Guidehouse

ComEd Small Business Kits Impact Evaluation Report

Energy Efficiency / Demand Response Plan:
Program Year 2020 (CY2020)
(1/1/2020-12/31/2020)

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1. Introduction

This report presents results from the CY2020 impact evaluation of ComEd's Small Business Kits Program. It summarizes the total energy and demand impacts for the program broken out by relevant measure and program structure details. The appendices provide the impact analysis methodology and details of the total resource cost inputs. CY2020 covers January 1, 2020 through December 31, 2020.

2. Program Description

The ComEd Small Business Kits Program aims to cost-effectively capture electric savings in small commercial facilities in ComEd's service territory by targeting small businesses, restaurants, public offices, and fire stations (the office kit was removed from the 2020 program and the fire station kit was added). This is an opt-in program where customers must request to receive an energy efficiency kit that includes self-install measures. The program was formerly known as the Rural Small Business EE Kit program and is under that name in the spreadsheet documenting the CY2020 NTG values.[1]

To participate in the program, the ComEd customer must have a peak electric load of 100 kW or less and take delivery from ComEd, regardless of their choice of electric supplier. The customer cannot have participated in the current ComEd Small Business Program. Franklin Energy is responsible for implementing the program and kits are delivered by direct mail. Customers can order a kit via telephone call, website request, or email request. Most of the kit orders are received by outbound calling. The kits contain products selected for the specific business types and detailed installation instructions. A Franklin Energy representative follows up with a random sample of customers within 8 weeks of energy kit receipt to verify that each customer received the kit, confirm what measures were installed or learn if the customer plans to install, answer any questions about the measures or program, and determine customer satisfaction with the products and program.

The program had 7,312 participants in CY2020 and distributed 65,808 measures as Table 2-1 and Figure 2-1 show.

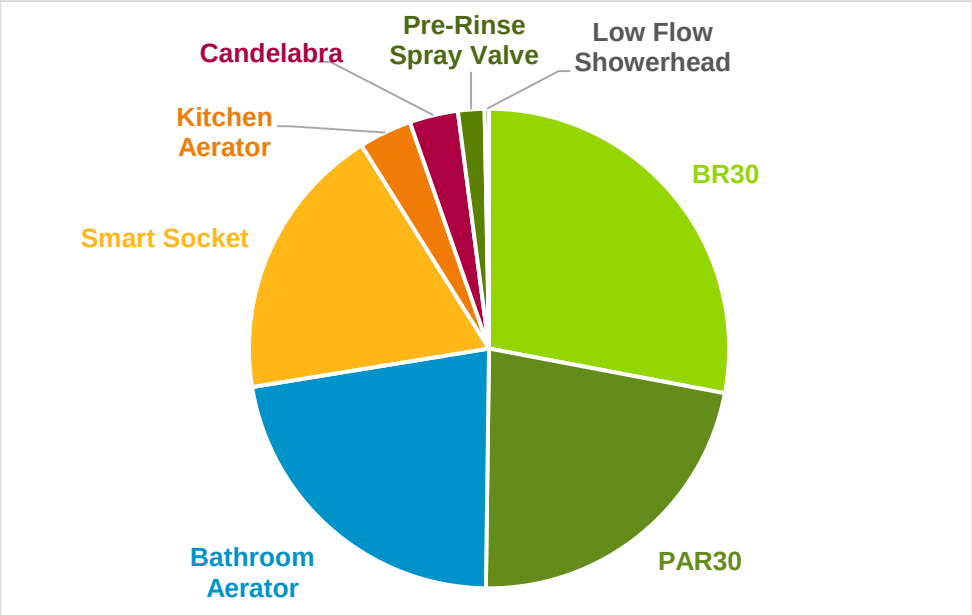
[1] https://www.ilsag.info/ntg_2020.

Table 2-1. CY2020 Volumetric Findings Detail

Participation	Fire Station	General Kit – Private	General Kit – Public	Restaurant	Total
Number of Measures/Kit	5	4	4	5	18
Number of Total Kits Distributed	97	5,852	287	1,076	7,312
Number of BR30 8W LEDs	0	17,556	861	0	18,417
Number of PAR30 14W LEDs	194	11,704	574	2,152	14,624
Number of Candelabra 5W LEDs	0	0	0	2,152	2,152
Number of Bathroom Aerators Distributed	194	11,704	574	2,152	14,624
Number of Kitchen Aerators Distributed	194	0	0	2,152	2,346
Number of Pre-Rinse Spray Valves Distributed	97	0	0	1,076	1,173
Number of Low Flow Showerheads Distributed	194	0	0	0	194
Number of Smart Sockets Distributed	0	11,704	574	0	12,278
Number of Total Measure Distributed	873	52,668	2,583	9,684	65,808

Source: ComEd tracking data and evaluation team analysis

Figure 2-1. Measure Types Installed



Source: ComEd tracking data and evaluation team analysis

3. Program Savings Detail

Table 3-1 summarizes the incremental energy and demand savings the Small Business Kits Program achieved in CY2020. The gas savings are only those that ComEd may be able to claim, which excludes savings gas utilities claim either through joint or non-joint programs.[2]

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

Table 3-1. CY2020 Total Annual Incremental Electric Savings

Savings Category	Energy Savings (kWh)	Summer Peak* Demand Savings (kW)
Electricity		
Ex Ante Gross Savings ‡	6,452,843	1,352
Program Gross Realization Rate	0.92	0.99
Verified Gross Savings	5,945,770	1,334
Program Net-to-Gross Ratio (NTG)	0.97	0.97
CY2018 Verified Net Carryover	213,464	52
CY2019 Verified Net Carryover	229,428	53
Verified Net Savings §	6,210,289	1,398
Converted from Gas†		
Ex Ante Gross Savings	1,383,614	NA
Program Gross Realization Rate	3.22	NA
Verified Gross Savings	4,452,722	NA
Program Net-to-Gross Ratio (NTG)	0.97	NA
Verified Net Savings	4,319,140	NA
Total Electric Plus Gas		
Ex Ante Gross Savings ‡	7,836,456	1,352
Program Gross Realization Rate	1.32	0.99
Verified Gross Savings	10,398,492	1,334
Program Net-to-Gross Ratio (NTG)	0.97	0.97
CY2018 Verified Net Carryover	213,464	52
CY2019 Verified Net Carryover	229,428	53
Verified Net Savings §	10,529,429	1,398

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 p.m.-5:00 p.m. Central Prevailing Time on non-holiday weekdays, June through August.
‡ Ex ante and verified gross savings exclude gross carryover savings from CY2018 and CY2019 bulb sales.
§ Verified net savings includes net carryover savings from CY2018 and CY2019.
† Gas savings converted to kilowatt-hours (kWh) by multiplying therms by 29.31 (which is based on 100,000 Btu/therm and 3,412 Btu/kWh). The evaluation determines which gas savings are 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 show the measure-specific and total verified gross savings for the Small Business Kits Program and the cumulative persisting annual savings (CPAS) for the measures installed in CY2020. Figure 4-1 shows the savings across the useful life of the measures. The electric CPAS across all measures installed in 2020 is 6,210,289 kWh (Table 4-1). The CY2020 gas contribution to CPAS (converted to equivalent electricity) is 4,319,140 kWh (Table 4-2). Adding the gas and electric contributions produces 10,529,429 kWh of total CY2020

contribution to CPAS (Table 4-3). The historic rows in each table are the CPAS contribution back to CY2018. The Program Total Electric CPAS and Program Total Gas CPAS rows are the sum of the CY2020 contribution and the historic contribution.

The ex ante savings did not include an estimate for carryover savings from light bulbs that were distributed in CY2018 and CY2019 but were installed in CY2020. The Guidehouse team included carryover for CY2018 and CY2019 into CY2020 in Table 4-1 through Table 4-3.

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

End Use Type	Research Category	EUL	CY2020 Verified Gross Savings (kWh)	NTG*	Lifetime Net Savings (kWh)†	Verified Net kWh Savings 2018	2019	2020	2021	2022	2023	2024	2025	2026
Lighting	BR30 LED 8 W - General Kit - Private	8.5	2,443,958	0.97	15,372,675			2,370,639	2,370,639	2,370,639	2,370,639	1,319,737	1,319,737	1,319,737
Lighting	PAR30 LED 14 W - General Kit - Private	8.5	1,699,639	0.97	10,690,854			1,648,649	1,648,649	1,648,649	1,648,649	917,805	917,805	917,805
Lighting	PAR30 LED 14 W - Restaurant	5.2	486,323	0.97	2,208,835			471,734	471,734	471,734	471,734	262,615	59,286	
Hot Water	Pre-rinse Spray Valve - Restaurant	5.0	429,251	0.97	2,081,869			416,374	416,374	416,374	416,374	416,374		
Lighting	Candelabra 5W - Restaurant	3.6	219,668	0.97	757,176			213,078	213,078	213,078	117,941			
Consumer Electronic	Smart Socket - General Kit - Private	7.0	175,651	0.97	1,192,668			170,381	170,381	170,381	170,381	170,381	170,381	170,381
Hot Water	Bath Aerator - Low Flow - General Kit - Private	10.0	104,887	0.97	1,017,404			101,740	101,740	101,740	101,740	101,740	101,740	101,740
Lighting	BR30 LED 8 W - General Kit - Public	8.1	103,132	0.97	628,257			100,038	100,038	100,038	100,038	55,691	55,691	55,691
Hot Water	Kitchen Aerator - Low Flow - Restaurant	10.0	82,310	0.97	798,407			79,841	79,841	79,841	79,841	79,841	79,841	79,841
Lighting	PAR30 LED 14 W - General Kit - Public	8.1	71,723	0.97	436,918			69,571	69,571	69,571	69,571	38,730	38,730	38,730
Hot Water	Bath Aerator - Low Flow - Restaurant	10.0	68,658	0.97	665,987			66,599	66,599	66,599	66,599	66,599	66,599	66,599
Lighting	PAR30 LED 14 W - Fire Station	8.1	28,172	0.97	171,615			27,326	27,326	27,326	27,326	15,213	15,213	15,213
Hot Water	Showerhead - Low Flow - Fire Station	10.0	15,481	0.97	150,162			15,016	15,016	15,016	15,016	15,016	15,016	15,016
Consumer Electronic	Smart Socket - General Kit - Public	7.0	8,614	0.97	58,492			8,356	8,356	8,356	8,356	8,356	8,356	8,356
Hot Water	Bath Aerator - Low Flow - General Kit - Public	10.0	5,286	0.97	51,278			5,128	5,128	5,128	5,128	5,128	5,128	5,128
Hot Water	Pre-rinse Spray Valve - Fire Station	5.0	1,375	0.97	6,668			1,334	1,334	1,334	1,334	1,334		
Hot Water	Kitchen Aerator - Low Flow - Fire Station	10.0	1,018	0.97	9,870			987	987	987	987	987	987	987
Hot Water	Bath Aerator - Low Flow - Fire Station	10.0	624	0.97	6,055			606	606	606	606	606	606	606
Carryover	CY2018 & CY2019 Carryover	10.9	486,561	0.91	2,024,832			442,892	442,892	442,892	442,892	31,792	30,664	30,664
CY2020 Program Total Electric Contribution to CPAS			6,432,331		38,330,023			6,210,289	6,210,289	6,210,289	6,115,152	3,507,944	2,885,780	2,826,494
Historic Program Total Electric Contribution to CPAS‡						2,049,602	8,426,683	8,364,314	6,929,852	6,929,852	6,714,994	2,923,072	2,866,749	2,778,810
Program Total Electric CPAS						2,049,602	8,426,683	14,574,603	13,140,141	13,140,141	12,830,146	6,431,016	5,752,529	5,605,304
CY2020 Program Incremental Expiring Electric Savings§									-	-	95,137	2,607,208	622,164	59,286
Historic Program Incremental Expiring Electric Savings‡§								62,369	1,434,462	-	214,858	3,791,922	56,323	87,939
Program Total Incremental Expiring Electric Savings§								62,369	1,434,462	-	309,995	6,399,130	678,487	147,225

