

ComEd UIC-ERC Income Eligible Kits Program Impact Evaluation Report

Energy Efficiency/Demand Response Plan:
Program Year 2021 (CY2021)
(1/1/2021-12/31/2021)

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1. Introduction

This report presents the results of the impact evaluation of the CY2021 University of Illinois at Chicago Energy Resources Center (UIC-ERC) Income Eligible 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 (TRC) analysis inputs. CY2021 covers January 1, 2021 through December 31, 2021.

2. Program Description

The UIC-ERC Income Eligible Kits Program provides eligible customers with a kit containing energy-saving devices and educational information on additional energy-saving actions customers can take to reduce their energy bills. The program’s target population is income-eligible customers living in single-family and small multifamily housing (2-4 units) who may be underserved by existing energy efficiency programs. Eligibility is limited to customers whose incomes are at or below 80% the area median income or below 250% of the federal poverty line for their household size. The UIC-ERC implements this program and jointly delivers the program with the Illinois Association of Community Action Agencies.

The program distributed 60,000 energy kits containing 840,000 measures in CY2021 (see Table 2-1).

Table 2-1. Number of Participants and Projects

Participation	CY2021 Distributions
Total Distributed Energy Kits	60,000
Measure Units per Kit	14

Source: ComEd tracking data and evaluation team analysis

The program included the measures shown in Table 2-2 and Figure 2-1.

Table 2-2. Number of Measures by Type

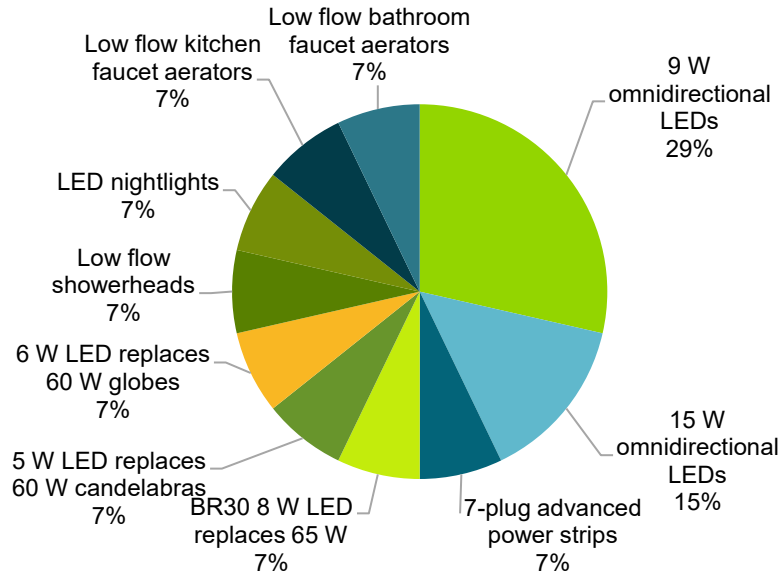
End Use Type	Research Category	Quantity	Unit
Lighting	9 W omnidirectional LEDs	240,000	Lamp
Lighting	15 W omnidirectional LEDs	120,000	Lamp
Consumer Electronics	7-plug advanced power strips	60,000	Each
Lighting	BR30 8 W LED replaces 65 W	60,000	Lamp
Lighting	5 W LED replaces 60 W candelabras	60,000	Lamp
Lighting	6 W LED replaces 60 W globes	60,000	Lamp
Hot Water	Low flow showerheads	60,000	Each
Lighting	LED nightlights	60,000	Lamp
Hot Water	Low flow kitchen faucet aerators	60,000	Each
Hot Water	Low flow bathroom faucet aerators	60,000	Each
Total		840,000	

Note: The rows are sorted by verified gross savings.

LED – light-emitting diode

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. Program Savings Detail

Table 3-1 summarizes the incremental energy and demand savings the UIC-ERC Income Eligible Kits Program achieved in CY2021. 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. Total Annual Incremental Electric Savings

Savings Category	Units	Ex Ante Gross Savings*	Program Gross Realization Rate	Verified Gross Savings*	Program Net-to-Gross Ratio (NTG)	CY2019 Net Carryover Savings	CY2020 Net Carryover Savings	Verified Net Savings†
Electric Energy Savings - Direct	kWh	32,342,460	1.11	35,945,840	1.0	2,043,217	1,095,395	35,945,840
Electric Energy Savings - Converted from Gas‡	kWh	16,937,991	1.00	16,937,991	1.0	N/A	N/A	16,937,991
Total Electric Energy Savings	kWh	49,280,477	1.07	52,883,831	1.0	2,043,217	1,095,395	52,883,831
Summer Peak§ Demand Savings	kW	3,924	1.00	3,924	1.0	221	103	4,248

N/A = not applicable (refers to a piece of data that cannot be produced or does not apply).

* Ex ante and verified gross savings exclude gross carryover savings from CY2019 and CY2020.

† The “Verified Net Savings” in row one (Electric Energy Savings – Direct) include primary kWh savings as a result of measure implementation. It also includes carryover savings from CY2019 and CY2020 and secondary kWh savings from waste water treatment.

‡ Gas savings are 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 team 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.”

§ The coincident summer peak period is defined as 1:00-5:00 p.m. Central Prevailing Time on non-holiday weekdays, June through August.

Source: ComEd tracking data and evaluation team analysis

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

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 UIC-ERC Income Eligible Kits Program and the cumulative persisting annual savings (CPAS) for the measures installed in CY2021. The electric CPAS across all measures installed in 2021 is shown in Table 4-1. The CY2021 gas contribution to CPAS (converted to equivalent electricity) is shown in Table 4-2. The combined savings are shown in Table 4-3. The historic rows in each table are the CPAS contribution back to CY2018. The Program Total Electric CPAS and the Program Total Gas CPAS are the sum of the CY2021 contribution and the historic contribution. Figure 4-1 shows the savings across the effective useful life (EUL) of the measures.

