Exterior												
Lighting	LED: Interior Omnidirectional												
Lighting	LED: Interior Specialty												
Hot Water	Bathroom Aerator	31	31										
Hot Water	Kitchen Aerator	74	74										
Hot Water	Showerhead	710	710										
CY2019 Program Total Gas Contribution to CPAS (Therms)		11,478	11,478	10,319	8,816	8,816	8,816	8,816	8,760	8,760	8,760	8,760	8,760
CY2019 Program Total Gas Contribution to CPAS (kWh Equivalent)‡		336,432	336,432	302,454	258,387	258,387	258,387	258,387	256,750	256,750	256,750	256,750	256,750
Historic Program Total Gas Contribution to CPAS (kWh Equivalent)‡§													
Program Total Gas CPAS (kWh Equivalent)‡		336,432	336,432	302,454	258,387	258,387	258,387	258,387	256,750	256,750	256,750	256,750	256,750
CY2019 Program Incremental Expiring Gas Savings (Therms)||		125	-	1,159	1,503	-	-	-	56	-	-	-	-
CY2019 Program Incremental Expiring Gas Savings (kWh Equivalent)‡||		3,653	-	33,978	44,067	-	-	-	1,636	-	-	-	-
Historic Program Incremental Expiring Gas Savings (kWh Equivalent)‡§||		-	-	-	-	-	-	-	-	-	-	-	-
Program Total Incremental Expiring Gas Savings (kWh Equivalent)‡||		3,653	-	33,978	44,067	-	-	-	1,636	-	-	-	-

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
Shell	Air Sealing	20.0	79,975	1.00	1,542,595		79,975	79,975	79,975	79,975	79,975	79,975	79,975	79,975
Shell	Insulation: Attic	20.0	65,971	1.00	1,326,148		65,971	65,971	65,971	65,971	65,971	65,971	65,971	65,971
Shell	Insulation: Band Joist	20.0	6,611	1.00	127,778		6,611	6,611	6,611	6,611	6,611	6,611	6,611	6,611
Shell	Insulation: Crawl Space	20.0	813	1.00	16,343		813	813	813	813	813	813	813	813
Shell	Insulation: Dense Pack	20.0	26,221	1.00	509,346		26,221	26,221	26,221	26,221	26,221	26,221	26,221	26,221
Shell	Insulation: Foundation	20.0	12,140	1.00	236,276		12,140	12,140	12,140	12,140	12,140	12,140	12,140	12,140
Shell	Insulation: Injection Foam	20.0	99,004	1.00	1,923,109		99,004	99,004	99,004	99,004	99,004	99,004	99,004	99,004
Consumer Electronics	Advanced Power Strip	7.0	1,067	1.00	7,466		1,067	1,067	1,067	1,067	1,067	1,067	1,067	
HVAC	Bathroom Fan	19.0	776	1.00	14,741		776	776	776	776	776	776	776	776
HVAC	Programmable Thermostat	8.0	3,767	1.00	30,138		3,767	3,767	3,767	3,767	3,767	3,767	3,767	3,767
HVAC	Advanced Thermostat	11.0	47,385	1.00	473,847		47,385	47,385	47,385	47,385	47,385	47,385	47,385	47,385
Water	Gas Pipe Insulation	15.0	1,636	1.00	24,545		1,636	1,636	1,636	1,636	1,636	1,636	1,636	1,636
Lighting	LED: Exterior	6.1	3,753	1.00	13,384		3,753	3,753	1,434	1,434	1,434	1,434	143	
Lighting	LED: Interior Omnidirectional	10.0	16,635	1.00	70,803		16,635	16,635	4,692	4,692	4,692	4,692	4,692	4,692
Lighting	LED: Interior Specialty	10.0	15,534	1.00	87,282		15,534	15,534	15,534	15,534	15,534	1,922	1,922	1,922
Hot Water	Bathroom Aerator	10.0	988	1.00	9,883		988	988	988	988	988	988	988	988
Hot Water	Kitchen Aerator	10.0	2,334	1.00	23,337		2,334	2,334	2,334	2,334	2,334	2,334	2,334	2,334
Hot Water	Showerhead	10.0	23,694	1.00	236,935		23,694	23,694	23,694	23,694	23,694	23,694	23,694	23,694
CY2019 Program Total Contribution to CPAS			408,304		6,673,955		408,304	408,304	394,041	394,041	394,041	380,429	379,139	377,929
Historic Program Total Contribution to CPAS‡						-	-	-	-	-	-	-	-	-
Program Total CPAS						-	408,304	408,304	394,041	394,041	394,041	380,429	379,139	377,929
CY2019 Program Incremental Expiring Savings§								-	14,263	-	-	13,612	1,290	1,210
Historic Program Incremental Expiring Savings‡§							-	-	-	-	-	-	-	-
Program Total Incremental Expiring Savings§							-	-	14,263	-	-	13,612	1,290	1,210