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Lighting	BR30 LED 8 W - General Kit - Private	1,319,737	611,171										
Lighting	PAR30 LED 14 W - General Kit - Private	917,805	425,036										
Lighting	PAR30 LED 14 W - Restaurant												
Hot Water	Pre-rinse Spray Valve - Restaurant												
Lighting	Candelabra 5W - Restaurant												
Consumer Electronic	Smart Socket - General Kit - Private												
Hot Water	Bath Aerator - Low Flow - General Kit - Private	101,740	101,740	101,740									
Lighting	BR30 LED 8 W - General Kit - Public	55,691	5,338										
Hot Water	Kitchen Aerator - Low Flow - Restaurant	79,841	79,841	79,841									
Lighting	PAR30 LED 14 W - General Kit - Public	38,730	3,712										
Hot Water	Bath Aerator - Low Flow - Restaurant	66,599	66,599	66,599									
Lighting	PAR30 LED 14 W - Fire Station	15,213	1,458										
Hot Water	Showerhead - Low Flow - Fire Station	15,016	15,016	15,016									
Consumer Electronic	Smart Socket - General Kit - Public												
Hot Water	Bath Aerator - Low Flow - General Kit - Public	5,128	5,128	5,128									
Hot Water	Pre-rinse Spray Valve - Fire Station												
Hot Water	Kitchen Aerator - Low Flow - Fire Station	987	987	987									
Hot Water	Bath Aerator - Low Flow - Fire Station	606	606	606									
Carryover	CY2018 & CY2019 Carryover	27,213	26,847	25,113	21,561	19,803	19,803	19,803					
CY2020 Program Total Electric Contribution to CPAS		2,644,306	1,343,480	295,029	21,561	19,803	19,803	19,803	-	-	-	-	-
Historic Program Total Electric Contribution to CPAS‡		2,615,230	2,011,748	1,912,248	1,818,651	1,802,422	1,793,178	1,319,834					
Program Total Electric CPAS		5,259,536	3,355,228	2,207,277	1,840,212	1,822,225	1,812,981	1,339,637	-	-	-	-	-
CY2020 Program Incremental Expiring Electric Savings§		182,189	1,300,826	1,048,450	273,469	1,758	-	-	19,803	-	-	-	-
Historic Program Incremental Expiring Electric Savings‡§		163,580	603,482	99,500	93,597	16,229	9,244	473,344	1,319,834	-	-	-	-
Program Total Incremental Expiring Electric Savings§		345,769	1,904,308	1,147,950	367,066	17,987	9,244	473,344	1,339,637	-	-	-	-

Note: The green highlighted cell shows program total first year electric savings. The gray cells are blank, indicating values irrelevant to the CY2020 contribution to CPAS.

* A deemed value. Source: is found on the Illinois SAG website: https://www.ilsag.info/ntg_2020.

† Lifetime savings are the sum of CPAS savings through the effective useful life (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	CY2020 Verified Gross Savings (Therms)	NTG*	Lifetime Net Savings (Therms)†	Verified Net Therms Savings 2018	2019	2020	2021	2022	2023	2024	2025	2026
Lighting	BR30 LED 8 W - General Kit - Private	8.5	-	0.97	-									
Lighting	PAR30 LED 14 W - General Kit - Private	8.5	-	0.97	-									
Lighting	PAR30 LED 14 W - Restaurant	5.2	-	0.97	-									
Hot Water	Pre-rinse Spray Valve - Restaurant	5.0	77,193	0.97	374,384			74,877	74,877	74,877	74,877	74,877		
Lighting	Candelabra 5W - Restaurant	3.6	-	0.97	-									
Consumer Electronic	Smart Socket - General Kit - Private	7.0	-	0.97	-									
Hot Water	Bath Aerator - Low Flow - General Kit - Private	10.0	22,080	0.97	214,171			21,417	21,417	21,417	21,417	21,417	21,417	21,417
Lighting	BR30 LED 8 W - General Kit - Public	8.1	-	0.97	-									
Hot Water	Kitchen Aerator - Low Flow - Restaurant	10.0	16,235	0.97	157,481			15,748	15,748	15,748	15,748	15,748	15,748	15,748
Lighting	PAR30 LED 14 W - General Kit - Public	8.1	-	0.97	-									
Hot Water	Bath Aerator - Low Flow - Restaurant	10.0	13,014	0.97	126,238			12,624	12,624	12,624	12,624	12,624	12,624	12,624
Lighting	PAR30 LED 14 W - Fire Station	8.1	-	0.97	-									
Hot Water	Showerhead - Low Flow - Fire Station	10.0	14,109	0.97	136,853			13,685	13,685	13,685	13,685	13,685	13,685	13,685
Consumer Electronic	Smart Socket - General Kit - Public	7.0	-	0.97	-									
Hot Water	Bath Aerator - Low Flow - General Kit - Public	10.0	1,083	0.97	10,504			1,050	1,050	1,050	1,050	1,050	1,050	1,050
Hot Water	Pre-rinse Spray Valve - Fire Station	5.0	6,959	0.97	33,750			6,750	6,750	6,750	6,750	6,750		
Hot Water	Kitchen Aerator - Low Flow - Fire Station	10.0	816	0.97	7,913			791	791	791	791	791	791	791
Hot Water	Bath Aerator - Low Flow - Fire Station	10.0	431	0.97	4,177			418	418	418	418	418	418	418
Carryover	CY2018 & CY2019 Carryover	10.9	-	0.91	-									
CY2020 Program Total Gas Contribution to CPAS (Therms)			151,918		1,065,472			147,361	147,361	147,361	147,361	147,361	65,734	65,734
CY2020 Program Total Gas Contribution to CPAS (kWh Equivalent)‡						-	-	4,319,140	4,319,140	4,319,140	4,319,140	4,319,140	1,926,655	1,926,655
Historic Program Total Gas Contribution to CPAS (kWh Equivalent)‡§						1,042,527	4,943,190	4,943,190	4,943,190	4,943,190	4,395,259	2,718,623	2,718,623	2,718,623
Program Total Gas CPAS (kWh Equivalent)‡						1,042,527	4,943,190	9,262,330	9,262,330	9,262,330	8,714,399	7,037,763	4,645,278	4,645,278
CY2020 Program Incremental Expiring Gas Savings (Therms)‖									-	-	-	-	81,627	-
CY2020 Program Incremental Expiring Gas Savings (kWh Equivalent)‡‖									-	-	-	-	2,392,485	-
Historic Program Incremental Expiring Gas Savings (kWh Equivalent)‡§‖								-	-	-	547,931	1,676,636	-	-
Program Total Incremental Expiring Gas Savings (kWh Equivalent)‡‖								-	-	-	547,931	1,676,636	2,392,485	-

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Lighting	BR30 LED 8 W - General Kit - Private												
Lighting	PAR30 LED 14 W - General Kit - Private												
Lighting	PAR30 LED 14 W - Restaurant												
Hot Water	Pre-rinse Spray Valve - Restaurant												
Lighting	Candelabra 5W - Restaurant												
Consumer Electronic	Smart Socket - General Kit - Private												
Hot Water	Bath Aerator - Low Flow - General Kit - Private	21,417	21,417	21,417									
Lighting	BR30 LED 8 W - General Kit - Public												
Hot Water	Kitchen Aerator - Low Flow - Restaurant	15,748	15,748	15,748									
Lighting	PAR30 LED 14 W - General Kit - Public												
Hot Water	Bath Aerator - Low Flow - Restaurant	12,624	12,624	12,624									
Lighting	PAR30 LED 14 W - Fire Station												
Hot Water	Showerhead - Low Flow - Fire Station	13,685	13,685	13,685									
Consumer Electronic	Smart Socket - General Kit - Public												
Hot Water	Bath Aerator - Low Flow - General Kit - Public	1,050	1,050	1,050									
Hot Water	Pre-rinse Spray Valve - Fire Station												
Hot Water	Kitchen Aerator - Low Flow - Fire Station	791	791	791									
Hot Water	Bath Aerator - Low Flow - Fire Station	418	418	418									
Carryover	CY2018 & CY2019 Carryover												
CY2020 Program Total Gas Contribution to CPAS (Therms)		65,734	65,734	65,734	-	-	-	-	-	-	-	-	-
CY2020 Program Total Gas Contribution to CPAS (kWh Equival		1,926,655	1,926,655	1,926,655	-	-	-	-	-	-	-	-	-
Historic Program Total Gas Contribution to CPAS (kWh Equiva		2,224,027											
Program Total Gas CPAS (kWh Equivalent)‡		4,150,682	1,926,655	1,926,655	-	-	-	-	-	-	-	-	-
CY2020 Program Incremental Expiring Gas Savings (Therms)||		-	-	-	65,734	-	-	-	-	-	-	-	-
CY2020 Program Incremental Expiring Gas Savings (kWh Equiv		-	-	-	1,926,655	-	-	-	-	-	-	-	-
Historic Program Incremental Expiring Gas Savings (kWh Equi		494,596	2,224,027	-	-	-	-	-	-	-	-	-	-
Program Total Incremental Expiring Gas Savings (kWh Equivale		494,596	2,224,027	-	1,926,655	-	-	-	-	-	-	-	-

Note: The green highlighted cell shows program total first year gas savings in kWh equivalents. The gray cells are blank, indicating no values or do not contribute to calculating CPAS in CY2020.