Table 4-1. Cumulative Persisting Annual Savings – Electric

							Verified Net kWh Savings								
End Use Type	Research Category	EUL	CY2021 Verified Gross Savings (kWh)	NTG*	Lifetime Net Savings (kWh)†										
						2018	2019	2020	2021	2022	2023	2024	2025	2026	
Lighting	9 W omnidirectional LEDs	10.0	8,746,997	1.00	81,959,363				8,746,997	8,746,997	8,746,997	8,746,997	8,746,997	8,746,997	8,746,997
Lighting	15 W omnidirectional LEDs	10.0	7,332,042	1.00	68,701,231				7,332,042	7,332,042	7,332,042	7,332,042	7,332,042	7,332,042	7,332,042
Consumer Electronics	7-plug advanced power strips	7.0	5,623,800	1.00	39,366,600				5,623,800	5,623,800	5,623,800	5,623,800	5,623,800	5,623,800	5,623,800
Lighting	BR30 8 W LED replaces 65 W	10.0	3,211,002	1.00	29,220,122				3,211,002	3,211,002	3,211,002	3,211,002	3,211,002	3,211,002	3,211,002
Lighting	5 W LED replaces 60 W candelabras	10.0	1,971,668	1.00	17,468,980				1,971,668	1,971,668	1,971,668	1,971,668	1,971,668	1,971,668	1,971,668
Lighting	6 W LED replaces 60 W globes	10.0	1,915,335	1.00	16,969,866				1,915,335	1,915,335	1,915,335	1,915,335	1,915,335	1,915,335	1,915,335
Hot Water	Low flow showerheads	10.0	1,750,962	1.00	17,509,623				1,750,962	1,750,962	1,750,962	1,750,962	1,750,962	1,750,962	1,750,962
Lighting	LED nightlights	8.0	1,080,266	1.00	8,642,125				1,080,266	1,080,266	1,080,266	1,080,266	1,080,266	1,080,266	1,080,266
Hot Water	Low flow kitchen faucet aerators	10.0	1,041,377	1.00	10,413,772				1,041,377	1,041,377	1,041,377	1,041,377	1,041,377	1,041,377	1,041,377
Hot Water	Low flow bathroom faucet aerators	10.0	133,779	1.00	1,337,792				133,779	133,779	133,779	133,779	133,779	133,779	133,779
Lighting	CY2019 and CY2020 Carryover	9.8	3,138,611	1.00	28,381,780				3,138,611	3,138,611	3,138,611	3,138,611	3,138,611	3,138,611	3,138,611
CY2021 Program Total Electric Contribution to CPAS			35,945,840		319,971,254				35,945,840	35,945,840	35,945,840	35,945,840	35,945,840	35,945,840	35,945,840
Historic Program Total Electric Contribution to CPAS‡						10,538,650	30,140,784	67,005,539	56,050,133	56,050,133	56,050,133	56,050,133	53,569,861	49,384,448	
Program Total Electric CPAS						10,538,650	30,140,784	67,005,539	91,995,973	91,995,973	91,995,973	91,995,973	89,515,701	85,330,288	
CY2021 Program Incremental Expiring Electric Savings§									-	-	-	-	-	-	-
Historic Program Incremental Expiring Electric Savings														2,480,272	4,185,413
Program Total Incremental Expiring Electric Savings									10,955,406	-	-	-	-	2,480,272	4,185,413

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Lighting	9 W omnidirectional LEDs	8,746,997	6,910,128	6,910,128	6,910,128								
Lighting	15 W omnidirectional LEDs	7,332,042	5,792,313	5,792,313	5,792,313								
Consumer Electronics	7-plug advanced power strips	5,623,800											
Lighting	BR30 8 W LED replaces 65 W	3,211,002	2,247,702	2,247,702	2,247,702								
Lighting	5 W LED replaces 60 W candelabras	1,971,668	1,222,434	1,222,434	1,222,434								
Lighting	6 W LED replaces 60 W globes	1,915,335	1,187,508	1,187,508	1,187,508								
Hot Water	Low flow showerheads	1,750,962	1,750,962	1,750,962	1,750,962								
Lighting	LED nightlights	1,080,266	1,080,266										
Hot Water	Low flow kitchen faucet aerators	1,041,377	1,041,377	1,041,377	1,041,377								
Hot Water	Low flow bathroom faucet aerators	133,779	133,779	133,779	133,779								
Lighting	CY2019 and CY2020 Carryover	3,138,611	2,281,203	2,065,150	2,065,150								
CY2021 Program Total Electric Contribution to CPAS		35,945,840	23,647,672	22,351,353	22,351,353	-	-	-	-	-	-	-	-
Historic Program Total Electric Contribution to CPAS‡		30,457,508	25,743,053	17,896,962									
Program Total Electric CPAS		66,403,348	49,390,725	40,248,315	22,351,353								
CY2021 Program Incremental Expiring Electric Savings§		-	12,298,168	1,296,319			22,351,353						
Historic Program Incremental Expiring Electric Savings		18,926,940	4,714,455	7,846,091	17,896,962								
Program Total Incremental Expiring Electric Savings		18,926,940	17,012,623	9,142,410	17,896,962	22,351,353	-	-	-	-	-	-	-

Note: The green highlighted cell shows program total first-year electric savings. The gray cells are blank, indicating values irrelevant to the CY2021 contribution to CPAS.

* A deemed value. Source: Illinois Stakeholder Advisory Group (SAG) website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2021>.