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Shell	Air Sealing	79,975	79,975	74,284	74,284	74,284	74,284	74,284	74,284	74,284	74,284	74,284	74,284
Shell	Insulation: Attic	65,971	65,971	66,643	66,643	66,643	66,643	66,643	66,643	66,643	66,643	66,643	66,643
Shell	Insulation: Band Joist	6,611	6,611	6,167	6,167	6,167	6,167	6,167	6,167	6,167	6,167	6,167	6,167
Shell	Insulation: Crawl Space	813	813	821	821	821	821	821	821	821	821	821	821
Shell	Insulation: Dense Pack	26,221	26,221	24,714	24,714	24,714	24,714	24,714	24,714	24,714	24,714	24,714	24,714
Shell	Insulation: Foundation	12,140	12,140	11,487	11,487	11,487	11,487	11,487	11,487	11,487	11,487	11,487	11,487
Shell	Insulation: Injection Foam	99,004	99,004	93,306	93,306	93,306	93,306	93,306	93,306	93,306	93,306	93,306	93,306
Consumer Electronics	Advanced Power Strip												
HVAC	Bathroom Fan	776	776	776	776	776	776	776	776	776	776	776	
HVAC	Programmable Thermostat												
HVAC	Advanced Thermostat	47,385	47,385										
Water	Gas Pipe Insulation	1,636	1,636	1,636	1,636	1,636	1,636	1,636					
Lighting	LED: Exterior												
Lighting	LED: Interior Omnidirectional	4,692	4,692										
Lighting	LED: Interior Specialty	1,922	1,922										
Hot Water	Bathroom Aerator	988	988										
Hot Water	Kitchen Aerator	2,334	2,334										
Hot Water	Showerhead	23,694	23,694										
CY2019 Program Total Contribution to CPAS		374,162	374,162	279,836	279,836	279,836	279,836	279,836	278,199	278,199	278,199	278,199	277,424
Historic Program Total Contribution to CPAS‡		-	-	-	-	-	-	-	-	-	-	-	-
Program Total CPAS		374,162	374,162	279,836	279,836	279,836	279,836	279,836	278,199	278,199	278,199	278,199	277,424
CY2019 Program Incremental Expiring Savings§		3,767	-	94,326	-	-	-	-	1,636	-	-	-	776
Historic Program Incremental Expiring Savings‡§		-	-	-	-	-	-	-	-	-	-	-	-
Program Total Incremental Expiring Savings§		3,767	-	94,326	-	-	-	-	1,636	-	-	-	776

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.

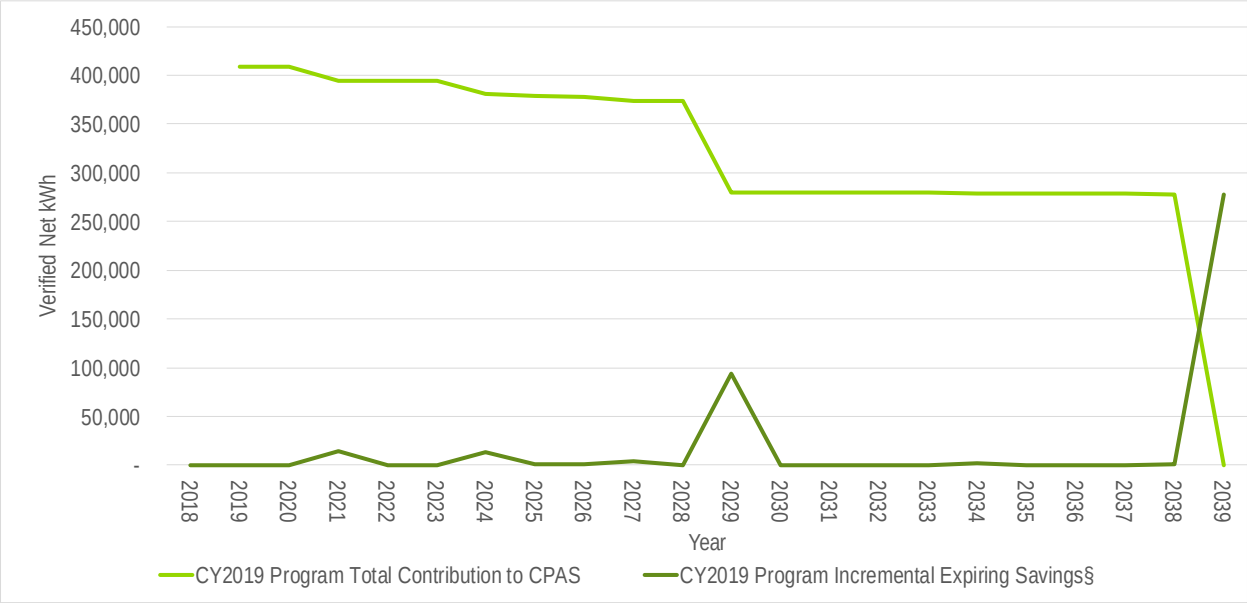
† Lifetime savings are the sum of CPAS savings through the EUL.