* A deemed value. Source: is found on the Illinois SAG website: https://www.ilsag.info/ntg_2020.

† 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 Y_{n-1} - CPAS Y_n.

Source: Evaluation team analysis

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

End Use Type	Research Category	EUL	CY2020 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
Lighting	BR30 LED 8 W - General Kit - Private	8.5	2,443,958	0.97	15,372,675			2,370,639	2,370,639	2,370,639	2,370,639	1,319,737	1,319,737	1,319,737
Lighting	PAR30 LED 14 W - General Kit - Private	8.5	1,699,639	0.97	10,690,854			1,648,649	1,648,649	1,648,649	1,648,649	917,805	917,805	917,805
Lighting	PAR30 LED 14 W - Restaurant	5.2	486,323	0.97	2,208,835			471,734	471,734	471,734	471,734	262,615	59,286	
Hot Water	Pre-rinse Spray Valve - Restaurant	5.0	2,691,768	0.97	13,055,075			2,611,015	2,611,015	2,611,015	2,611,015	2,611,015		
Lighting	Candelabra 5W - Restaurant	3.6	219,668	0.97	757,176			213,078	213,078	213,078	117,941			
Consumer Electronic	Smart Socket - General Kit - Private	7.0	175,651	0.97	1,192,668			170,381	170,381	170,381	170,381	170,381	170,381	170,381
Hot Water	Bath Aerator - Low Flow - General Kit - Private	10.0	752,038	0.97	7,294,770			729,477	729,477	729,477	729,477	729,477	729,477	729,477
Lighting	BR30 LED 8 W - General Kit - Public	8.1	103,132	0.97	628,257			100,038	100,038	100,038	100,038	55,691	55,691	55,691
Hot Water	Kitchen Aerator - Low Flow - Restaurant	10.0	558,162	0.97	5,414,175			541,417	541,417	541,417	541,417	541,417	541,417	541,417
Lighting	PAR30 LED 14 W - General Kit - Public	8.1	71,723	0.97	436,918			69,571	69,571	69,571	69,571	38,730	38,730	38,730
Hot Water	Bath Aerator - Low Flow - Restaurant	10.0	450,104	0.97	4,366,014			436,601	436,601	436,601	436,601	436,601	436,601	436,601
Lighting	PAR30 LED 14 W - Fire Station	8.1	28,172	0.97	171,615			27,326	27,326	27,326	27,326	15,213	15,213	15,213
Hot Water	Showerhead - Low Flow - Fire Station	10.0	429,002	0.97	4,161,319			416,132	416,132	416,132	416,132	416,132	416,132	416,132
Consumer Electronic	Smart Socket - General Kit - Public	7.0	8,614	0.97	58,492			8,356	8,356	8,356	8,356	8,356	8,356	8,356
Hot Water	Bath Aerator - Low Flow - General Kit - Public	10.0	37,025	0.97	359,139			35,914	35,914	35,914	35,914	35,914	35,914	35,914
Hot Water	Pre-rinse Spray Valve - Fire Station	5.0	205,338	0.97	995,888			199,178	199,178	199,178	199,178	199,178		
Hot Water	Kitchen Aerator - Low Flow - Fire Station	10.0	24,928	0.97	241,800			24,180	24,180	24,180	24,180	24,180	24,180	24,180
Hot Water	Bath Aerator - Low Flow - Fire Station	10.0	13,247	0.97	128,497			12,850	12,850	12,850	12,850	12,850	12,850	12,850
Carryover	CY2018 & CY2019 Carryover	10.9	486,561	0.91	2,024,832			442,892	442,892	442,892	442,892	31,792	30,664	30,664
CY2020 Program Total Contribution to CPAS			10,885,053		69,558,999			10,529,429	10,529,429	10,529,429	10,434,292	7,827,084	4,812,435	4,753,149
Historic Program Total Contribution to CPAS‡						3,092,129	13,369,873	13,307,504	11,873,042	11,873,042	11,110,253	5,641,695	5,585,372	5,497,433
Program Total CPAS						3,092,129	13,369,873	23,836,933	22,402,471	22,402,471	21,544,545	13,468,779	10,397,807	10,250,582
CY2020 Program Incremental Expiring Savings§									-	-	95,137	2,607,208	3,014,649	59,286
Historic Program Incremental Expiring Savings‡§								62,369	1,434,462	-	762,789	5,468,558	56,323	87,939
Program Total Incremental Expiring Savings§								62,369	1,434,462	-	857,926	8,075,766	3,070,972	147,225

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Lighting	BR30 LED 8 W - General Kit - Private	1,319,737	611,171										
Lighting	PAR30 LED 14 W - General Kit - Private	917,805	425,036										
Lighting	PAR30 LED 14 W - Restaurant												
Hot Water	Pre-rinse Spray Valve - Restaurant												
Lighting	Candelabra 5W - Restaurant												
Consumer Electronic	Smart Socket - General Kit - Private												
Hot Water	Bath Aerator - Low Flow - General Kit - Private	729,477	729,477	729,477									
Lighting	BR30 LED 8 W - General Kit - Public	55,691	5,338										
Hot Water	Kitchen Aerator - Low Flow - Restaurant	541,417	541,417	541,417									
Lighting	PAR30 LED 14 W - General Kit - Public	38,730	3,712										
Hot Water	Bath Aerator - Low Flow - Restaurant	436,601	436,601	436,601									
Lighting	PAR30 LED 14 W - Fire Station	15,213	1,458										
Hot Water	Showerhead - Low Flow - Fire Station	416,132	416,132	416,132									
Consumer Electronic	Smart Socket - General Kit - Public												
Hot Water	Bath Aerator - Low Flow - General Kit - Public	35,914	35,914	35,914									
Hot Water	Pre-rinse Spray Valve - Fire Station												
Hot Water	Kitchen Aerator - Low Flow - Fire Station	24,180	24,180	24,180									
Hot Water	Bath Aerator - Low Flow - Fire Station	12,850	12,850	12,850									
Carryover	CY2018 & CY2019 Carryover	27,213	26,847	25,113	21,561	19,803	19,803	19,803					
CY2020 Program Total Contribution to CPAS		4,570,960	3,270,135	2,221,684	21,561	19,803	19,803	19,803	-	-	-	-	-
Historic Program Total Contribution to CPAS‡		4,839,257	2,011,748	1,912,248	1,818,651	1,802,422	1,793,178	1,319,834	-	-	-	-	-
Program Total CPAS		9,410,217	5,281,883	4,133,932	1,840,212	1,822,225	1,812,981	1,339,637	-	-	-	-	-
CY2020 Program Incremental Expiring Savings§		182,189	1,300,826	1,048,450	2,200,124	1,758	-	-	19,803	-	-	-	-
Historic Program Incremental Expiring Savings‡§		658,176	2,827,509	99,500	93,597	16,229	9,244	473,344	1,319,834	-	-	-	-
Program Total Incremental Expiring Savings§		840,365	4,128,335	1,147,950	2,293,721	17,987	9,244	473,344	1,339,637	-	-	-	-

Note: The green highlighted cell shows program 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 CY2020.

* A deemed value. Source: is found on the Illinois SAG website: https://www.ilsag.info/ntg_2020.

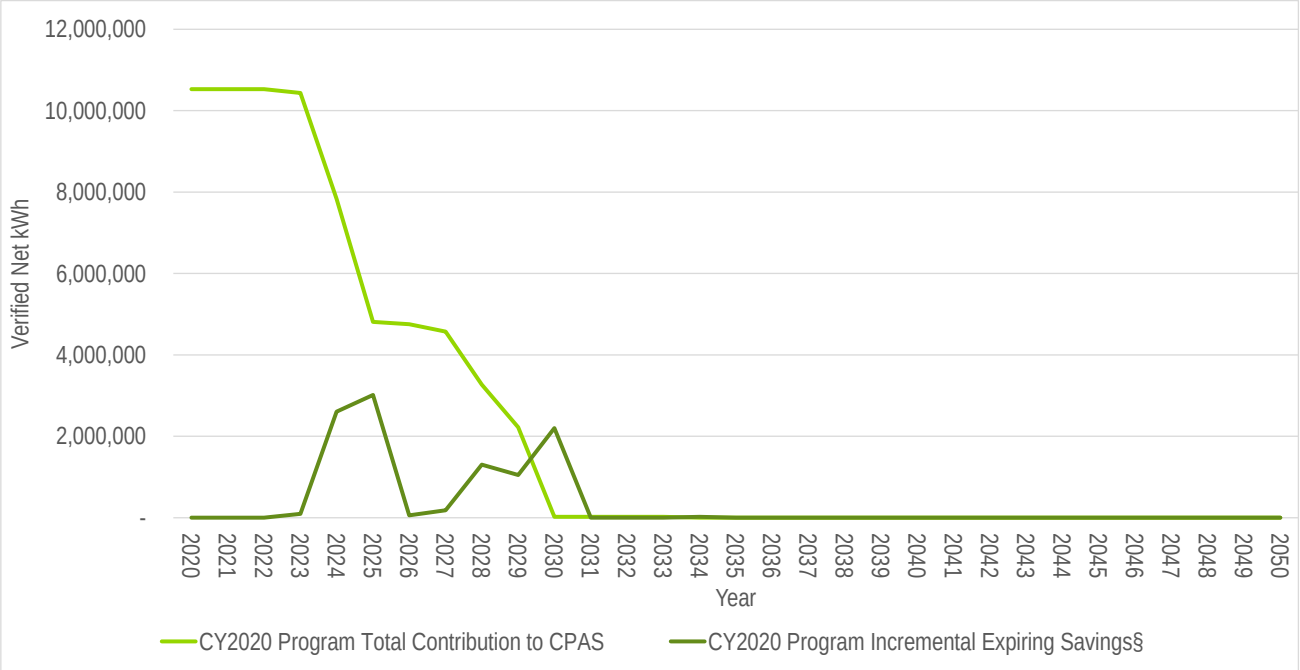
† Lifetime savings are the sum of CPAS savings through the EUL.

‡ 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 + Expiring Savings Y_{n-1}.