† 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

Table 4-2. Cumulative Persisting Annual Savings – Gas

End Use Type	Research Category	EUL	CY2021 Verified Gross Savings (Therms)	Lifetime Net Savings (Therms)†	Verified Net Therms Savings											
					2018	2019	2020	2021	2022	2023	2024	2025	2026			
Lighting	9 W omnidirectional LEDs	10.0	-	1.00												
Lighting	15 W omnidirectional LEDs	10.0	-	1.00												
Consumer Electronics	7-plug advanced power strips	7.0	-	1.00												
Lighting	BR30 8 W LED replaces 65 W	10.0	-	1.00												
Lighting	5 W LED replaces 60 W candelabras	10.0	-	1.00												
Lighting	6 W LED replaces 60 W globes	10.0	-	1.00												
Hot Water	Low flow showerheads	10.0	352,399	1.00	3,523,986				352,399	352,399	352,399	352,399	352,399	352,399	352,399	352,399
Lighting	LED nightlights	8.0	-	1.00	-											
Hot Water	Low flow kitchen faucet aerators	10.0	200,276	1.00	2,002,758				200,276	200,276	200,276	200,276	200,276	200,276	200,276	200,276
Hot Water	Low flow bathroom faucet aerators	10.0	25,217	1.00	252,168				25,217	25,217	25,217	25,217	25,217	25,217	25,217	25,217
Lighting	CY2019 and CY2020 Carryover	9.8	-	1.00	-											
CY2021 Program Total Gas Contribution to CPAS (Therms)			577,891	5,778,912					577,891	577,891	577,891	577,891	577,891	577,891	577,891	577,891
CY2021 Program Total Gas Contribution to CPAS (kWh Equivalent)‡									16,937,991	16,937,991	16,937,991	16,937,991	16,937,991	16,937,991	16,937,991	16,937,991
Historic Program Total Gas Contribution to CPAS (kWh Equivalent)§									14,976,893	34,958,486	34,958,486	34,958,486	34,958,486	34,958,486	34,958,486	34,958,486
Program Total Gas CPAS (kWh Equivalent)									14,976,893	34,958,486	51,896,477	51,896,477	51,896,477	51,896,477	51,896,477	51,896,477
CY2021 Program Incremental Expiring Gas Savings (Therms)																
CY2021 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
Lighting	9 W omnidirectional LEDs	-	-	-	-								
Lighting	15 W omnidirectional LEDs	-	-	-	-								
Consumer Electronics	7-plug advanced power strips	-	-	-	-								
Lighting	BR30 8 W LED replaces 65 W	-	-	-	-								
Lighting	5 W LED replaces 60 W candelabras	-	-	-	-								
Lighting	6 W LED replaces 60 W globes	-	-	-	-								
Hot Water	Low flow showerheads	352,399	352,399	352,399	352,399								
Lighting	LED nightlights	-	-	-	-								
Hot Water	Low flow kitchen faucet aerators	200,276	200,276	200,276	200,276								
Hot Water	Low flow bathroom faucet aerators	25,217	25,217	25,217	25,217								
Lighting	CY2019 and CY2020 Carryover	-	-	-	-								
CY2021 Program Total Gas Contribution to CPAS (Therms)		577,891	577,891	577,891	577,891								
CY2021 Program Total Gas Contribution to CPAS (kWh Equivalent)‡		16,937,991	16,937,991	16,937,991	16,937,991								
Historic Program Total Gas Contribution to CPAS (kWh Equivalent)§		34,958,486	34,958,486	19,981,593									
Program Total Gas CPAS (kWh Equivalent)		51,896,477	51,896,477	36,919,584	16,937,991								
CY2021 Program Incremental Expiring Gas Savings (Therms)						577,891							
CY2021 Program Incremental Expiring Gas Savings (kWh Equivalent) 						16,937,991							
Historic Program Incremental Expiring Gas Savings (kWh Equivalent)				14,976,893	19,981,593								
Program Total Incremental Expiring Gas Savings (kWh Equivalent)				14,976,893	19,981,593	16,937,991							

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 CY2021.

* A deemed value. Source: Illinois SAG website: <https://www.ilsag.info/evaluator-ntq-recommendations-for-2021>.

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

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

§ Historic gas savings go back to CY2019.