‡ 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

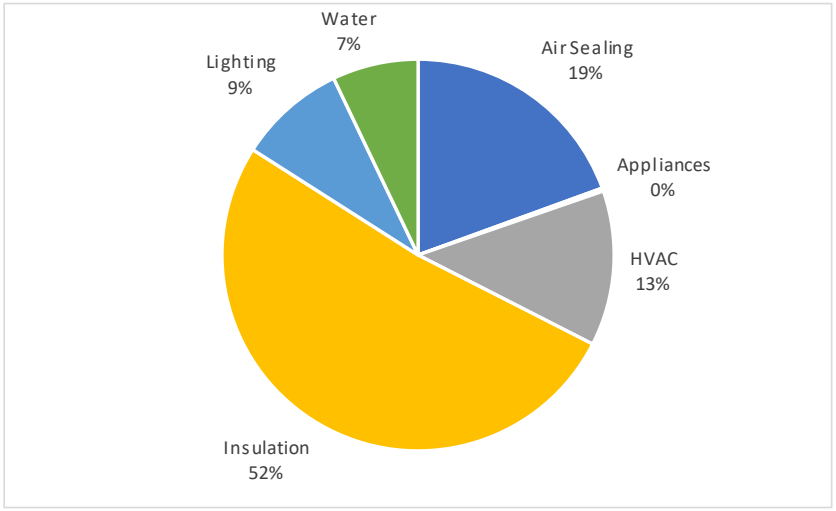


* Expiring savings are equal to CPAS Y_{n-1} - CPAS Y_n
Source: Evaluation team analysis

5. Pilot Savings by Measure

The IEPD Pilot includes 45 measures allocated to six different categories as shown in the following tables. The two Shell measures - Air Sealing and Insulation - contributed the most savings (see Figure 5-1), representing 71% of the pilot's savings counting gas savings converted to kWh.

Figure 5-1. Verified Net Savings by Measure – Electric



Source: ComEd tracking data and evaluation team analysis

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)
Shell	Air Sealing	9,015	1.00	8,991	1.00	8,991	20.0
Shell	Insulation: Attic	4,839	1.00	4,829	1.00	4,829	20.0
Shell	Insulation: Band Joist	450	1.00	448	1.00	448	20.0
Shell	Insulation: Crawl Space	37	1.02	38	1.00	38	20.0
Shell	Insulation: Dense Pack	2,272	0.81	1,832	1.00	1,832	20.0
Shell	Insulation: Foundation	795	0.99	790	1.00	790	20.0
Shell	Insulation: Injection Foam	8,575	0.82	6,998	1.00	6,998	20.0
Consumer Electronics	Advanced Power Strip	1,065	1.00	1,067	1.00	1,067	7.0
HVAC	Bathroom Fan	855	0.91	776	1.00	776	19.0
HVAC	Programmable Thermostat	112	1.02	115	1.00	115	8.0
HVAC	Advanced Thermostat	4,027	0.82	3,318	1.00	3,318	11.0
Water	Gas Pipe Insulation	0		0	1.00	0	15.0
Lighting	LED: Exterior	3,752	1.00	3,753	1.00	3,753	6.1
Lighting	LED: Interior Omnidirectional	16,939	0.98	16,635	1.00	16,635	10.0
Lighting	LED: Interior Specialty	15,819	0.98	15,534	1.00	15,534	10.0
Hot Water	Bathroom Aerator	19	3.53	68	1.00	68	10.0
Hot Water	Kitchen Aerator	65	2.44	159	1.00	159	10.0
Hot Water	Showerhead	2,070	1.39	2,871	1.00	2,871	10.0
	Total	70,708	0.96	68,220	1.00	68,220	13.4

NA = Not applicable

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

Note: The savings in this table includes secondary electric energy (kWh) savings from water supply and wastewater treatment plants for measures claimed by ComEd.