Source: Evaluation team analysis

5. Program Savings by Measure

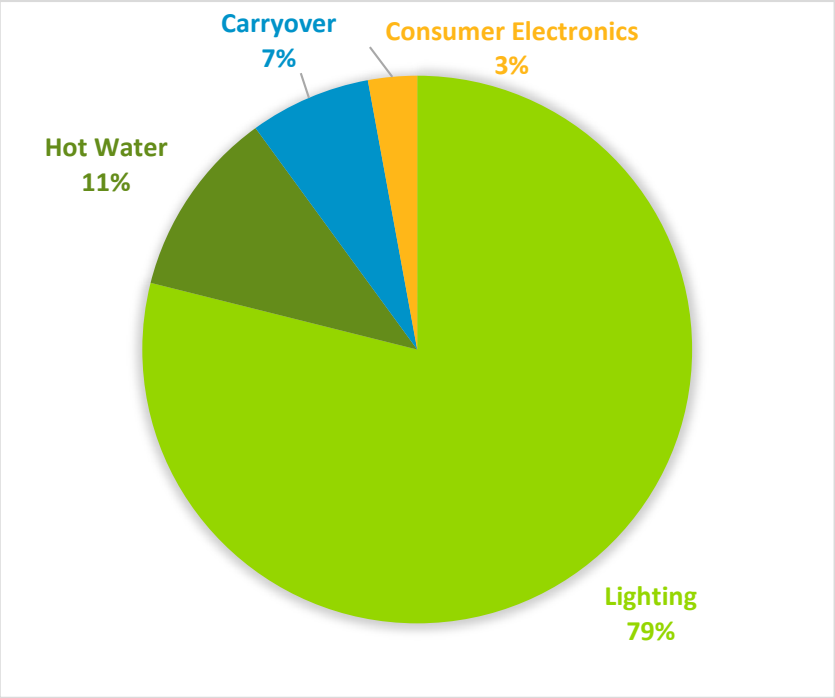
The program includes 18 measures as the following tables in this section show. The LED lighting measures in aggregate (BR30, PAR30, and Candelabra) are the largest source of savings for the Small Business Kits Program (see Figure 5-1). The LED lighting measures in aggregate (BR30, PAR30, and Candelabra) are the largest source of savings for the Small Business EE Kits Program. Pre-rinse spray valves contribute the most savings after the evaluation team converted gas savings to electric energy savings.

The evaluation team calculated custom in-service rates (ISRs) and domestic hot water fuel splits using the participant telephone survey data provided by ComEd. All the other input parameters for the savings algorithms were from the appropriate commercial and industrial (C&I) section of the Illinois Statewide Technical Reference Manual (TRM v8.0), or the Illinois TRM v8.0 Errata. The telephone survey was conducted by the program implementation contractor on a sample of program participants and the evaluation team reviewed the final summary results along with the survey questions. The evaluation team calculated custom ISR values from the survey responses, which are similar to the values used in the ex ante calculations for the lighting and smart socket measures (where the ex ante calculations used CY2018 evaluation results). The evaluated ISR values and percent of customers who use electric water heating were lower than the ex ante values. Appendix B details the comparison of the evaluated and ex ante input parameters.

The discrepancies between the verified and ex ante observations in the tables that follow are due largely to the evaluation team using custom ISR and domestic hot water heating fuel splits. Adding secondary electric savings due to water measures and carryover lighting savings had smaller impacts on the evaluated savings. The evaluation team applied the lighting baseline

shift for the BR30, PAR30, and Candelabra lamps starting in 2024. Gross and net verified electric savings for the bathroom aerator, kitchen aerator, and pre-rinse spray valve measures include the secondary kWh savings derived from water supply and wastewater treatment savings. The ex ante electric savings did not include secondary kWh savings.

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



Source: ComEd tracking data and evaluation team analysis

Table 5-1. CY2020 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)
Lighting	BR30 LED 8 W - General Kit - Private	2,284,727	1.07	2,443,958	0.97	2,370,639	8.5
Lighting	PAR30 LED 14 W - General Kit - Private	1,823,433	0.93	1,699,639	0.97	1,648,649	8.5
Lighting	PAR30 LED 14 W - Restaurant	447,642	1.09	486,323	0.97	471,734	5.2
Hot Water	Pre-rinse Spray Valve - Restaurant	733,426	0.59	429,251	0.97	416,374	5.0
Lighting	Candelabra 5W - Restaurant	237,386	0.93	219,668	0.97	213,078	3.6
Consumer Electronics	Smart Socket - General Kit - Private	121,044	1.45	175,651	0.97	170,381	7.0
Hot Water	Bath Aerator - Low Flow - General Kit - Private	213,723	0.49	104,887	0.97	101,740	10.0
Lighting	BR30 LED 8 W - General Kit - Public	106,024	0.97	103,132	0.97	100,038	8.1
Hot Water	Kitchen Aerator - Low Flow - Restaurant	134,171	0.61	82,310	0.97	79,841	10.0
Lighting	PAR30 LED 14 W - General Kit - Public	75,643	0.95	71,723	0.97	69,571	8.1
Hot Water	Bath Aerator - Low Flow - Restaurant	110,074	0.62	68,658	0.97	66,599	10.0
Lighting	PAR30 LED 14 W - Fire Station	25,566	1.10	28,172	0.97	27,326	8.1
Hot Water	Showerhead - Low Flow - Fire Station	62,358	0.25	15,481	0.97	15,016	10.0
Consumer Electronics	Smart Socket - General Kit - Public	5,936	1.45	8,614	0.97	8,356	7.0
Hot Water	Bath Aerator - Low Flow - General Kit - Public	10,482	0.50	5,286	0.97	5,128	10.0
Hot Water	Pre-rinse Spray Valve - Fire Station	52,894	0.03	1,375	0.97	1,334	5.0
Hot Water	Kitchen Aerator - Low Flow - Fire Station	4,771	0.21	1,018	0.97	987	10.0
Hot Water	Bath Aerator - Low Flow - Fire Station	3,543	0.18	624	0.97	606	10.0
Carryover	CY2018 & CY2019 Carryover	NR	NA	486,561	0.91	442,892	10.9
	Total§	6,452,843	1.00	6,432,331	NA	6,210,289	8.0

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

* A deemed value. Source: is found on the Illinois SAG website: https://www.ilsag.info/ntg_2020.

§ The overall program realization rate includes verified gross carryover savings in the program savings totals. The overall program realization rate excluding verified carryover savings is 0.92.

Source: ComEd tracking data and evaluation team analysis

Table 5-2. CY2020 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)
Lighting	BR30 LED 8 W - General Kit - Private	596.19	1.09	649.09	0.97	629.62
Lighting	PAR30 LED 14 W - General Kit - Private	475.82	0.95	451.41	0.97	437.87
Lighting	PAR30 LED 14 W - Restaurant	95.30	1.11	106.04	0.97	102.86
Hot Water	Pre-rinse Spray Valve - Restaurant	0.00	NA	0.00	0.97	0.00
Lighting	Candelabra 5W - Restaurant	50.54	0.95	47.90	0.97	46.46
Consumer Electronics	Smart Socket - General Kit - Private	0.00	NA	0.00	0.97	0.00
Hot Water	Bath Aerator - Low Flow - General Kit - Private	55.83	0.37	20.72	0.97	20.10
Lighting	BR30 LED 8 W - General Kit - Public	22.95	0.97	22.34	0.97	21.67
Hot Water	Kitchen Aerator - Low Flow - Restaurant	14.62	0.50	7.31	0.97	7.09
Lighting	PAR30 LED 14 W - General Kit - Public	16.37	0.95	15.53	0.97	15.07
Hot Water	Bath Aerator - Low Flow - Restaurant	11.99	0.49	5.86	0.97	5.69
Lighting	PAR30 LED 14 W - Fire Station	5.53	1.10	6.10	0.97	5.91
Hot Water	Showerhead - Low Flow - Fire Station	1.54	0.07	0.11	0.97	0.11
Consumer Electronics	Smart Socket - General Kit - Public	0.00	NA	0.00	0.97	0.00
Hot Water	Bath Aerator - Low Flow - General Kit - Public	2.74	0.37	1.02	0.97	0.99
Hot Water	Pre-rinse Spray Valve - Fire Station	0.00	NA	0.00	0.97	0.00
Hot Water	Kitchen Aerator - Low Flow - Fire Station	1.25	0.06	0.07	0.97	0.07
Hot Water	Bath Aerator - Low Flow - Fire Station	0.93	0.04	0.04	0.97	0.04
Carryover	CY2018 & CY2019 Carryover	NR	NA	115.31	0.91	104.94
	Total§	1,351.61	1.07	1,448.86	NA	1,398.48

* A deemed value. Source: is found on the Illinois SAG website: https://www.ilsag.info/ntg_2020.

§ The overall program realization rate includes verified gross carryover savings in the program savings totals. The overall program realization rate excluding verified carryover savings is 0.99.Source: ComEd tracking data and evaluation team analysis

Table 5-3. CY2020 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)
Lighting	BR30 LED 8 W - General Kit - Private	-40,114	0.00	0	0.97	0	8.5
Lighting	PAR30 LED 14 W - General Kit - Private	-32,014	0.00	0	0.97	0	8.5
Lighting	PAR30 LED 14 W - Restaurant	-3,730	0.00	0	0.97	0	5.2
Hot Water	Pre-rinse Spray Valve - Restaurant	65,142	1.18	77,193	0.97	74,877	5.0
Lighting	Candelabra 5W - Restaurant	-1,978	0.00	0	0.97	0	3.6
Consumer Electronics	Smart Socket - General Kit - Private	0	NA	0	0.97	0	7.0
Hot Water	Bath Aerator - Low Flow - General Kit - Private	21,022	1.05	22,080	0.97	21,417	10.0
Lighting	BR30 LED 8 W - General Kit - Public	-100	0.00	0	0.97	0	8.1
Hot Water	Kitchen Aerator - Low Flow - Restaurant	14,241	1.14	16,235	0.97	15,748	10.0
Lighting	PAR30 LED 14 W - General Kit - Public	-71	0.00	0	0.97	0	8.1
Hot Water	Bath Aerator - Low Flow - Restaurant	11,681	1.11	13,014	0.97	12,624	10.0
Lighting	PAR30 LED 14 W - Fire Station	-24	0.00	0	0.97	0	8.1
Hot Water	Showerhead - Low Flow - Fire Station	6,569	2.15	14,109	0.97	13,685	10.0
Consumer Electronics	Smart Socket - General Kit - Public	0	NA	0	0.97	0	7.0
Hot Water	Bath Aerator - Low Flow - General Kit - Public	1,031	1.05	1,083	0.97	1,050	10.0
Hot Water	Pre-rinse Spray Valve - Fire Station	4,698	1.48	6,959	0.97	6,750	5.0
Hot Water	Kitchen Aerator - Low Flow - Fire Station	506	1.61	816	0.97	791	10.0
Hot Water	Bath Aerator - Low Flow - Fire Station	348	1.24	431	0.97	418	10.0
Carryover	CY2018 & CY2019 Carryover	NR	NA	0	0.91	0	10.9
	Total Therms	47,206	3.22	151,918	NA	147,361	8.0
	Total kWh Converted From Therms†	1,383,614	3.22	4,452,722	NA	4,319,140	8.0

* A deemed value. Source: is found on the Illinois SAG website: https://www.ilsag.info/ntg_2020.