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

Source: Evaluation team analysis

Table 4-3. Cumulative Persisting Annual Savings – Total

End Use Type	Research Category	EUL	CY2021 Verified Gross Savings		Verified Net kWh Savings (Including Those Converted from Gas Savings)									
			(kWh)	NTG* Savings (kWh)†	2018	2019	2020	2021	2022	2023	2024	2025	2026	
Lighting	9 W omnidirectional LEDs	10.0	8,746,997	1.00	81,959,363				8,746,997	8,746,997	8,746,997	8,746,997	8,746,997	8,746,997
Lighting	15 W omnidirectional LEDs	10.0	7,332,042	1.00	68,701,231				7,332,042	7,332,042	7,332,042	7,332,042	7,332,042	7,332,042
Consumer Electronics	7-plug advanced power strips	7.0	5,623,800	1.00	39,366,600				5,623,800	5,623,800	5,623,800	5,623,800	5,623,800	5,623,800
Lighting	BR30 8 W LED replaces 65 W	10.0	3,211,002	1.00	29,220,122				3,211,002	3,211,002	3,211,002	3,211,002	3,211,002	3,211,002
Lighting	5 W LED replaces 60 W candelabra	10.0	1,971,668	1.00	17,468,980				1,971,668	1,971,668	1,971,668	1,971,668	1,971,668	1,971,668
Lighting	6 W LED replaces 60 W globes	10.0	1,915,335	1.00	16,969,866				1,915,335	1,915,335	1,915,335	1,915,335	1,915,335	1,915,335
Hot Water	Low flow showerheads	10.0	12,079,765	1.00	120,797,653				12,079,765	12,079,765	12,079,765	12,079,765	12,079,765	12,079,765
Lighting	LED nightlights	8.0	1,080,266	1.00	8,642,125				1,080,266	1,080,266	1,080,266	1,080,266	1,080,266	1,080,266
Hot Water	Low flow kitchen faucet aerators	10.0	6,911,461	1.00	69,114,609				6,911,461	6,911,461	6,911,461	6,911,461	6,911,461	6,911,461
Hot Water	Low flow bathroom faucet aerators	10.0	872,884	1.00	8,728,836				872,884	872,884	872,884	872,884	872,884	872,884
Lighting	CY2019 and CY2020 Carryover	9.8	3,138,611	1.00	28,381,780				3,138,611	3,138,611	3,138,611	3,138,611	3,138,611	3,138,611
CY2021 Program Total Contribution to CPAS			52,883,831		489,351,165				52,883,831	52,883,831	52,883,831	52,883,831	52,883,831	52,883,831
Historic Program Total Contribution to CPAS‡						10,538,650	45,117,677	101,964,025	91,008,619	91,008,619	91,008,619	91,008,619	88,528,347	84,342,934
Program Total CPAS						10,538,650	45,117,677	101,964,025	143,892,450	143,892,450	143,892,450	143,892,450	141,412,178	137,226,765
CY2021 Program Incremental Expiring Savings§														
Historic Program Incremental Expiring Savings													2,480,272	4,185,413
Program Total Incremental Expiring Savings													2,480,272	4,185,413

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Lighting	9 W omnidirectional LEDs	8,746,997	6,910,128	6,910,128	6,910,128								
Lighting	15 W omnidirectional LEDs	7,332,042	5,792,313	5,792,313	5,792,313								
Consumer Electronics	7-plug advanced power strips	5,623,800											
Lighting	BR30 8 W LED replaces 65 W	3,211,002	2,247,702	2,247,702	2,247,702								
Lighting	5 W LED replaces 60 W candelabra	1,971,668	1,222,434	1,222,434	1,222,434								
Lighting	6 W LED replaces 60 W globes	1,915,335	1,187,508	1,187,508	1,187,508								
Hot Water	Low flow showerheads	12,079,765	12,079,765	12,079,765	12,079,765								
Lighting	LED nightlights	1,080,266	1,080,266										
Hot Water	Low flow kitchen faucet aerators	6,911,461	6,911,461	6,911,461	6,911,461								
Hot Water	Low flow bathroom faucet aerators	872,884	872,884	872,884	872,884								
Lighting	CY2019 and CY2020 Carryover	3,138,611	2,281,203	2,065,150	2,065,150								
CY2021 Program Total Contribution to CPAS		52,883,831	40,585,663	39,289,344	39,289,344	-	-	-	-	-	-	-	-
Historic Program Total Contribution to CPAS‡		65,415,994	60,701,539	37,878,555	-	-	-	-	-	-	-	-	-
Program Total CPAS		118,299,825	101,287,202	77,167,899	39,289,344	-	-	-	-	-	-	-	-
CY2021 Program Incremental Expiring Savings§		-	12,298,168	1,296,319	-	39,289,344	-	-	-	-	-	-	-
Historic Program Incremental Expiring Savings		18,926,940	4,714,455	22,822,984	37,878,555	-	-	-	-	-	-	-	-
Program Total Incremental Expiring Savings		18,926,940	17,012,623	24,119,303	37,878,555	39,289,344	-	-	-	-	-	-	-

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 CY2021.

* A deemed value. Source: Illinois SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2021>.

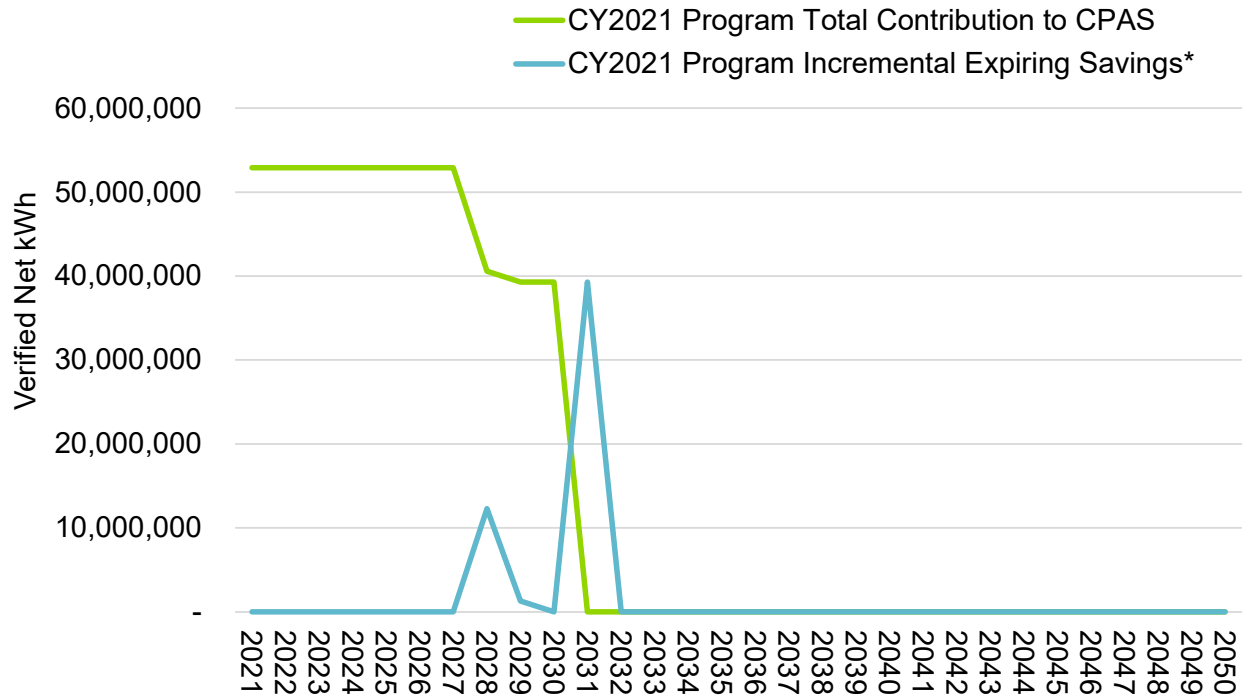
† Lifetime savings are the sum of CPAS savings through the EUL.