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)
Shell	Air Sealing	NR	NA	12.19	1.00	12.19
Shell	Insulation: Attic	NR	NA	5.10	1.00	5.10
Shell	Insulation: Band Joist	NR	NA	0.48	1.00	0.48
Shell	Insulation: Crawl Space	NR	NA	0.03	1.00	0.03
Shell	Insulation: Dense Pack	NR	NA	2.05	1.00	2.05
Shell	Insulation: Foundation	NR	NA	0.85	1.00	0.85
Shell	Insulation: Injection Foam	NR	NA	7.41	1.00	7.41
Consumer Electronics	Advanced Power Strip	NR	NA	0.15	1.00	0.15
HVAC	Bathroom Fan	NR	NA	0.71	1.00	0.71
HVAC	Programmable Thermostat	NR	NA	0.00	1.00	0.00
HVAC	Advanced Thermostat	NR	NA	4.65	1.00	4.65
Water	Gas Pipe Insulation	NR	NA	0.00	1.00	0.00
Lighting	LED: Exterior	NR	NA	1.52	1.00	1.52
Lighting	LED: Interior Omnidirectional	NR	NA	16.29	1.00	16.29
Lighting	LED: Interior Specialty	NR	NA	21.71	1.00	21.71
Hot Water	Bathroom Aerator	NR	NA	1.45	1.00	1.45
Hot Water	Kitchen Aerator	NR	NA	0.65	1.00	0.65
Hot Water	Showerhead	NR	NA	8.12	1.00	8.12
	Total	0.00	NA	83.37	1.00	83.37

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)
Shell	Air Sealing	5.45	1.04	5.68	1.00	5.68
Shell	Insulation: Attic	2.29	1.04	2.38	1.00	2.38
Shell	Insulation: Band Joist	0.21	1.06	0.22	1.00	0.22
Shell	Insulation: Crawl Space	0.01	1.50	0.01	1.00	0.01
Shell	Insulation: Dense Pack	0.90	1.06	0.95	1.00	0.95
Shell	Insulation: Foundation	0.36	1.08	0.39	1.00	0.39
Shell	Insulation: Injection Foam	4.39	0.79	3.45	1.00	3.45
Consumer Electronics	Advanced Power Strip	0.12	1.00	0.12	1.00	0.12
HVAC	Bathroom Fan	0.11	0.91	0.10	1.00	0.10
HVAC	Programmable Thermostat	0.00		0.00	1.00	0.00
HVAC	Advanced Thermostat	1.38	0.79	1.08	1.00	1.08
Water	Gas Pipe Insulation	0.00		0.00	1.00	0.00
Lighting	LED: Exterior	0.41	1.00	0.41	1.00	0.41
Lighting	LED: Interior Omnidirectional	2.09	1.00	2.09	1.00	2.09
Lighting	LED: Interior Specialty	2.37	1.00	2.37	1.00	2.37
Hot Water	Bathroom Aerator	0.03	1.07	0.03	1.00	0.03
Hot Water	Kitchen Aerator	0.01	1.01	0.01	1.00	0.01
Hot Water	Showerhead	0.23	1.00	0.23	1.00	0.23
	Total	20.35	0.96	19.54	1.00	19.54

