

# ComEd Food Bank-LED Distribution 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 CY2021 Food Bank-LED Distribution Program impact evaluation.

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 Food Bank-LED Distribution Program provides packages of light-emitting diodes (LEDs), advanced power strips (APS), and weatherstripping to select Feeding America food banks and community organizations. The food banks use their network of local food pantries in ComEd’s service territory to distribute the energy efficiency measures to utility customers.

In CY2021, the program had 636 participating organizations and distributed 2,817,014 measures, as Table 2-1 shows.

**Table 2-1. Number of Participants and Projects**

Participation	Total Count
Participating Organizations	636
Total Measures Distributed	2,817,014

Source: ComEd tracking data and evaluation team analysis

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

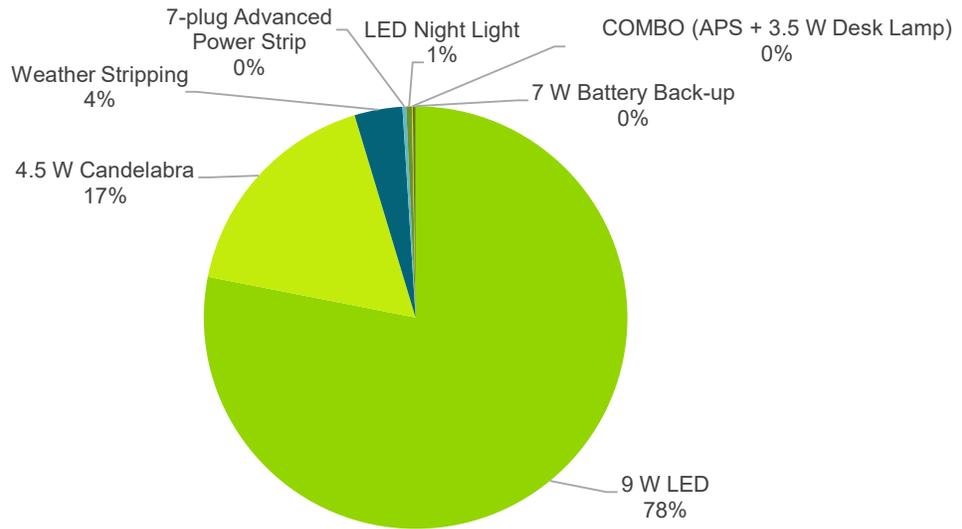
**Table 2-2. Number of Measures by Type**

End Use Type	Research Category	Quantity	Unit
Lighting	9 W LED	2,199,936	Lamp
Lighting	4.5 W Candelabra	486,078	Each
HVAC	Weather Stripping	103,000	Lamp
Consumer Electronics	7-plug Advanced Power Strip	8,000	Lamp
Lighting	LED Night Light	12,000	Each
Multiple	COMBO (APS + 3.5 W Desk Lamp)	2,000	Lamp
Lighting	7 W Battery Back-up	6,000	Each
<b>Total</b>		<b>2,817,014</b>	

Note: The rows are sorted by verified gross savings.

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 Food Bank-LED Distribution 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.<sup>1</sup> Overall, the program had a CY2021 gross realization rate of 1.22.

**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	91,240,466	1.00	91,190,056	1.0	6,200,849	10,792,474	108,183,380
Electric Energy Savings - Converted from Gas‡	kWh	19,143,035	1.00	19,143,064	1.0	N/A	N/A	19,143,064
Total Electric Energy Savings	kWh	110,383,501	1.00	110,333,121	1.0	6,200,849	10,792,474	127,326,444
Summer Peak§ Demand Savings	kW	10,788	1.00	10,780	1.0	750	1,294	12,824

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.

‡ 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

<sup>1</sup> 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 Food Bank-LED Distribution 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**