‡ 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 included the measures shown in Table 5-1 and Figure 5-1.

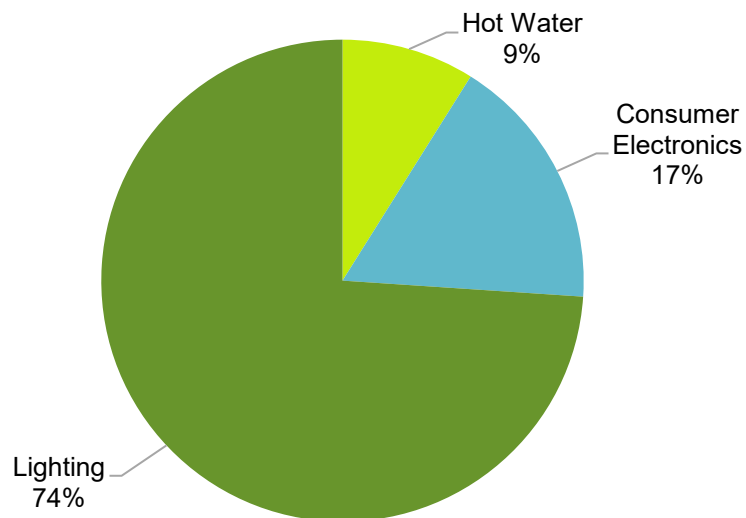
Table 5-1. Number of Measures by Type

End Use Type	Research Category	Quantity	Unit
Lighting	9 W omnidirectional LEDs	240,000	Lamp
Lighting	15 W omnidirectional LEDs	120,000	Lamp
Consumer Electronics	7-plug advanced power strips	60,000	Each
Lighting	BR30 8 W LED replaces 65 W	60,000	Lamp
Lighting	5 W LED replaces 60 W candelabra	60,000	Lamp
Lighting	6 W LED replaces 60 W globes	60,000	Lamp
Hot Water	Low flow showerheads	60,000	Each
Lighting	LED nightlights	60,000	Lamp
Hot Water	Low flow kitchen faucet aerators	60,000	Each
Hot Water	Low flow bathroom faucet aerators	60,000	Each
Total		840,000	

Note: This is the same table as Table 2-2.

Source: ComEd tracking data and evaluation team analysis

Figure 5-1. Verified Net Savings by End Use Type – Electric



Source: ComEd tracking data and evaluation team analysis

Measure-level energy and demand savings are provided in the following tables.

Table 5-2. 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	9 W omnidirectional LEDs	8,746,997	1.00	8,746,997	1.00	8,746,997	10.0
Lighting	15 W omnidirectional LEDs	7,332,042	1.00	7,332,042	1.00	7,332,042	10.0
Consumer Electronics	7-plug advanced power strips	5,623,800	1.00	5,623,800	1.00	5,623,800	7.0
Lighting	BR30 8 W LED replaces 65 W	3,211,002	1.00	3,211,002	1.00	3,211,002	10.0
Lighting	5 W LED replaces 60 W candelabras	1,971,668	1.00	1,971,668	1.00	1,971,668	10.0
Lighting	6 W LED replaces 60 W globes	1,915,335	1.00	1,915,335	1.00	1,915,335	10.0
Hot Water	Low flow showerheads	1,493,053	1.00	1,750,962	1.00	1,750,962	10.0
Lighting	LED nightlights	1,080,266	1.00	1,080,266	1.00	1,080,266	8.0
Hot Water	Low flow kitchen faucet aerators	861,660	1.00	1,041,377	1.00	1,041,377	10.0
Hot Water	Low flow bathroom faucet aerators	106,663	1.00	133,779	1.00	133,779	10.0
Lighting	CY2019 and CY2020 Carryover	NR	N/A	3,138,611	1.00	3,138,611	9.8
Total†		32,342,460	1.11	35,945,840	1.00	35,945,840	9.5

Note: The savings in this table include 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.

N/A = not applicable (refers to a piece of data that cannot be produced or does not apply).

NR = not reported

* A deemed value. Source: Illinois SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2021>.

† The sum of measure-level ex ante gross savings differs from the total ex ante gross savings and verified gross savings slightly due to rounding. Guidehouse will use the measure-level ex ante gross total, 32,342,460 kWh, in the CY2021 Summary Report.