† Gas savings converted to kWh by multiplying therms by 29.31 (which is based on 100,000 Btu/therm and 3,412 Btu/kWh).

Source: ComEd tracking data and evaluation team analysis

Table 5-4. CY2020 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)
Lighting	BR30 LED 8 W - General Kit - Private	1,108,999	2.20	2,443,958	0.97	2,370,639
Lighting	PAR30 LED 14 W - General Kit - Private	885,089	1.92	1,699,639	0.97	1,648,649
Lighting	PAR30 LED 14 W - Restaurant	338,306	1.44	486,323	0.97	471,734
Hot Water	Pre-rinse Spray Valve - Restaurant	2,642,736	1.02	2,691,768	0.97	2,611,015
Lighting	Candelabra 5W - Restaurant	179,404	1.22	219,668	0.97	213,078
Consumer Electronics	Smart Socket - General Kit - Private	121,044	1.45	175,651	0.97	170,381
Hot Water	Bath Aerator - Low Flow - General Kit - Private	829,878	0.91	752,038	0.97	729,477
Lighting	BR30 LED 8 W - General Kit - Public	103,093	1.00	103,132	0.97	100,038
Hot Water	Kitchen Aerator - Low Flow - Restaurant	551,572	1.01	558,162	0.97	541,417
Lighting	PAR30 LED 14 W - General Kit - Public	73,551	0.98	71,723	0.97	69,571
Hot Water	Bath Aerator - Low Flow - Restaurant	452,433	0.99	450,104	0.97	436,601
Lighting	PAR30 LED 14 W - Fire Station	24,859	1.13	28,172	0.97	27,326
Hot Water	Showerhead - Low Flow - Fire Station	254,894	1.68	429,002	0.97	416,132
Consumer Electronics	Smart Socket - General Kit - Public	5,936	1.45	8,614	0.97	8,356
Hot Water	Bath Aerator - Low Flow - General Kit - Public	40,700	0.91	37,025	0.97	35,914
Hot Water	Pre-rinse Spray Valve - Fire Station	190,591	1.08	205,338	0.97	199,178
Hot Water	Kitchen Aerator - Low Flow - Fire Station	19,615	1.27	24,928	0.97	24,180
Hot Water	Bath Aerator - Low Flow - Fire Station	13,756	0.96	13,247	0.97	12,850
Carryover	CY2018 & CY2019 Carryover	NR	NA	486,561	0.91	442,892
	Total†§	7,836,456	1.39	10,885,053	NA	10,529,429

* A deemed value. Source: is found on the Illinois SAG website: https://www.ilsag.info/ntg_2020.
† The total includes the electric equivalent of the total therms.
§ The overall program realization rate includes verified gross carryover savings in the program savings totals. The overall program realization rate excluding verified carryover savings is 1.32.

Source: ComEd tracking data and evaluation team analysis

The Small Business Kits Program includes measures that save water. That reduction in water produces secondary kWh savings from water supply and wastewater treatment. Table 5-5 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 5-5. 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)
Lighting	BR30 LED 8 W - General Kit - Private	0	NR	NA	0	0.97	0
Lighting	PAR30 LED 14 W - General Kit - Private	0	NR	NA	0	0.97	0
Lighting	PAR30 LED 14 W - Restaurant	0	NR	NA	0	0.97	0
Hot Water	Pre-rinse Spray Valve - Restaurant	13,143,125	NR	NA	47,918	0.97	46,480
Lighting	Candelabra 5W - Restaurant	0	NR	NA	0	0.97	0
Consumer Electronics	Smart Socket - General Kit - Private	0	NR	NA	0	0.97	0
Hot Water	Bath Aerator - Low Flow - General Kit - Private	8,146,489	NR	NA	25,566	0.97	24,799
Lighting	BR30 LED 8 W - General Kit - Public	0	NR	NA	0	0.97	0
Hot Water	Kitchen Aerator - Low Flow - Restaurant	4,326,971	NR	NA	15,177	0.97	14,722
Lighting	PAR30 LED 14 W - General Kit - Public	0	NR	NA	0	0.97	0
Hot Water	Bath Aerator - Low Flow - Restaurant	4,326,801	NR	NA	14,832	0.97	14,387
Lighting	PAR30 LED 14 W - Fire Station	0	NR	NA	0	0.97	0
Hot Water	Showerhead - Low Flow - Fire Station	1,665,550	NR	NA	10,853	0.97	10,527
Consumer Electronics	Smart Socket - General Kit - Public	0	NR	NA	0	0.97	0
Hot Water	Bath Aerator - Low Flow - General Kit - Public	399,529	NR	NA	1,396	0.97	1,354
Hot Water	Pre-rinse Spray Valve - Fire Station	947,868	NR	NA	841	0.97	815
Hot Water	Kitchen Aerator - Low Flow - Fire Station	153,874	NR	NA	752	0.97	729
Hot Water	Bath Aerator - Low Flow - Fire Station	135,032	NR	NA	484	0.97	469
Carryover	CY2018 & CY2019 Carryover	NR	NA	NA	0	0.91	0
	Total	33,245,240	0	NA	117,818	NA	114,284

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 found on the Illinois SAG website: https://www.ilsag.info/ntg_2020.

Source: ComEd tracking data and evaluation team analysis

6. Impact Analysis Findings and Recommendations

6.1 Impact Parameter Estimates

Table 6-1 details all the custom and deemed inputs used for calculating the energy and demand savings for each measure, and the source of these inputs. The evaluation team calculated savings for each measure based on the savings algorithms noted in the TRM v8.0. The evaluation team calculated the custom inputs using the telephone participant survey data supplied by the implementer. The lifetime energy savings are estimated by multiplying the verified savings by the effective useful life for each measure, except for LED lamp measures. The evaluation team adjusts the annual savings for the LED measures following guidance in TRM v8.0 and TRM v8.0 Errata Memo.

Table 6-1. Savings Parameters

Measure	Custom Input Parameters	Deemed Input Parameters	Deemed* Input Data Source
BR30 8 W LEDs	WattsEE, ISR	Wattbase, Hours, WHFe, WHFd, CF, NTG†	TRM v8.0* – Section 4.5.4, TRM v8.0 Errata Memo
PAR30 14 W LEDs	WattsEE, ISR	Wattbase, Hours, WHFe, WHFd, CF, NTG†	TRM v8.0 – Section 4.5.4, TRM v8.0 Errata Memo
Bathroom Aerators	ISR, Usage, %Electric DHW, %FossilDHW, %CookCounty, %NotCook	GPM_base, GPM_low, EPG_electric, EPG_gas, CF, Hours, EWaterCook, EWaterNotCook, NTG†	TRM v8.0 – Section 4.3.2
Kitchen Aerators	ISR, Usage, %Electric DHW, %FossilDHW, %CookCounty, %NotCook	GPM_base, GPM_low, EPG_electric, EPG_gas, CF, Hours, EWaterCook, EWaterNotCook, NTG†	TRM v8.0 – Section 4.3.2
Pre-Rinse Spray Valves	ISR, FLOee, %Electric DHW, %FossilDHW, %CookCounty, %NotCook	Tout, Tin, EEF_Elec, FLObase, HOURSday, DAYSyear, EWaterCook, EWaterNotCook, NTG†	TRM v8.0 – Section 4.2.11
Low Flow Showerhead	ISR, %Electric DHW, %FossilDHW, %CookCounty, %NotCook	GPM_base, GPM_low, L_base, L_low, EPG_electric, EPG_gas, NSPD, CF, Hours, EWaterCook, EWaterNotCook, NTG†	TRM v8.0 – Section 4.3.3
Smart Sockets	ISR, W_base	W_eff, hrswkday, hrswkend, hrswkday-open, hrswkend-open, weeks/year, NTG†	TRM v8.0 – Section 4.8.7

* TRM is the State of Illinois Technical Reference Manual version 8.0 from http://www.ilsag.info/technical-reference-manual.html.
†The NTG values can be found on the Illinois SAG website: https://www.ilsag.info/ntg_2020.
Source: ComEd survey data and evaluation team analysis

6.2 CY2021 Carryover Savings Estimates

The evaluation team calculated the CY2021 carryover savings estimates using the TRM (TRM v7.0, TRM v8.0, and TRM v9.0) and the CY2019 and CY2020 Impact Evaluation reports. These data sources are available and it is possible to estimate the gross and net carryover energy savings that the evaluation team recommends for CY2021. The energy and demand savings from these CY2019 and CY2020 deferred install bulbs are calculated based on the following parameters:

- **Delta Watts:** Verified savings estimate from the year of installation (source: TRM v9).
- **Quantity:** Number of bulbs from the year of distribution (source: Impact Evaluation Reports).
- **HOU and Peak CF:** Verified savings estimate from the year of installation (source: TRM v9).

- **Energy and Demand Interactive Effects:** Verified savings estimate from the year of installation (source: TRM v9).
- **Installation Rate:** Verified savings estimate from the year of distribution (CY2019 and CY2020 program survey data). The evaluation team subtracted the custom ISR from the lifetime ISR found in the TRM (TRM v7.0 for CY2019 and TRM v8.0 for CY2020) and split the remaining installs between the second and third years using the same ratio found in the TRM (TRM v7.0 for CY2019 and TRM v8.0 for CY2020).
- **NTG:** Evaluation research from the year of distribution (source: Impact Evaluation Reports).

Table 6-2 shows that Guidehouse estimates a total of 6,729 bulbs that ComEd distributed during CY2019 and CY2020 will be installed within ComEd's service territory in CY2021. The table provides the gross and net energy and demand savings from these carryover bulbs attributable to CY2021. The evaluation team estimates these total CY2021 net carryover savings to be 1,402,761 kWh, 676 demand kW, and 464 peak demand kW.