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)
Shell	Air Sealing	2,422	1.00	2,422	1.00	2,422	20.0
Shell	Insulation: Attic	2,086	1.00	2,086	1.00	2,086	20.0
Shell	Insulation: Band Joist	197	1.07	210	1.00	210	20.0
Shell	Insulation: Crawl Space	26	1.00	26	1.00	26	20.0
Shell	Insulation: Dense Pack	818	1.02	832	1.00	832	20.0
Shell	Insulation: Foundation	387	1.00	387	1.00	387	20.0
Shell	Insulation: Injection Foam	3,085	1.02	3,139	1.00	3,139	20.0
Consumer Electronics	Advanced Power Strip	0		0	1.00	0	7.0
HVAC	Bathroom Fan	0		0	1.00	0	19.0
HVAC	Programmable Thermostat	125	1.00	125	1.00	125	8.0
HVAC	Advanced Thermostat	1,504	1.00	1,503	1.00	1,503	11.0
Water	Gas Pipe Insulation	56	1.00	56	1.00	56	15.0
Lighting	LED: Exterior	0		0	1.00	0	6.1
Lighting	LED: Interior Omnidirectional	0		0	1.00	0	10.0
Lighting	LED: Interior Specialty	0		0	1.00	0	10.0
Hot Water	Bathroom Aerator	31	1.00	31	1.00	31	10.0
Hot Water	Kitchen Aerator	74	1.00	74	1.00	74	10.0
Hot Water	Showerhead	816	0.87	710	1.00	710	10.0
	Total Therms	11,627	1.00	11,603	NA	11,603	NA
	Total kWh Converted From Therms†	340,802	1.00	340,084	NA	340,084	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)
Shell	Air Sealing	80,001	1.00	79,975	1.00	79,975
Shell	Insulation: Attic	65,985	1.00	65,971	1.00	65,971
Shell	Insulation: Band Joist	6,226	1.06	6,611	1.00	6,611
Shell	Insulation: Crawl Space	813	1.00	813	1.00	813
Shell	Insulation: Dense Pack	26,241	1.00	26,221	1.00	26,221
Shell	Insulation: Foundation	12,148	1.00	12,140	1.00	12,140
Shell	Insulation: Injection Foam	98,995	1.00	99,004	1.00	99,004
Consumer Electronics	Advanced Power Strip	1,066	1.00	1,067	1.00	1,067
HVAC	Bathroom Fan	856	0.91	776	1.00	776
HVAC	Programmable Thermostat	3,768	1.00	3,767	1.00	3,767
HVAC	Advanced Thermostat	48,115	0.98	47,385	1.00	47,385
Water	Gas Pipe Insulation	1,630	1.00	1,636	1.00	1,636
Lighting	LED: Exterior	3,753	1.00	3,753	1.00	3,753
Lighting	LED: Interior Omnidirectional	16,941	0.98	16,635	1.00	16,635
Lighting	LED: Interior Specialty	15,820	0.98	15,534	1.00	15,534
Hot Water	Bathroom Aerator	940	1.05	988	1.00	988
Hot Water	Kitchen Aerator	2,240	1.04	2,334	1.00	2,334
Hot Water	Showerhead	25,970	0.91	23,694	1.00	23,694
	Total†	411,510	0.99	408,304	1.00	408,304

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

The IEPD Pilot includes measures that save water. That reduction in water produces secondary kWh savings from water supply and wastewater treatment. Table 5-6 shows the secondary measure level savings. The savings in this table are included within the electricity savings in the previous tables in this section.

Table 5-6. Secondary Energy Savings from Water Reduction by Measure – Electric

End Use Type	Research Category	Ex Ante Annual Water Savings (gallons)	Ex Ante Gross Savings (kWh)	Verified Gross Realization Rate (RR_{water})	Verified Gross Savings (kWh)	NTG*	Verified Net Savings (kWh)
Shell	Air Sealing	NR	NR	NA	0	1.00	0
Shell	Insulation: Attic	NR	NR	NA	0	1.00	0
Shell	Insulation: Band Joist	NR	NR	NA	0	1.00	0
Shell	Insulation: Crawl Space	NR	NR	NA	0	1.00	0
Shell	Insulation: Dense Pack	NR	NR	NA	0	1.00	0
Shell	Insulation: Foundation	NR	NR	NA	0	1.00	0
Shell	Insulation: Injection Foam	NR	NR	NA	0	1.00	0
Consumer Electronics	Advanced Power Strip	NR	NR	NA	0	1.00	0
HVAC	Bathroom Fan	NR	NR	NA	0	1.00	0
HVAC	Programmable Thermostat	NR	NR	NA	0	1.00	0
HVAC	Advanced Thermostat	NR	NR	NA	0	1.00	0
Water	Gas Pipe Insulation	NR	NR	NA	0	1.00	0
Lighting	LED: Exterior	NR	NR	NA	0	1.00	0
Lighting	LED: Interior Omnidirectional	NR	NR	NA	0	1.00	0
Lighting	LED: Interior Specialty	NR	NR	NA	0	1.00	0
Hot Water	Bathroom Aerator	NR	NR	NA	47	1.00	47
Hot Water	Kitchen Aerator	NR	NR	NA	93	1.00	93
Hot Water	Showerhead	NR	NR	NA	799	1.00	799
	Total	**NR**	**NR**	**NA**	**940**	**1.00**	**940**