Source: ComEd tracking data and evaluation team analysis

Table 5-3. 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	9 W omnidirectional LEDs	1,058.40	1.00	1,058.40	1.00	1,058.40
Lighting	15 W omnidirectional LEDs	888.00	1.00	888.00	1.00	888.00
Consumer Electronics	7-plug advanced power strips	631.20	1.00	631.20	1.00	631.20
Lighting	BR30 8 W LED replaces 65 W	381.60	1.00	381.60	1.00	381.60
Lighting	5 W LED replaces 60 W candelabras	234.00	1.00	234.00	1.00	234.00
Lighting	6 W LED replaces 60 W globes	227.40	1.00	227.40	1.00	227.40
Hot Water	Low flow showerheads	164.40	1.00	164.40	1.00	164.40
Lighting	LED nightlights	0.00	1.00	0.00	1.00	0.00
Hot Water	Low flow kitchen faucet aerators	196.80	1.00	196.80	1.00	196.80
Hot Water	Low flow bathroom faucet aerators	142.20	1.00	142.20	1.00	142.20
Lighting	CY2019 and CY2020 Carryover	NR	N/A	324.00	1.00	324.00
Total		3,924.00	1.08	4,248.00	1.00	4,248.00

N/A = not applicable (refers to a piece of data that cannot be produced or does not apply).

NR = not reported

* A deemed value. Source: Illinois SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2021>.

Source: ComEd tracking data and evaluation team analysis

The UIC-ERC Income Eligible Kits Program includes measures that save water. That reduction in water produces secondary kWh savings from water supply and wastewater treatment. Table 5-4 shows the secondary measure-level savings. The savings in this table are included in the electricity savings in the previous tables in this section.

Table 5-4. 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	9 W omnidirectional LEDs	0	0	N/A	0.00	N/A	0
Lighting	15 W omnidirectional LEDs	0	0	N/A	0.00	N/A	0
Consumer Electronics	7-plug advanced power strips	0	0	N/A	0.00	N/A	0
Lighting	BR30 8 W LED replaces 65 W	0	0	N/A	0.00	N/A	0
Lighting	5 W LED replaces 60 W candelabras	0	0	N/A	0.00	N/A	0
Lighting	6 W LED replaces 60 W globes	0	0	N/A	0.00	N/A	0
Hot Water	Low flow showerheads	79,757,120	257,909	1.00	257,909	1.00	257,909
Lighting	LED nightlights	0	0	N/A	0	N/A	0
Hot Water	Low flow kitchen faucet aerators	55,576,632	179,717	1.00	179,717	1.00	179,717
Hot Water	Low flow bathroom faucet aerators	8,385,473	27,116	1.00	27,116	1.00	27,116
Lighting	CY2019 and CY2020 Carryover	NR	NR	N/A	0	N/A	0
Total		143,719,224	464,742	1.00	464,742	1.00	464,742

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

N/A = not applicable (refers to a piece of data that cannot be produced or does not apply).

NR = not reported

* A deemed value. Source: Illinois SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2021>.

Source: ComEd tracking data and evaluation team analysis

The UIC-ERC Income Eligible Kits Program includes measures that save gas. Table 5-5 shows the measure-level gas savings.

Table 5-5. 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	9 W omnidirectional LEDs	0	N/A	0	N/A	0	10.0
Lighting	15 W omnidirectional LEDs	0	N/A	0	N/A	0	10.0
Consumer Electronics	7-plug advanced power strips	0	N/A	0	N/A	0	7.0
Lighting	BR30 8 W LED replaces 65 W	0	N/A	0	N/A	0	10.0
Lighting	5 W LED replaces 60 W candelabras	0	N/A	0	N/A	0	10.0
Lighting	6 W LED replaces 60 W globes	0	N/A	0	N/A	0	10.0
Hot Water	Low flow showerheads	352,399	1.00	352,399	1.00	352,399	10.0
Lighting	LED nightlights	0	N/A	0	N/A	0	8.0
Hot Water	Low flow kitchen faucet aerators	200,276	1.00	200,276	1.00	200,276	10.0
Hot Water	Low flow bathroom faucet aerators	25,217	1.00	25,217	1.00	25,217	10.0
Lighting	CY2019 and CY2020 Carryover	NR	N/A	0	N/A	0	9.8
Total Therms†		577,920	1.00	577,891	1.00	577,891	10.00
Total kWh Converted From Therms†		16,938,835	1.00	16,937,991		16,937,991	

N/A = not applicable (refers to a piece of data that cannot be produced or does not apply).

NR = not reported

* A deemed value. Source: Illinois SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2021>.

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

‡ The sum of measure-level ex ante gross savings differs from the total ex ante gross savings and verified gross savings slightly due to rounding. Guidehouse will use the measure-level ex ante gross total, 577,891 therms, in the CY2021 Summary Report.

Source: ComEd tracking data and evaluation team analysis

Table 5-6 is combined savings from Table 5-2 and Table 5-5.

Table 5-6. Energy Savings by Measure – Total

End Use Type	Research Category	Ex Ante Gross Savings (kWh)	Verified Gross Realization Rate	Verified Gross Savings (kWh)	NTG*	Verified Net Savings (kWh)
Lighting	9 W omnidirectional LEDs	8,746,997	1.00	8,746,997	1.00	8,746,997
Lighting	15 W omnidirectional LEDs	7,332,042	1.00	7,332,042	1.00	7,332,042
Consumer Electronics	7-plug advanced power strips	5,623,800	1.00	5,623,800	1.00	5,623,800
Lighting	BR30 8 W LED replaces 65 W	3,211,002	1.00	3,211,002	1.00	3,211,002
Lighting	5 W LED replaces 60 W candelabra	1,971,668	1.00	1,971,668	1.00	1,971,668
Lighting	6 W LED replaces 60 W globes	1,915,335	1.00	1,915,335	1.00	1,915,335
Hot Water	Low flow showerheads	11,821,856	1.00	12,079,765	1.00	12,079,765
Lighting	LED nightlights	1,080,266	1.00	1,080,266	1.00	1,080,266
Hot Water	Low flow kitchen faucet aerators	6,731,744	1.00	6,911,461	1.00	6,911,461
Hot Water	Low flow bathroom faucet aerators	845,767	1.00	872,884	1.00	872,884
Lighting	CY2019 and CY2020 Carryover	NR	N/A	3,138,611	1.00	3,138,611
	Total†	49,280,477	1.07	52,883,831	1.00	52,883,831

N/A = not applicable (refers to a piece of data that cannot be produced or does not apply).