End Use Type	Research Category	EUL	CY2021 Verified Gross Savings (kWh)	NTG*	Lifetime Net Savings (kWh)†	Verified Net kWh Savings										
						2018	2019	2020	2021	2022	2023	2024	2025	2026		
Lighting	9 W LED	10.0	73,644,872	1.00	690,052,450				73,644,872	73,644,872	73,644,872	73,644,872	73,644,872	73,644,872	73,644,872	
Lighting	4.5 W Candelabra	10.0	14,621,031	1.00	129,542,340				14,621,031	14,621,031	14,621,031	14,621,031	14,621,031	14,621,031		
HVAC	Weather Stripping	20.0	1,561,332	1.00	31,226,648				1,561,332	1,561,332	1,561,332	1,561,332	1,561,332	1,561,332		
Consumer Electronics	7-plug Advanced Power Strip	7.0	749,840	1.00	5,248,880				749,840	749,840	749,840	749,840	749,840	749,840		
Lighting	LED Night Light	8.0	283,368	1.00	2,266,945				283,368	283,368	283,368	283,368	283,368	283,368		
Multiple	COMBO (APS + 3.5 W Desk Lamp)	15.0	201,531	1.00	1,523,282				201,531	201,531	201,531	201,531	201,531	201,531		
Lighting	7 W Battery Back-up	10.0	128,082	1.00	1,200,127				128,082	128,082	128,082	128,082	128,082	128,082		
Lighting	CY2019 & CY2020 Carryover	10.0	16,993,324	1.00	146,261,568				16,993,324	16,993,324	16,993,324	16,993,324	16,993,324	16,993,324		
<b>CY2021 Program Total Electric Contribution to CPAS</b>			<b>108,183,380</b>		<b>1,007,322,240</b>				<b>108,183,380</b>	<b>108,183,380</b>	<b>108,183,380</b>	<b>108,183,380</b>	<b>108,183,380</b>	<b>108,183,380</b>		
<b>Historic Program Total Electric Contribution to CPAS‡</b>						<b>39,753,102</b>	<b>116,517,078</b>	<b>22,926,723</b>	<b>144,892,369</b>	<b>144,892,369</b>	<b>144,892,369</b>	<b>140,392,831</b>	<b>139,603,832</b>	<b>139,602,697</b>		
<b>Program Total Electric CPAS</b>						<b>39,753,102</b>	<b>116,517,078</b>	<b>22,926,723</b>	<b>253,075,749</b>	<b>253,075,749</b>	<b>253,075,749</b>	<b>248,576,211</b>	<b>247,787,212</b>	<b>247,786,077</b>		
<b>CY2021 Program Incremental Expiring Electric Savings§</b>																
<b>Historic Program Incremental Expiring Electric Savings</b>									(121,965,646)	-	-	4,499,538	788,999	1,135		
<b>Program Total Incremental Expiring Electric Savings</b>									(121,965,646)	-	-	4,499,538	788,999	1,135		

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Lighting	9 W LED	73,644,872	58,179,449	58,179,449	58,179,449								
Lighting	4.5 W Candelabra	14,621,031	9,065,040	9,065,040	9,065,040								
HVAC	Weather Stripping	1,561,332	1,561,332	1,561,332	1,561,332	1,561,332	1,561,332	1,561,332	1,561,332	1,561,332	1,561,332	1,561,332	1,561,332
Consumer Electronics	7-plug Advanced Power Strip	749,840											
Lighting	LED Night Light	283,368	283,368										
Multiple	COMBO (APS + 3.5 W Desk Lamp)	201,531	14,071	14,071	14,071	14,071	14,071	14,071	14,071	14,071			
Lighting	7 W Battery Back-up	128,082	101,185	101,185	101,185								
Lighting	CY2019 & CY2020 Carryover	11,079,641	11,079,641	11,071,172	11,071,172								
<b>CY2021 Program Total Electric Contribution to CPAS</b>		<b>102,269,698</b>	<b>80,284,087</b>	<b>79,992,249</b>	<b>79,992,249</b>	<b>1,575,403</b>	<b>1,575,403</b>	<b>1,575,403</b>	<b>1,575,403</b>	<b>1,575,403</b>	<b>1,561,332</b>	<b>1,561,332</b>	<b>1,561,332</b>
<b>Historic Program Total Electric Contribution to CPAS‡</b>		<b>95,866,718</b>	<b>84,577,710</b>	<b>62,602,825</b>	<b>20,094</b>	<b>20,094</b>	<b>20,094</b>	<b>20,094</b>	<b>20,094</b>	<b>20,094</b>	<b>20,094</b>	<b>20,094</b>	<b>20,094</b>
<b>Program Total Electric CPAS</b>		<b>198,136,416</b>	<b>164,861,797</b>	<b>142,595,074</b>	<b>80,012,343</b>	<b>1,595,497</b>	<b>1,595,497</b>	<b>1,595,497</b>	<b>1,595,497</b>	<b>1,595,497</b>	<b>1,581,426</b>	<b>1,581,426</b>	<b>1,581,426</b>
<b>CY2021 Program Incremental Expiring Electric Savings§</b>		<b>5,913,682</b>	<b>21,985,611</b>	<b>291,837</b>	<b>-</b>	<b>78,416,846</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>14,071</b>	<b>-</b>	<b>-</b>
<b>Historic Program Incremental Expiring Electric Savings</b>		<b>43,735,979</b>	<b>11,289,008</b>	<b>21,974,885</b>	<b>62,582,731</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Program Total Incremental Expiring Electric Savings</b>		<b>49,649,661</b>	<b>33,274,619</b>	<b>22,266,722</b>	<b>62,582,731</b>	<b>78,416,846</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>14,071</b>	<b>-</b>	<b>-</b>