NA = Not applicable
Note: The savings in this table reflects only secondary electric energy (kWh) savings from water supply and wastewater treatment plants for measures claimed by ComEd, not those claimed by gas utilities.
* 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

6. Impact Analysis Findings and Recommendations

6.1 Impact Parameter Estimates

Guidehouse used the savings algorithms and inputs deemed by the TRM v7.0 and TRM v7.0 Errata, where applicable, to calculate the energy and demand savings for each measure installed as a part of the pilot in CY2019. Table 6-1 lists all the inputs used to calculate the savings along with its source. A more detailed breakdown of the unit energy and demand savings for each measure can be found in Section 8 (Appendix 2). The lifetime energy savings are estimating by multiplying the verified savings by the effective useful life for each measure.

The results are shown in the following table.

Table 6-1. Savings Parameters

Measure	Value	Gross Savings Input Parameters	Deemed or Evaluated?	Source *
Air Sealing	Varies	ΔCFM50, N_Cool, CDD, DUA, ηCool, ADJAirSealingCool, N_heat, ADJAirSealingGasHeat, ADJAirSealingHeatFan, FLH_Cooling, CF	Deemed and custom	TRM v7.0 – Section 5.6.1
Insulation	Varies	A_wall, Framing_factor_wall, HDD, ηHeat, ADJWallHeat, CDD, DUA, ηCool, ADJ WallCool, %AC_IE, Fe, EFLH_Cooling, CF	Deemed and custom	TRM v7.0 – Sections 5.6.2 through 5.6.6
Pipe Insulation	Varies	R_exist, R_new, L, C, ΔT, η_DHW	Deemed and custom	TRM v7.0 – Sections 5.4.1 and 5.3.2
Programmable/Advanced Thermostats	Varies	%Electric Heat, Elec_Heating_Consumption, Heating_Reduction, HF, ISR, F_e, NTG†	Deemed and custom	TRM v7.0 – Section 5.3.11
Aerators, Bath and Kitchen	Varies	%DHW, GPM_base, GPM_low, L_base, L_low, Household, FPH, DF, EPG_electric, ISR, Usage, Hours, CF	Deemed	TRM v7.0 – Section 5.4.4 TRM v7.0 – Errata
LED Lighting	Varies	Watts_EE, Watts_Base, Hours, WHF_e, ISR, WHF_d, CF	Deemed and Custom	TRM v7.0 – Sections 5.5.6, 5.5.8 and 5.5.9
Showerhead	Varies	%DHW, GPM_base, GPM_low, L_base, L_low, Household, SPH, SPCD, EPG_electric, ISR, Hours, CF, NTG†	Deemed	TRM v7.0 – Section 5.4.5 TRM v7.0 – Errata
Advanced Power Strip (Tier 1)	Varies	kWh, ISR, Hours, CF	Deemed	TRM v7.0, 5.2.1

* 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 IL SAG web site here: https://www.ilsag.info/ntg_2019.

6.2 Other Impact Findings and Recommendations

The CY2019 IEPD Pilot achieved 408,304 kWh of verified net energy savings; the overall pilot realization rate was 99%. The evaluation team developed several recommendations based on findings from the CY2019 evaluation.

6.2.1 Climate Zone (Air Sealing and Insulation)

Finding 1. For Air sealing and Insulation Measures, the ex ante calculations use Climate Zone 2 specific input assumptions. After reviewing the zip codes provided in the tracking data, Guidehouse determined that some projects were implemented in Climate Zone 1. The verified energy and demand savings for these projects use the appropriate climate zone specific inputs.

Recommendation 1. Guidehouse recommends that the IC use zip codes to determine the climate zone specific inputs to increase the accuracy of the savings calculations.