NR = not reported

* A deemed value. Source: Illinois SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2021>.

† The total includes the electric equivalent of the total therms.

Source: ComEd tracking data and evaluation team analysis

6. Impact Analysis Findings and Recommendations

The evaluation team developed the following recommendation for ComEd based on CY2021 evaluation findings.

Finding 1. The ex ante tracking data includes a “Total_Ex_Ante_Gross_kWh” field that accounts for primary kWh savings and secondary kWh savings from water reduction. However, the ex ante program savings summary file only contains the total primary kWh and does not include the combined kWh. Program total gross verified savings from secondary kWh from water reduction is 464,742 kWh.

Recommendation 1. Update the program savings summary file to include a field for total combined kWh that accounts for primary kWh and secondary kWh from water reduction.

Appendix A. Impact Analysis Methodology

The evaluation team verified unit savings for each program measure using the impact algorithm sources found in the Illinois Statewide Technical Reference Manual v9.0 (IL-TRM).² Table A-1 presents the key parameters and the references used in the verified gross and net savings calculations.

The team estimated the lifetime energy and demand savings by multiplying the verified savings by the EUL for each measure. The evaluation team also applied midlife baseline adjustments to the lifetime savings calculations for lighting measures following IL-TRM methodology.

Table A-1. Savings Parameters

Gross Savings Input Parameters	Value	Units	Deemed or Evaluated?	Source*
Quantity	Varies	No. of measures	Evaluated	Program Tracking Data
Net-to-Gross (NTG)	1	%	Deemed	SAG Consensus
APS Measures	93.73	kWh	Deemed	IL-TRM – Section 5.2.1
LED Bulb Measures	Varies	kWh	Deemed	IL-TRM – Errata Sept. 10, 2021 – Section 5.5.8
Specialty LED Measures	Varies	kWh	Deemed	IL-TRM
LED Nightlight Measures	18	kWh	Deemed	IL-TRM – Section 5.5.11
Faucet Aerator Measures	Varies	kWh	Deemed	IL-TRM – Section 5.4.4
Low Flow Showerhead Measures	Varies	kWh	Deemed	IL-TRM – Section 5.4.5
EUL	Varies	Years	Mixture	IL-TRM

APS – advanced power strip

*IL-TRM is the Illinois Technical Reference Manual version 9.0 from <https://www.ilsag.info/technical-reference-manual/il-trm-version-9/>. The NTG values can be found on the Illinois SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2021/>.

Source: Evaluation team analysis

² In this report, unless stated otherwise, IL-TRM refers to version 9.0 (v9.0).

Appendix B. CY2022 Carryover

B.1 CY2021 Carryover Savings

The evaluation team calculated the CY2021 lighting carryover savings estimates using the IL-TRM (v7.0 through v9.0) and the CY2019 and CY2020 impact evaluation reports. The team calculated energy and peak demand savings from CY2020 second-year and CY2019 third-year lighting measure installations based on the following parameters:

- **Delta watts:** Verified delta watts for lighting measures installed in CY2021 based on the baseline wattage values associated with the installation year (source: IL-TRM v9.0)
- **Residential/nonresidential split:** Verified residential/nonresidential split from the year the lighting measures were purchased (source: IL-TRM v7.0 and v8.0)
- **Hours of use (HOU) and summer peak coincidence factor (CF):** Verified HOU and summer peak CF from the installation year (source: IL-TRM v9.0)
- **Energy and demand waste heat factors (WHFs):** Verified WHFs from the year the lighting measures are installed (source: IL-TRM v9.0)
- **In-service rate (ISR):** Verified ISR from the year the lighting measures were purchased (source: IL-TRM v7.0 and v8.0)
- **NTG:** Deemed NTG based on evaluation research from the year the lighting measures were purchased (source: SAG consensus)

Table B-1 shows that 42,000 lighting measures purchased in CY2019, and 19,200 lighting measures purchased in CY2020 are expected to be installed in ComEd's service territory in CY2021. The table provides the gross and net energy and summer peak demand savings from these carryover bulbs that will be counted in CY2021. The evaluation team estimated total CY2021 net carryover savings to be 3,138,611 kWh and summer peak carryover savings of 2,569 kW.

Table B-1. CY2021 Carryover Savings from CY2019 and CY2020 Program Distribution

CY2021 Verified Savings Carryover Estimate	CY2019 Bulbs	CY2020 Bulbs	Carryover in CY2021
Carryover Bulbs Installed During CY2021	42,000	19,200	61,200
Average Delta Watts	36.6	40.6	37.9
Average Annual Hours of Use	1,619	1,492	1,579
Energy Interactive Effects	1.051	1.049	1.051
Demand Interactive Effects	1.094	1.089	1.092
Summer Peak Load Coincidence Factor	0.116	0.109	0.114
Carryover Gross Energy Savings (kWh)	2,043,217	1,095,395	3,138,611
Carryover Gross Demand Savings (kW)	1,682.3	886.9	2,569.3
Carryover Gross Summer Peak Demand Savings (kW)	221.3	103.2	324.5
Net-to-Gross Ratio	1.00	1.00	1.00
Carryover Net Energy Savings (kWh)	2,043,217	1,095,395	3,138,611
Carryover Net Demand Savings (kW)	1,682.3	886.9	2,569.3
Carryover Net Summer Peak Demand Savings (kW)	221.3	103.2	324.5
Effective Useful Life	9.7	9.8	9.7