Table 6-2. CY2021 Carryover Savings Estimate

CY2021 Verified Savings Carryover Estimate	CY2019 Bulbs	CY2020 Bulbs	CY2021 Carryover
Carryover Bulbs Installed During CY2021	1,212	5,517	6,729
Average Delta Watts	43.7	57.0	54.6
Average Annual Hours of Use	3,516	3,170	3,232.7
Energy Interactive Effects	1.184	1.272	1.256
Demand Interactive Effects	1.329	1.461	1.437
Summer Peak Load Coincidence Factor	0.717	0.699	0.702
Carryover Gross Energy Savings (kWh)	212,214	1,244,870	1,457,084
Carryover Gross Demand Savings (kW)	247	463	709
Carryover Gross Summer Peak Demand Savings (kW)	171	316	487
Net-to-Gross Ratio	0.92	0.97	0.96
Carryover Net Energy Savings (kWh)	195,237	1,207,524	1,402,761
Carryover Net Demand Savings (kW)	227	449	676
Carryover Net Summer Peak Demand Savings (kW)	158	306	464
Effective Useful Life	7.9	8.0	7.9

Source: ComEd tracking data and evaluation team analysis

6.3 Other Impact Findings and Recommendations

The evaluation team developed several recommendations based on findings from the CY2020 evaluation. Table 6-3 presents the end use-level realization rates and program savings percentages to give context to the team's recommendations.

Table 6-3. End Use-Level Savings and Realization Rates

End Use Type	Realization Rate	Percentage of Verified Net Savings
Lighting	1.01	79%
Hot Water	0.53	11%
Consumer Electronics	1.45	3%
Carryover	NA	7%

Source: Evaluation team analysis

6.3.1 Program Level

Finding 1. The CY2020 ISRs for all measures are lower than was seen during the CY2019 evaluation. On average, the ISR values are 24% lower than the previous year as Table 6-4 shows. Even though CY2020 ISRs are lower than CY2019, the impact on verified savings is small because the ex ante values use more conservative ISR estimates from the CY2018 evaluation. The average difference between ex ante and verified ISRs for CY2020 was 0.02 across all measures.

Table 6-4. ISR Comparison from CY2019 to CY2020

Measure	CY2019 ISR			CY2020 ISR				ISR Change (CY2020 - CY2019)*
	Small Office	Restaurant	Other / General	Small Business Fire Station Kit	Small Business General Kit - Private	Small Business General Kit - Public	Small Business Restaurant Kit	
9W LED	0.76	0.82	0.90	NA	NA	NA	NA	NA
8W BR30	0.72	NA	0.87	NA	0.64	0.64	NA	-0.20
14W PAR30	NA	0.84	0.87	0.73	0.63	0.63	0.73	-0.22
5W Candelabra	NA	NA	NA	NA	NA	NA	0.58	NA
Bath Aerator - Low Flow	0.74	0.78	0.82	0.64	0.35	0.35	0.45	-0.43
Kitchen Aerator - Low Flow	0.72	0.80	NA	0.55	NA	NA	0.46	-0.30
Pre-rinse Spray Valve	NA	0.65	NA	0.09	NA	NA	0.65	-0.04
Showerhead - Low Flow	NA	NA	NA	0.73	NA	NA	NA	NA
Smart Socket	NA	NA	NA	NA	0.28	0.28	NA	NA

NA = Not applicable.
*Weighted average based on the number of each type of kit distributed.
Source: ComEd tracking, customer survey data and evaluation team analysis

Recommendation 1. Guidehouse recommends that the program continue to use the CY2018 ISR estimates until ISR values are added to the TRM. Guidehouse has submitted a request to update TRM v10 to include C&I kit measure defaults for aerators, LED lamps, and pre-rinse spray valves. Other measures do not have sufficient historical ISR survey data to submit at this time.

6.3.2 8 W BR30, 14 W PAR30, 5 W Candelabra LEDs

Finding 2. The verified savings account for the heating penalty from electric resistance heating interactive effects. This approach is consistent with the TRM v8.0 instructions. The heating fuel type was collected through the implementer participant survey for general-private and restaurant building types. There were not any completed surveys with general-public participants, and the fire station survey did not ask about space heating fuel type. These measures represent 79% of the verified program savings and a verified gross realization rate of 1.01.

Recommendation 2. Guidehouse recommends that the program track electric heating penalties for affected measures and account for those in ex ante gross and net savings to better align the ex ante and verified savings.

Recommendation 3. Guidehouse also recommends that the participant survey fielded by the program implementer include questions about space heating fuel type for the fire station and general-public kit recipients to account for electric heating penalties from these participants.

Finding 3. The ex ante savings include the gas heating penalty from lighting measures. Gas heating penalties are included in the program total resource cost (TRC) analysis, but should not be included in the ex ante gross savings. Including the natural gas penalty from lighting measures reduced the ex ante natural gas savings by 61%.

Recommendation 4. Guidehouse recommends that the program tracking data exclude natural gas heating penalties from lighting measures. Gas heating penalties should be tracked separate from natural gas measure savings.

6.3.3 Bath Aerator, Kitchen Aerator, Showerhead, Pre-Rinse Spray Valve

Finding 4. The ex ante calculations used the custom fuel split for domestic hot water fuels calculated during the CY2018 evaluation while the verified savings used the CY2020 survey data to update the fuel split percentages. Customers who knew their fuel type were allocated to electric and natural gas accordingly. Customers who responded they “didn’t know” or had “unknown” fuel types were allocated to electric or natural gas following the fuel split found in the TRM v8.0 (0.16 electric and 0.84 natural gas). This analysis resulted in updated hot water splits for each kit type, which the evaluation team used to calculate the verified savings. The weighted average percent of customers with electric heat fell from 0.33 in CY2019 to 0.15 in CY2020. The lower prevalence of electric water heating was the main driver for the lower electric realization rates for hot water measures. Hot water measures represent 11% of the verified program savings and a verified gross realization rate of 0.53.

Finding 5. The lower prevalence of electric water heating resulted in increased verified natural gas savings from distributed hot water reducing measures. The average realization rate for hot water measures was 1.34 as a result of the increased prevalence of natural gas fuel type.

Recommendation 5. Guidehouse recommends monitoring the survey data to determine if the domestic hot water fuel split should be updated during the program year. The evaluation team will continue to use the survey responses to determine the verified savings. Examining the survey responses during the program year would allow the program implementer the ability to better forecast the verified savings for the program.

Finding 6. The tracking data provides the gallons of water saved but 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 bathroom aerator, kitchen aerator, pre-rinse spray valve, and showerhead measures. Secondary electric savings from water increased the verified gross savings by 2%.

Recommendation 6. Guidehouse recommends that ComEd include 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.

6.3.4 Smart Socket

Finding 7. The ex ante calculations used an assumption of 8 W for W_{base} to determine gross measure savings for smart sockets. The evaluation team used the participant survey to determine the wattage of the equipment controlled by the smart socket. The verified wattage controlled by the smart socket depended on the type of equipment controlled:

1. Lights or lamps: 10.4 W, the average of the lamps included in the kit.
2. Large Office Equipment: 4.19 W, the mean standby power of a multifunction printer.
3. Computer Equipment: 15 W, half of the computer office equipment value used for the advanced power strip measure in the TRM v8.0.
4. Air Purifiers: 50 W, the average wattage of available brands based on web research.
5. Insufficient Detail: 8 W, the default from the ex ante calculations.

The survey data analysis showed that the average controlled wattage was 9.4 W. The evaluation team used this value to determine the verified savings for smart sockets. Smart sockets represent 3% of the verified program savings and had a realization rate of 1.45.

Recommendation 7. Guidehouse recommends that the ex ante values continue to use 8 W for the baseline wattage (W_{base}) until the TRM is updated with a default assumption. Guidehouse is in the process of conducting a participant survey that will be used to provide a recommended default baseline wattage value for inclusion in the TRM v10.

Finding 8. The ex ante savings used 2 W as the efficient wattage (W_{eff}). The smart sockets contained in the kits use 0.7 W, per the included specifications. Guidehouse used 0.7 W for the efficient wattage in the verified savings.

Recommendation 8. Guidehouse recommends that the ex ante savings reflect the actual standby wattage of the smart sockets included in the kits. The smart socket distributed during CY2020 consumed 0.7 W.

Appendix A. Impact Analysis Detail

Table A-1 through Table A-8 show the comparison between the inputs assumptions used by the evaluation team and the implementation contractor in the ex ante and verified calculations for each measure.

Table A-1. 8 W BR30 Custom and Deemed Values Comparison

Value, Guidehouse	Value, Implementer	Variable	Source	Deemed / Custom	Discrepancy
8 W BR30 LED General Public					
65	65	Wattsbase	IL TRM 4.5.4	Deemed	
8	8	WattsEE	Specifications	Actual	
0.64	0.66	ISR	Survey	Custom	Yes
3,088	3,088	Hours	IL TRM 4.5.4	Deemed	
1.06	1.06	WHFe	IL TRM 4.5.4	Deemed	
1.09	1.09	WHFd	IL TRM 4.5.4	Deemed	
0.65	0.65	CF	IL TRM 4.5.4	Deemed	
0.01	NA	IFkWh	IL TRM 4.5.4	Deemed	Yes
0.001	0.001	IFTherms	IL TRM 4.5.4	Deemed	
0.06	NA	%elec_heat	Survey	Custom	Yes
0.92	NA	%gas_heat	Survey	Custom	Yes
8 W BR30 LED General Private					
65	65	Wattsbase	IL TRM 4.5.4	Deemed	
8	8	WattsEE	Specifications	Actual	
0.64	0.59	ISR	Survey	Custom	Yes
2,954	2,954	Hours	IL TRM 4.5.4	Deemed	
1.31	1.31	WHFe	IL TRM 4.5.4	Deemed	
1.53	1.53	WHFd	IL TRM 4.5.4	Deemed	
0.66	0.66	CF	IL TRM 4.5.4	Deemed	
0.393	NA	IFkWh	IL TRM 4.5.5	Deemed	Yes
0.023	0.023	IFTherms	IL TRM 4.5.6	Deemed	
0.06	NA	%elec_heat	IL TRM 4.5.7	Deemed	Yes
0.92	NA	%gas_heat	IL TRM 4.5.4	Deemed	Yes