End Use Type	Research Category	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Lighting	9 W LED												
Lighting	4.5 W Candelabra												
HVAC	Weather Stripping	1,561,332	1,561,332										
Consumer Electronics	7-plug Advanced Power Strip												
Lighting	LED Night Light												
Multiple	COMBO (APS + 3.5 W Desk Lamp)												
Lighting	7 W Battery Back-up												
Lighting	CY2019 & CY2020 Carryover												
<b>CY2021 Program Total Electric Contribution to CPAS</b>		<b>1,561,332</b>	<b>1,561,332</b>	-	-	-	-	-	-	-	-	-	-
<b>Historic Program Total Electric Contribution to CPAS†</b>		<b>20,094</b>	-	-	-	-	-	-	-	-	-	-	-
<b>Program Total Electric CPAS</b>		<b>1,581,426</b>	<b>1,561,332</b>	-	-	-	-	-	-	-	-	-	-
<b>CY2021 Program Incremental Expiring Electric Savings§</b>		-	-	<b>1,561,332</b>	-	-	-	-	-	-	-	-	-
<b>Historic Program Incremental Expiring Electric Savings</b>		-	<b>20,094</b>	-	-	-	-	-	-	-	-	-	-
<b>Program Total Incremental Expiring Electric Savings</b>		-	<b>20,094</b>	<b>1,561,332</b>	-	-	-	-	-	-	-	-	-

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	CY2021 Verified Gross Savings			Lifetime Net Savings (Therms)†	Verified Net Therms Savings										
		EUL	(Therms)	NTG*		2018	2019	2020	2021	2022	2023	2024	2025	2026		
Lighting	9 W LED	10.0	-	1.00	-											
Lighting	4.5 W Candelabra	10.0	-	1.00	-											
HVAC	Weather Stripping	20.0	653,124	1.00	13,062,480				653,124	653,124	653,124	653,124	653,124	653,124	653,124	653,124
Consumer Electronics	7-plug Advanced Power Strip	7.0	-	1.00	-											
Lighting	LED Night Light	8.0	-	1.00	-											
Multiple	COMBO (APS + 3.5 W Desk Lamp)	15.0	-	1.00	-											
Lighting	7 W Battery Back-up	10.0	-	1.00	-											
Lighting	CY2019 & CY2020 Carryover	10.0	-	1.00	-											
<b>CY2021 Program Total Gas Contribution to CPAS (Therms)</b>			<b>653,124</b>		<b>13,062,480</b>				<b>653,124</b>							
<b>CY2021 Program Total Gas Contribution to CPAS (kWh Equivalent)‡</b>									<b>19,143,064</b>							
<b>Historic Program Total Gas Contribution to CPAS (kWh Equivalent)§</b>									<b>245,692</b>							
<b>Program Total Gas CPAS (kWh Equivalent)</b>									<b>245,692</b>	<b>19,388,756</b>						
<b>CY2021 Program Incremental Expiring Gas Savings (Therms)</b>																
<b>CY2021 Program Incremental Expiring Gas Savings (kWh Equivalent)  </b>																
<b>Historic Program Incremental Expiring Gas Savings (kWh Equivalent)</b>																
<b>Program Total Incremental Expiring Gas Savings (kWh Equivalent)</b>																