Source: Evaluation team analysis

B.2 CY2022 Lighting Carryover Savings

The CY2022 carryover estimate calculation relies on the IL-TRM v10.0 and the CY2020 and CY2021 reports. All of these data sources are available, so it is possible to estimate the gross and net carryover energy savings the evaluation team recommends for CY2021. The energy and demand savings from these CY2020 and CY2021 deferred installs are calculated based on the following parameters:

- **Delta watts:** Verified savings estimate from the installation year (source: IL-TRM v10.0, CY2020 and CY2021 program data)
- **Quantity:** Number of bulbs from the distribution year (source: impact evaluation reports)
- **Hours of use and peak coincidence factor:** Verified savings estimate from the installation year (source: IL-TRM v10.0)
- **Energy and demand interactive effects:** Verified savings estimate from the installation year (source: IL-TRM v10.0)
- **Installation rate:** Verified savings estimate from the distribution year (source: IL-TRM v8.0 and v9.0)
- **NTG:** Deemed through the SAG consensus process

Table B-2 shows that 48,600 bulbs distributed during CY2020 and CY2021 are expected to be installed in CY2022 within ComEd's service territory. The table provides the gross and net energy and demand savings from these carryover bulbs attributable to CY2022. Total CY2022 net carryover savings are estimated to be 2,129,835 kWh and 210.6 peak demand kW.

Table B-2. CY2022 Carryover Savings from CY2012 and CY2021 Program Distribution

CY2022 Verified Savings Carryover Estimate	CY2020 Bulbs	CY2021 Bulbs	Carryover in CY2022
Carryover Bulbs Installed During CY2021	19,200	29,400	48,600
Average Delta Watts	40.6	38.3	39.2
Average Annual Hours of Use	1,492	1,439	1,460
Energy Interactive Effects	1.049	1.049	1.049
Demand Interactive Effects	1.089	1.089	1.089
Summer Peak Load Coincidence Factor	0.109	0.128	0.120
Carryover Gross Energy Savings (kWh)	844,052	1,285,783	2,129,835
Carryover Gross Demand Savings (kW)	670.6	1,038.2	1,708.8
Carryover Gross Summer Peak Demand Savings (kW)	77.4	133.3	210.6
Net-to-Gross Ratio	1.00	1.00	1.00
Carryover Net Energy Savings (kWh)	844,052	1,285,783	2,129,835
Carryover Net Demand Savings (kW)	670.6	1,038.2	1,708.8
Carryover Net Summer Peak Demand Savings (kW)	77.4	133.3	210.6
Effective Useful Life	9.8	9.8	9.8

Source: Evaluation team analysis

Appendix C. Total Resource Cost Detail

Table C-1 shows the TRC cost-effectiveness analysis inputs available at the time of finalizing this impact evaluation report. This table does not include additional required cost data (e.g., measure costs, program-level incentives, and non-incentive costs). ComEd will provide this data to the evaluation team later.

Table C-1. Total Resource Cost Savings Summary

End Use Type	Research Category	Units	Quantity	EUL (years)*	ER Flag†	Gross Electric 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 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	9 W omnidirectional LEDs	Lamp	240,000	10.0	No	8,746,997	1,058.40	0	0	0	-170,379	1.00	1.00	1.00	8,746,997	1,058.40	0	0	0	-170,379
Lighting	15 W omnidirectional LEDs	Lamp	120,000	10.0	No	7,332,042	888.00	0	0	0	-142,818	1.00	1.00	1.00	7,332,042	888.00	0	0	0	-142,818
Consumer Electronics	7-plug advanced power strips	Each	60,000	7.0	No	5,623,800	631.20	0	0	0	0	1.00	1.00	1.00	5,623,800	631.20	0	0	0	0
Lighting	BR30 8 W LED replaces 65 W	Lamp	60,000	10.0	No	3,211,002	381.60	0	0	0	-62,845	1.00	1.00	1.00	3,211,002	381.60	0	0	0	-62,845
Lighting	5 W LED replaces 60 W candelabras	Lamp	60,000	10.0	No	1,971,668	234.00	0	0	0	-38,589	1.00	1.00	1.00	1,971,668	234.00	0	0	0	-38,589
Lighting	6 W LED replaces 60 W globes	Lamp	60,000	10.0	No	1,915,335	227.40	0	0	0	-37,486	1.00	1.00	1.00	1,915,335	227.40	0	0	0	-37,486
Hot Water	Low flow showerheads	Each	60,000	10.0	No	1,493,053	164.40	352,399	257,909	0	0	1.00	1.00	1.00	1,493,053	164.40	352,399	257,909	0	0
Lighting	LED nightlights	Lamp	60,000	8.0	No	1,080,266	0.00	0	0	0	-24,479	1.00	1.00	1.00	1,080,266	0.00	0	0	0	-24,479
Hot Water	Low flow kitchen faucet aerators	Each	60,000	10.0	No	861,660	196.80	200,276	179,717	0	0	1.00	1.00	1.00	861,660	196.80	200,276	179,717	0	0
Hot Water	Low flow bathroom faucet aerators	Each	60,000	10.0	No	106,663	142.20	25,217	27,116	0	0	1.00	1.00	1.00	106,663	142.20	25,217	27,116	0	0
Lighting	CY2019 and CY2020 Carryover	Lamp	56,400	9.8	No	3,138,611	324.00	0	0	0	-45,606	1.00	1.00	1.00	3,138,611	324.00	0	0	0	-45,606
Total				9.4		35,481,098	4,248	577,891	464,742	0	-522,202	1.00	1.00	1.00	35,481,098	4,248	577,891	464,742	0	-522,202

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.

* 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).

Source: ComEd tracking data and evaluation team analysis