6.2.2 Insulation

Finding 2. For the insulation measures listed below, the verified per unit savings values are consistent with the values in the CY2019 ex ante calculator provided earlier in the year. However, the ex ante savings provided in the ComEd tracking data did not align with the values provided in the ex ante calculator. Listed below are the insulation measures and the corresponding ranges of the realization rates (RR):

- Attic insulation – kW and kWh RR ranges from 99% to 104%
- Band joist insulation – kW and kWh RR ranges from 99% to 106%, Therm RR is 107%
- Crawl space ceiling insulation – kW and kWh RR ranges from 96% to 152%
- Dense pack wall insulation – kW and kWh RR are 106% and 81% respectively, Therm RR is 102%
- Foundation insulation – kW and kWh RR ranges from 98% to 108%
- Injection foam insulation – kW and kWh RR are 79% and 82% respectively, Therm RR is 102%

Recommendation 2. Guidehouse recommends supplying the source of the ex ante values in the tracking data or updating the ex ante values according to the CY2019 ex ante calculator.

Finding 3. The gas savings realization rate for gas pipe insulation of the hot water boiler outlet is 108%. Guidehouse found that the per unit gas saving therms are hardcoded in the IC Calculator, tab "Algorithms-Gas." Guidehouse verified per unit gas savings for this measure and could not determine the source of the discrepancy.
Recommendation 3. Guidehouse recommends supplying the source of the ex ante values used in the calculator.

6.2.3 HVAC

Finding 4. The energy and demand realization rates for standard use Energy Star bathroom exhaust fans are 91%. When calculating savings, the IC applied input values deemed by TRM v7.0 category **"**Standard Usage, Average CFM 92.4"; however, in the case of $\eta_{EFFICIENT}$ (the average efficacy for efficient fan in CFM/watts), the IC used an unknown value of 6.2 versus the deemed value of 5.3.
Recommendation 4. While reviewing the CY2019 ex ante calculations Guidehouse requested the source of the $\eta_{EFFICIENT}$ value being used in the ex ante calculations but it was not provided. Guidehouse requests the IC provide a source for their 6.2 value or use the 5.3 value deemed by TRM v7.0.

Finding 5. The energy realization rates for the programmable gas thermostat (furnace) is 101%. The energy savings calculation is dependent on the gas savings calculation and the energy savings discrepancy is likely due to rounding differences. Guidehouse's verified per unit savings values are consistent with the values in the CY2019 ex ante calculator provided earlier in the year.
Recommendation 5. Guidehouse recommends the IC report the energy and demand savings at the same level of precision in the tracking data and the ex ante calculator.

Finding 6. The electric and gas realization rates for the advanced gas thermostat are 82% and 79%, respectively. The IC applied a custom value for full load cooling hours (FLH); however, the TRM does not allow custom values in this case. Conversely, the IC used a TRM deemed value for capacity and seasonal energy efficiency ratio (SEER). In the case of capacity and SEER, the TRM recommends "Use actual when program delivery allows size of AC unit to be known".

Recommendation 6. The IC should use the TRM v7.0 deemed full load hours and track the actual capacity and SEER values moving forward.

6.2.4 Water

Finding 7. The electric energy realization rate for bathroom and kitchen aerators is 106% and 105%, respectively. The realization rate is greater than 100% because the implementer did not account for secondary electric energy savings from water supply and wastewater treatment. Specifically, the tracking data does not calculate the secondary electric energy (kWh) savings from water supply and wastewater treatment plants for measures claimed by ComEd. The additional verified savings increased the gross savings realization rates for the aerator measures.
Recommendation 7. Guidehouse recommends the pilot claim secondary energy savings associated with water supply and wastewater treatment for water efficiency measures. The tracking data should produce the eligible secondary ex ante kWh savings from gallons of water reported in the tracking data using the TRM guidelines and algorithm on the conversion of gallons of water to kWh.

Finding 8. The gas realization rates for the gas showerheads is 87%. Guidehouse's verified per unit savings values are consistent with the values in the CY2019 ex ante calculator provided earlier in the year, but the ex ante savings provided in the ComEd tracking data did not align with the values provided in the ex ante calculator.
Recommendation 8. Guidehouse recommends providing the source of the ex ante values provided in the tracking data or update them with the values in the CY2019 ex ante calculator.

6.2.5 Lighting

Finding 9. The electric energy realization rate for both interior omnidirectional and interior specialty lighting is 98%. The realization rate is less than 100% because the implementer did not account for the electric heating penalty. The verified savings account for heating penalty reduction from electric resistance heating interactive effects due to projects or measures installed in electrically heated buildings. This approach is consistent with the TRM v7.0 instructions. The heating system type was not recorded in the tracking data submitted for evaluation, though it was submitted as a separate addendum file.
Recommendation 9. Guidehouse recommends the IC reports savings from lighting measures that include the penalty for electrically heated buildings. . The tracking data should include a field to track the whether the facility heating system is electric or gas. Also, considering that the evaluation process is now reporting electric heating penalties, we recommend that the program tracks electric heating penalties for affected measures and account for those in ex ante gross and net savings.