Source: ComEd tracking, customer survey, and evaluation team analysis

Table A-2. 14 W PAR30 Custom and Deemed Values Comparison

Value, Guidehouse	Value, Implementer	Variable	Source	Deemed / Custom	Discrepancy
14 W PAR30 LED Fire Station					
75	75	Wattsbase	IL TRM 4.5.4	Deemed	
14	14	WattsEE	Specifications	Actual	
0.73	0.66	ISR	Survey	Custom	Yes
3,088	3,088	Hours	IL TRM 4.5.4	Deemed	
1.06	1.06	WHFe	IL TRM 4.5.4	Deemed	
1.09	1.09	WHFd	IL TRM 4.5.4	Deemed	
0.65	0.65	CF	IL TRM 4.5.4	Deemed	
0.01	NA	IFkWh	IL TRM 4.5.4	Deemed	Yes
0.001	0.001	IFTherms	IL TRM 4.5.4	Deemed	
0.00	NA	%elec_heat	Survey	Custom	Yes
1.00	NA	%gas_heat	Survey	Custom	Yes
14 W PAR30 LED Restaurant					
75	75	Wattsbase	IL TRM 4.5.4	Deemed	
14	14	WattsEE	Specifications	Actual	
0.73	0.66	ISR	Survey	Custom	Yes
4,784	4,784	Hours	IL TRM 4.5.4	Deemed	
1.08	1.08	WHFe	IL TRM 4.5.4	Deemed	
1.1	1.1	WHFd	IL TRM 4.5.4	Deemed	
1	1	CF	IL TRM 4.5.4	Deemed	
0.149	NA	IFkWh	IL TRM 4.5.4	Deemed	Yes
0.009	0.009	IFTherms	IL TRM 4.5.4	Deemed	
0.17	NA	%elec_heat	Survey	Custom	Yes
0.83	NA	%gas_heat	Survey	Custom	Yes
14 W PAR30 LED General Public					
75	75	Wattsbase	IL TRM 4.5.4	Deemed	
14	14	WattsEE	Specifications	Actual	
0.63	0.66	ISR	Survey	Custom	Yes
3,088	3,088	Hours	IL TRM 4.5.4	Deemed	
1.06	1.06	WHFe	IL TRM 4.5.4	Deemed	
1.09	1.09	WHFd	IL TRM 4.5.4	Deemed	
0.65	0.65	CF	IL TRM 4.5.4	Deemed	
0.01	NA	IFkWh	IL TRM 4.5.4	Deemed	Yes
0.001	0.001	IFTherms	IL TRM 4.5.4	Deemed	
0.06	NA	%elec_heat	Survey	Custom	Yes
0.92	NA	%gas_heat	Survey	Custom	Yes
14 W PAR30 LED General Private					
75	75	Wattsbase	IL TRM 4.5.4	Deemed	
14	14	WattsEE	Specifications	Actual	
0.63	0.66	ISR	Survey	Custom	Yes
2,954	2,954	Hours	IL TRM 4.5.4	Deemed	
1.31	1.31	WHFe	IL TRM 4.5.4	Deemed	
1.53	1.53	WHFd	IL TRM 4.5.4	Deemed	
0.66	0.66	CF	IL TRM 4.5.4	Deemed	
0.393	NA	IFkWh	IL TRM 4.5.4	Deemed	Yes
0.023	0.023	IFTherms	IL TRM 4.5.4	Deemed	
0.06	NA	%elec_heat	Survey	Custom	Yes
0.92	NA	%gas_heat	Survey	Custom	Yes

Source: ComEd tracking, customer survey, and evaluation team analysis

Table A-3. 5 W Candelabra Custom and Deemed Values Comparison

Value, Guidehouse	Value, Implementer	Variable	Source	Deemed / Custom	Discrepancy
40	40	Wattsbase	IL TRM 4.5.4	Deemed	
5	5	WattsEE	Specifications	Actual	
0.58	0.61	ISR	Survey	Custom	Yes
4,784	4,784	Hours	IL TRM 4.5.4	Deemed	
1.08	1.08	WHFe	IL TRM 4.5.4	Deemed	
1.10	1.10	WHFd	IL TRM 4.5.4	Deemed	
1.0	1.0	CF	IL TRM 4.5.4	Deemed	
0.149	NA	IFkWh	IL TRM 4.5.4	Deemed	Yes
0.009	0.009	IFTherms	IL TRM 4.5.4	Deemed	
0.17	NA	%elec_heat	Survey	Custom	Yes
0.83	NA	%gas_heat	Survey	Custom	Yes

Source: ComEd tracking, customer survey, and evaluation team analysis

Table A-4. Bathroom Aerator Custom and Deemed Values Comparison

Value, Guidehouse	Value, Implementer	Variable	Source	Deemed / Custom	Discrepancy
Bathroom Faucet Aerator Fire Station					
0.02	0.33	%Electric DHW	Survey	Custom	Yes
0.98	0.65	%FossilDHW	Survey	Custom	Yes
1.39	1.39	GPM_base	IL TRM 4.3.2	Deemed	
0.94	0.94	GPM_low	IL TRM 4.3.2	Deemed	
5,000	5,000	Usage	IL TRM 4.3.2	Deemed	
0.0795	0.0795	EPG_electric	IL TRM 4.3.2	Deemed	
0.00397	0.00397	EPG_gas	IL TRM 4.3.2	Deemed	
0.35	0.43	ISR	Survey	Custom	Yes
0.0128	0.0128	CF	IL TRM 4.3.2	Deemed	
49	49	Hours	IL TRM 4.3.2	Deemed	
0.30	NA	%CookCounty	Survey	Custom	Yes
0.70	NA	%NotCook	Survey	Custom	Yes
2,937	NA	EWaterCook	IL TRM 4.3.2	Deemed	Yes
5,010	NA	EWaterNotCoo	IL TRM 4.3.2	Deemed	Yes
Bathroom Faucet Aerator Restaurant					
0.17	0.32	%Electric DHW	Survey	Custom	Yes
0.83	0.68	%FossilDHW	Survey	Custom	Yes
1.39	1.39	GPM_base	IL TRM 4.3.2	Deemed	
0.94	0.94	GPM_low	IL TRM 4.3.2	Deemed	
12,675	12,675	Usage	IL TRM 4.3.2	Deemed	
0.0795	0.0795	EPG_electric	IL TRM 4.3.2	Deemed	
0.00397	0.00397	EPG_gas	IL TRM 4.3.2	Deemed	
0.45	0.49	ISR	Survey	Custom	Yes
0.0134	0.0134	CF	IL TRM 4.3.2	Deemed	
123	123	Hours	IL TRM 4.3.2	Deemed	
0.61	NA	%CookCounty	Survey	Custom	Yes
0.39	NA	%NotCook	Survey	Custom	Yes
2,937	NA	EWaterCook	IL TRM 4.3.2	Deemed	Yes
5,010	NA	EWaterNotCoo	IL TRM 4.3.2	Deemed	Yes
Bathroom Faucet Aerator General Public					
0.15	0.33	%Electric DHW	Survey	Custom	Yes
0.84	0.65	%FossilDHW	Survey	Custom	Yes
1.39	1.39	GPM_base	IL TRM 4.3.2	Deemed	
0.94	0.94	GPM_low	IL TRM 4.3.2	Deemed	
5,000	5,000	Usage	IL TRM 4.3.2	Deemed	
0.0795	0.0795	EPG_electric	IL TRM 4.3.2	Deemed	
0.00397	0.00397	EPG_gas	IL TRM 4.3.2	Deemed	
0.35	0.43	ISR	Survey	Custom	Yes
0.0128	0.0128	CF	IL TRM 4.3.2	Deemed	
49	49	Hours	IL TRM 4.3.2	Deemed	
0.35	NA	%CookCounty	Survey	Custom	Yes
0.65	NA	%NotCook	Survey	Custom	Yes
2,937	NA	EWaterCook	IL TRM 4.3.2	Deemed	Yes
5,010	NA	EWaterNotCoo	IL TRM 4.3.2	Deemed	Yes
Bathroom Faucet Aerator General Private					
0.15	0.33	%Electric DHW	Survey	Custom	Yes
0.84	0.65	%FossilDHW	Survey	Custom	Yes
1.39	1.39	GPM_base	IL TRM 4.3.2	Deemed	
0.94	0.94	GPM_low	IL TRM 4.3.2	Deemed	
5,000	5,000	Usage	IL TRM 4.3.2	Deemed	
0.0795	0.0795	EPG_electric	IL TRM 4.3.2	Deemed	
0.00397	0.00397	EPG_gas	IL TRM 4.3.2	Deemed	
0.35	0.43	ISR	Survey	Custom	Yes
0.0128	0.0128	CF	IL TRM 4.3.2	Deemed	
49	49	Hours	IL TRM 4.3.2	Deemed	
0.56	NA	%CookCounty	Survey	Custom	Yes
0.44	NA	%NotCook	Survey	Custom	Yes
2,937	NA	EWaterCook	IL TRM 4.3.2	Deemed	Yes
5,010	NA	EWaterNotCoo	IL TRM 4.3.2	Deemed	Yes

Source: ComEd tracking, customer survey, and evaluation team analysis

Table A-5. Kitchen Aerator Custom and Deemed Values Comparison

Value, Guidehouse	Value, Implementer	Variable	Source	Deemed / Custom	Discrepancy
Kitchen Faucet Aerator Fire Station					
0.02	0.32	%Electric DHW	Survey	Custom	Yes
0.98	0.68	%FossilDHW	Survey	Custom	Yes
1.39	1.39	GPM_base	IL TRM 4.3.2	Deemed	
0.94	0.94	GPM_low	IL TRM 4.3.2	Deemed	
5,000	5,000	Usage	IL TRM 4.3.2	Deemed	
0.0969	0.0969	EPG_electric	IL TRM 4.3.2	Deemed	
0.00484	0.00484	EPG_gas	IL TRM 4.3.2	Deemed	
0.55	0.49	ISR	Survey	Custom	Yes
0.0128	0.0128	CF	IL TRM 4.3.2	Deemed	
49	49	Hours	IL TRM 4.3.2	Deemed	
0.30	NA	%CookCounty	Survey	Custom	Yes
0.70	NA	%NotCook	Survey	Custom	Yes
2,937	NA	EWaterCook	IL TRM 4.3.2	Deemed	Yes
5,010	NA	EWaterNotCoo	IL TRM 4.3.2	Deemed	Yes
Kitchen Faucet Aerator Restaurant					
0.17	0.32	%Electric DHW	Survey	Custom	Yes
0.83	0.68	%FossilDHW	Survey	Custom	Yes
1.39	1.39	GPM_base	IL TRM 4.3.2	Deemed	
0.94	0.94	GPM_low	IL TRM 4.3.2	Deemed	
12,675	12,675	Usage	IL TRM 4.3.2	Deemed	
0.0969	0.0969	EPG_electric	IL TRM 4.3.2	Deemed	
0.00484	0.00484	EPG_gas	IL TRM 4.3.2	Deemed	
0.46	0.49	ISR	Survey	Custom	Yes
0.0134	0.0134	CF	IL TRM 4.3.2	Deemed	
123	123	Hours	IL TRM 4.3.2	Deemed	
0.61	NA	%CookCounty	Survey	Custom	Yes
0.39	NA	%NotCook	Survey	Custom	Yes
2,937	NA	EWaterCook	IL TRM 4.3.2	Deemed	Yes
5,010	NA	EWaterNotCoo	IL TRM 4.3.2	Deemed	Yes