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Lighting	9 W LED	-	-	-	-								
Lighting	4.5 W Candelabra	-	-	-	-								
HVAC	Weather Stripping	653,124	653,124	653,124	653,124	653,124	653,124	653,124	653,124	653,124	653,124	653,124	653,124
Consumer Electronics	7-plug Advanced Power Strip	-	-	-	-								
Lighting	LED Night Light	-	-	-	-								
Multiple	COMBO (APS + 3.5 W Desk Lamp)	-	-	-	-								
Lighting	7 W Battery Back-up	-	-	-	-								
Lighting	CY2019 & CY2020 Carryover	-	-	-	-								
<b>CY2021 Program Total Gas Contribution to CPAS (Therms)</b>		<b>653,124</b>											
<b>CY2021 Program Total Gas Contribution to CPAS (kWh Equivalent)‡</b>		<b>19,143,064</b>											
<b>Historic Program Total Gas Contribution to CPAS (kWh Equivalent)§</b>		<b>245,692</b>											
<b>Program Total Gas CPAS (kWh Equivalent)</b>		<b>19,388,756</b>											
<b>CY2021 Program Incremental Expiring Gas Savings (Therms)</b>		-	-	-	-								
<b>CY2021 Program Incremental Expiring Gas Savings (kWh Equivalent)  </b>		-	-	-	-								
<b>Historic Program Incremental Expiring Gas Savings (kWh Equivalent)</b>		-	-	-	-								
<b>Program Total Incremental Expiring Gas Savings (kWh Equivalent)</b>		-	-	-	-								

End Use Type	Research Category	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Lighting	9 W LED												
Lighting	4.5 W Candelabra												
HVAC	Weather Stripping	653,124	653,124										
Consumer Electronics 7-plug Advanced Power Strip													
Lighting	LED Night Light												
Multiple	COMBO (APS + 3.5 W Desk Lamp)												
Lighting	7 W Battery Back-up												
Lighting	CY2019 & CY2020 Carryover												
<b>CY2021 Program Total Gas Contribution to CPAS (Therms)</b>		<b>653,124</b>	<b>653,124</b>	-	-	-	-	-	-	-	-	-	-
<b>CY2021 Program Total Gas Contribution to CPAS (kWh Equivalent)†</b>		<b>19,143,064</b>	<b>19,143,064</b>	-	-	-	-	-	-	-	-	-	-
<b>Historic Program Total Gas Contribution to CPAS (kWh Equivalent)§</b>		<b>245,692</b>	<b>245,692</b>	<b>245,692</b>	-	-	-	-	-	-	-	-	-
<b>Program Total Gas CPAS (kWh Equivalent)</b>		<b>19,388,756</b>	<b>19,388,756</b>	<b>245,692</b>	-	-	-	-	-	-	-	-	-
<b>CY2021 Program Incremental Expiring Gas Savings (Therms)</b>		-	-	<b>653,124</b>	-	-	-	-	-	-	-	-	-
<b>CY2021 Program Incremental Expiring Gas Savings (kWh Equivalent)  </b>		-	-	<b>19,143,064</b>	-	-	-	-	-	-	-	-	-
<b>Historic Program Incremental Expiring Gas Savings (kWh Equivalent)</b>		-	-	-	<b>245,692</b>	-	-	-	-	-	-	-	-
<b>Program Total Incremental Expiring Gas Savings (kWh Equivalent)</b>		-	-	<b>19,143,064</b>	<b>245,692</b>	-	-	-	-	-	-	-	-

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-ntg-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 CY2020.

|| Incremental expiring savings are equal to CPAS Y<sub>n-1</sub> - CPAS Y<sub>n</sub>.