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 and the TRM v7.0 Errata, where applicable.
2. Validating 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 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). For the IEPD Pilot, the NTG is deemed as 1.0 through the SAG consensus process.

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

- Final CY2019 tracking data: "IE Wx Program Design Pilots 2019 Calculator Data 01.27.2020.xlsx"
- Illinois Technical Reference Manual (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 2019 IE Program Design Pilot Savings - Guidehouse Review 2019-11-22.xlsx" as well as "ComEd 2019-2020 IE Design Pilot Savings Calculator - Franklin - 2019-12-28.xlsx"

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, program 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)
Shell	Air Sealing	CFM_50	37,685	20.0	No	8,991	5.68	2,422	0	0	1.00	1.00	1.00	8,991	5.68	2,422	0	0
Shell	Insulation: Attic	Sq Ft	31,159	20.0	No	4,829	2.38	2,086	0	0	1.00	1.00	1.00	4,829	2.38	2,086	0	0
Shell	Insulation: Band Joist	Sq Ft	1,440	20.0	No	448	0.22	210	0	0	1.00	1.00	1.00	448	0.22	210	0	0
Shell	Insulation: Crawl Space	Sq Ft	236	20.0	No	38	0.01	26	0	0	1.00	1.00	1.00	38	0.01	26	0	0
Shell	Insulation: Dense Pack	Sq Ft	7,367	20.0	No	1,832	0.95	832	0	0	1.00	1.00	1.00	1,832	0.95	832	0	0
Shell	Insulation: Foundation	Sq Ft	535	20.0	No	790	0.39	387	0	0	1.00	1.00	1.00	790	0.39	387	0	0
Shell	Insulation: Injection Foam	Sq Ft	27,792	20.0	No	6,998	3.45	3,139	0	0	1.00	1.00	1.00	6,998	3.45	3,139	0	0
Consumer Electronics	Advanced Power Strip	Each	15	7.0	No	1,067	0.12	0	0	0	1.00	1.00	1.00	1,067	0.12	0	0	0
HVAC	Bathroom Fan	Each	29	19.0	No	776	0.10	0	0	0	1.00	1.00	1.00	776	0.10	0	0	0
HVAC	Programmable Thermostat	Each	2	8.0	No	115	0.00	125	0	0	1.00	1.00	1.00	115	0.00	125	0	0
HVAC	Advanced Thermostat	Each	17	11.0	No	3,318	1.08	1,503	0	0	1.00	1.00	1.00	3,318	1.08	1,503	0	0
Water	Gas Pipe Insulation	Ln Ft	126	15.0	No	0	0.00	56	0	0	1.00	1.00	1.00	0	0.00	56	0	0
Lighting	LED: Exterior	Lamps	30	6.1	No	3,753	0.41	0	0	0	1.00	1.00	1.00	3,753	0.41	0	0	0
Lighting	LED: Interior Omnidirection	Lamps	437	10.0	No	16,635	2.09	0	0	-363	1.00	1.00	1.00	16,635	2.09	0	0	-363
Lighting	LED: Interior Specialty	Lamps	472	10.0	No	15,534	2.37	0	0	-339	1.00	1.00	1.00	15,534	2.37	0	0	-339
Hot Water	Bathroom Aerator	Each	37	10.0	No	20	0.03	31	0	0	1.00	1.00	1.00	20	0.03	31	0	0
Hot Water	Kitchen Aerator	Each	27	10.0	No	67	0.01	74	0	0	1.00	1.00	1.00	67	0.01	74	0	0
Hot Water	Showerhead	Each	90	10.0	No	2,071	0.23	710	0	0	1.00	1.00	1.00	2,071	0.23	710	0	0
	Total			13.4		67,280	19.54	11,603	0	-701	1.00	1.00	1.00	67,280	19.54	11,603	0	-701

NA = Not applicable

Note: To avoid double counting, the verified gross kWh and net kWh used in the TRC analysis excludes secondary energy savings from water reduction measures. Table 8-1 represents the kWh savings from Table 5-1 minus those shown in Table 5-6)

* 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 to Table 4-3).

Source: ComEd tracking data and evaluation team analysis