Source: ComEd tracking, customer survey, and evaluation team analysis

Table A-6. Pre-Rinse Spray Valve Custom and Deemed Values Comparison

Value, Guidehouse	Value, Implementer	Variable	Source	Deemed / Custom	Discrepancy
Pre-Rinse Spray Valve Fire Station					
0.02	0.32	%Electric DHW	Survey	Custom	Yes
0.98	0.68	%FossilDHW	Survey	Custom	Yes
124.1	124.1	Tout	IL TRM 4.2.11	Deemed	
54.1	54.1	Tin	IL TRM 4.2.11	Deemed	
0.98	0.98	EFF_Elec	IL TRM 4.2.11	Deemed	
0.80	0.80	EFF_Gas	IL TRM 4.2.11	Deemed	
2.14	2.14	FLObase	IL TRM 4.2.11	Deemed	
0.98	0.98	FLOee	IL TRM 4.2.11	Deemed	
1.0	1.0	HOURSday	IL TRM 4.2.11	Deemed	
312	312	DAYSyear	IL TRM 4.2.11	Deemed	
0.09	0.45	ISR	Survey	Custom	Yes
0.30	NA	%CookCounty	Survey	Custom	Yes
0.70	NA	%NotCook	Survey	Custom	Yes
2,937	NA	EWaterCook	IL TRM 4.2.11	Deemed	Yes
5,010	NA	EWaterNotCoo	IL TRM 4.2.11	Deemed	Yes
Pre-Rinse Spray Valve Restaurant					
0.17	0.32	%Electric DHW	Survey	Custom	Yes
0.83	0.68	%FossilDHW	Survey	Custom	Yes
124.1	124.1	Tout	IL TRM 4.2.11	Deemed	
54.1	54.1	Tin	IL TRM 4.2.11	Deemed	
0.98	0.98	EFF_Elec	IL TRM 4.2.11	Deemed	
0.80	0.80	EFF_Gas	IL TRM 4.2.11	Deemed	
2.14	2.14	FLObase	IL TRM 4.2.11	Deemed	
0.98	0.98	FLOee	IL TRM 4.2.11	Deemed	
1.25	1.25	HOURSday	IL TRM 4.2.11	Deemed	
312	312	DAYSyear	IL TRM 4.2.11	Deemed	
0.44	0.45	ISR	Survey	Custom	Yes
0.61	NA	%CookCounty	Survey	Custom	Yes
0.39	NA	%NotCook	Survey	Custom	Yes
2,937	NA	EWaterCook	IL TRM 4.2.11	Deemed	Yes
5,010	NA	EWaterNotCoo	IL TRM 4.2.11	Deemed	Yes

Source: ComEd tracking, customer survey, and evaluation team analysis

Table A-7. Low Flow Showerhead Custom and Deemed Values Comparison

Value, Guidehouse	Value, Implementer	Variable	Source	Deemed / Custom	Discrepancy
0.02	0.32	%ElectricDHW	Survey	Custom	Yes
0.98	0.68	%FossilDHW	Survey	Custom	Yes
2.67	2.67	GPM_base	IL TRM 4.3.3	Deemed	
8.2	8.2	L_base	IL TRM 4.3.3	Deemed	
1.5	1.5	GPM_low	IL TRM 4.3.3	Deemed	
8.2	8.2	L_low	IL TRM 4.3.3	Deemed	
5	5	NSPD	IL TRM 4.3.3	Deemed	
0.117	0.117	EPG_electric	IL TRM 4.3.3	Deemed	
0.0058	0.0058	EPG_gas	IL TRM 4.3.3	Deemed	
0.73	0.49	ISR	Survey	Custom	Yes
0.0278	0.0278	CF	IL TRM 4.3.3	Deemed	
0.30	NA	%CookCounty	Survey	Custom	Yes
0.70	NA	%NotCook	Survey	Custom	Yes
2,937	NA	EWaterCook	IL TRM 4.3.3	Deemed	Yes
5,010	NA	EWaterNotCoo	IL TRM 4.3.3	Deemed	Yes

Source: ComEd tracking, customer survey, and evaluation team analysis

Table A-8. Smart Socket Custom and Deemed Values Comparison

Value, Guidehouse	Value, Implementer	Variable	Source	Deemed / Custom	Discrepancy
9.4	8.0	W_base	Survey	Custom	Yes
0.7	2.0	W_eff	Actual	Custom	Yes
106	106	hrswkday	IL TRM 4.8.7	Deemed	
62	62	hrswkend	IL TRM 4.8.7	Deemed	
50	50	hrswkday-open	IL TRM 4.8.7	Deemed	
0	0	hrswkend-open	IL TRM 4.8.7	Deemed	
52.2	52.2	weeks/year	IL TRM 4.8.7	Deemed	
0.28	0.28	ISR	Survey	Custom	Yes

Source: ComEd tracking, customer survey, and evaluation team analysis

Appendix B. Total Resource Cost Detail

Table B-1 shows the 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 B-1. Total Resource Cost Savings Summary

End Use Type	Research Category	Units	Quantity	EUL (years)*	ER Flag †	Gross Electric Energy Savings (kWh)	Gross Peak Demand Reduction (kW)	Gross Gas Savings (Therms)	Gross Secondary Savings due to Water Reduction (kWh)	Gross Heating Penalty (kWh)	Gross Heating Penalty (Therms)	NTG (kWh)	NTG (kW)	NTG (Therms)	Net Electric Energy Savings (kWh)	Net Peak Demand Reduction (kW)	Net Gas Savings (Therms)	Net Secondary Savings due to Water Reduction (kWh)	Net Heating Penalty (kWh)	Net Heating Penalty (Therms)
Lighting	BR30 LED 8 W - General Kit - Private	Lamp	17,556	8.5	No	2,443,958	649.09	0	0	-43,492	-40,257	0.97	0.97	0.97	2,370,639	629.62	0	0	-42,187	-39,049
Lighting	PAR30 LED 14 W - General Kit - Private	Lamp	11,704	8.5	No	1,699,639	451.41	0	0	-30,246	-27,996	0.97	0.97	0.97	1,648,649	437.87	0	0	-29,339	-27,156
Lighting	PAR30 LED 14 W - Restaurant	Lamp	2,152	5.2	No	486,323	106.04	0	0	-11,763	-3,440	0.97	0.97	0.97	471,734	102.86	0	0	-11,410	-3,337
Hot Water	Pre-rinse Spray Valve - Restaurant	Each	1,076	5.0	No	381,334	0.00	77,193	47,918	0	0	0.97	0.97	0.97	369,894	0.00	74,877	46,480	0	0
Lighting	Candelabra 5W - Restaurant	Lamp	2,152	3.6	No	219,668	47.90	0	0	-5,313	-1,554	0.97	0.97	0.97	213,078	46.46	0	0	-5,154	-1,507
Consumer Electronics	Smart Socket - General Kit - Private	Each	11,704	7.0	No	175,651	0.00	0	0	0	0	0.97	0.97	0.97	170,381	0.00	0	0	0	0
Hot Water	Bath Aerator - Low Flow - General Kit - Private	Each	11,704	10.0	No	79,321	20.72	22,080	25,566	0	0	0.97	0.97	0.97	76,942	20.10	21,417	24,799	0	0
Lighting	BR30 LED 8 W - General Kit - Public	Lamp	861	8.1	No	103,132	22.34	0	0	-57	-90	0.97	0.97	0.97	100,038	21.67	0	0	-55	-87
Hot Water	Kitchen Aerator - Low Flow - Restaurant	Each	2,152	10.0	No	67,133	7.31	16,235	15,177	0	0	0.97	0.97	0.97	65,119	7.09	15,748	14,722	0	0
Lighting	PAR30 LED 14 W - General Kit - Public	Lamp	574	8.1	No	71,723	15.53	0	0	-39	-62	0.97	0.97	0.97	69,571	15.07	0	0	-38	-61
Hot Water	Bath Aerator - Low Flow - Restaurant	Each	2,152	10.0	No	53,826	5.86	13,014	14,832	0	0	0.97	0.97	0.97	52,212	5.69	12,624	14,387	0	0
Lighting	PAR30 LED 14 W - Fire Station	Lamp	194	8.1	No	28,172	6.10	0	0	0	-27	0.97	0.97	0.97	27,326	5.91	0	0	0	-26
Hot Water	Showerhead - Low Flow - Fire Station	Each	194	10.0	No	4,628	0.11	14,109	10,853	0	0	0.97	0.97	0.97	4,489	0.11	13,685	10,527	0	0
Consumer Electronics	Smart Socket - General Kit - Public	Each	574	7.0	No	8,614	0.00	0	0	0	0	0.97	0.97	0.97	8,356	0.00	0	0	0	0
Hot Water	Bath Aerator - Low Flow - General Kit - Public	Each	574	10.0	No	3,890	1.02	1,083	1,396	0	0	0.97	0.97	0.97	3,773	0.99	1,050	1,354	0	0
Hot Water	Pre-rinse Spray Valve - Fire Station	Each	97	5.0	No	534	0.00	6,959	841	0	0	0.97	0.97	0.97	518	0.00	6,750	815	0	0
Hot Water	Kitchen Aerator - Low Flow - Fire Station	Each	194	10.0	No	266	0.07	816	752	0	0	0.97	0.97	0.97	258	0.07	791	729	0	0
Hot Water	Bath Aerator - Low Flow - Fire Station	Each	194	10.0	No	140	0.04	431	484	0	0	0.97	0.97	0.97	136	0.04	418	469	0	0
Carryover	CY2018 & CY2019 Carryover	Lamp	3,469	10.9	No	486,561	115.31	0	0	0	-7,488	0.91	0.91	0.91	442,892	104.94	0	0	0	-6,816
	Total			8.0		6,314,512	1,449	151,918	117,818	-90,911	-80,914	NA	NA	NA	6,096,005	1,398	147,361	114,284	-88,184	-78,039

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

* 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 program 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).

†§ The kWh savings account for electric heating penalties, where applicable. The electric heating penalties columns show the magnitude of adjustments applied to the program savings. Gas heating penalties represent the program therms heating penalties. The therms penalties are not required to be applied to the program savings.

Source: ComEd tracking data and evaluation team analysis