Source: Evaluation team analysis

**Table 4-3. Cumulative Persisting Annual Savings – Total**

End Use Type	Research Category	CY2021 Verified		Lifetime Net	Verified Net kWh Savings (Including Those Converted from Gas Savings)										
		EUL	Gross Savings (kWh)		NTG* Savings (kWh)†	2018	2019	2020	2021	2022	2023	2024	2025	2026	
Lighting	9 W LED	10.0	73,644,872	1.00	690,052,450				73,644,872	73,644,872	73,644,872	73,644,872	73,644,872	73,644,872	73,644,872
Lighting	4.5 W Candelabra	10.0	14,621,031	1.00	129,542,340				14,621,031	14,621,031	14,621,031	14,621,031	14,621,031	14,621,031	14,621,031
HVAC	Weather Stripping	20.0	20,704,397	1.00	414,087,936				20,704,397	20,704,397	20,704,397	20,704,397	20,704,397	20,704,397	20,704,397
Consumer Electronics	7-plug Advanced Power Strip	7.0	749,840	1.00	5,248,880				749,840	749,840	749,840	749,840	749,840	749,840	749,840
Lighting	LED Night Light	8.0	283,368	1.00	2,266,945				283,368	283,368	283,368	283,368	283,368	283,368	283,368
Multiple	COMBO (APS + 3.5 W Desk Lamp)	15.0	201,531	1.00	1,523,282				201,531	201,531	201,531	201,531	201,531	201,531	201,531
Lighting	7 W Battery Back-up	10.0	128,082	1.00	1,200,127				128,082	128,082	128,082	128,082	128,082	128,082	128,082
Lighting	CY2019 & CY2020 Carryover	10.0	16,993,324	1.00	146,261,568				16,993,324	16,993,324	16,993,324	16,993,324	16,993,324	16,993,324	16,993,324
<b>CY2021 Program Total Contribution to CPAS</b>			<b>127,326,444</b>		<b>1,390,183,529</b>				<b>127,326,444</b>	<b>127,326,444</b>	<b>127,326,444</b>	<b>127,326,444</b>	<b>127,326,444</b>	<b>127,326,444</b>	<b>127,326,444</b>
<b>Historic Program Total Contribution to CPAS‡</b>						<b>39,753,102</b>	<b>116,517,078</b>	<b>23,172,415</b>	<b>145,138,061</b>	<b>145,138,061</b>	<b>145,138,061</b>	<b>140,638,523</b>	<b>139,849,524</b>	<b>139,848,389</b>	<b>139,848,389</b>
<b>Program Total CPAS</b>						<b>39,753,102</b>	<b>116,517,078</b>	<b>23,172,415</b>	<b>272,464,505</b>	<b>272,464,505</b>	<b>272,464,505</b>	<b>267,964,967</b>	<b>267,175,968</b>	<b>267,174,833</b>	<b>267,174,833</b>
<b>CY2021 Program Incremental Expiring Savings§</b>															
<b>Historic Program Incremental Expiring Savings</b>									<b>(121,965,646)</b>			<b>4,499,538</b>	<b>788,999</b>	<b>1,135</b>	<b>1,135</b>
<b>Program Total Incremental Expiring Savings</b>									<b>(121,965,646)</b>			<b>4,499,538</b>	<b>788,999</b>	<b>1,135</b>	<b>1,135</b>
End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038		
Lighting	9 W LED	73,644,872	58,179,449	58,179,449	58,179,449										
Lighting	4.5 W Candelabra	14,621,031	9,065,040	9,065,040	9,065,040										
HVAC	Weather Stripping	20,704,397	20,704,397	20,704,397	20,704,397	20,704,397	20,704,397	20,704,397	20,704,397	20,704,397	20,704,397	20,704,397	20,704,397		
Consumer Electronics	7-plug Advanced Power Strip	749,840													
Lighting	LED Night Light	283,368	283,368												
Multiple	COMBO (APS + 3.5 W Desk Lamp)	201,531	14,071	14,071	14,071	14,071	14,071	14,071	14,071	14,071					
Lighting	7 W Battery Back-up	128,082	101,185	101,185	101,185										
Lighting	CY2019 & CY2020 Carryover	11,079,641	11,079,641	11,071,172	11,071,172										
<b>CY2021 Program Total Contribution to CPAS</b>		<b>121,412,762</b>	<b>99,427,151</b>	<b>99,135,314</b>	<b>99,135,314</b>	<b>20,718,468</b>	<b>20,718,468</b>	<b>20,718,468</b>	<b>20,718,468</b>	<b>20,718,468</b>	<b>20,704,397</b>	<b>20,704,397</b>	<b>20,704,397</b>		
<b>Historic Program Total Contribution to CPAS‡</b>		<b>96,112,410</b>	<b>84,823,402</b>	<b>62,848,517</b>	<b>265,786</b>	<b>265,786</b>	<b>265,786</b>	<b>265,786</b>	<b>265,786</b>	<b>265,786</b>	<b>265,786</b>	<b>265,786</b>	<b>265,786</b>		
<b>Program Total CPAS</b>		<b>217,525,172</b>	<b>184,250,553</b>	<b>161,983,831</b>	<b>99,401,100</b>	<b>20,984,254</b>	<b>20,984,254</b>	<b>20,984,254</b>	<b>20,984,254</b>	<b>20,984,254</b>	<b>20,970,183</b>	<b>20,970,183</b>	<b>20,970,183</b>		
<b>CY2021 Program Incremental Expiring Savings§</b>		<b>5,913,682</b>	<b>21,985,611</b>	<b>291,837</b>	<b>-</b>	<b>78,416,846</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>14,071</b>	<b>-</b>	<b>-</b>		
<b>Historic Program Incremental Expiring Savings</b>		<b>43,735,979</b>	<b>11,289,008</b>	<b>21,974,885</b>	<b>62,582,731</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>		
<b>Program Total Incremental Expiring Savings</b>		<b>49,649,661</b>	<b>33,274,619</b>	<b>22,266,722</b>	<b>62,582,731</b>	<b>78,416,846</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>14,071</b>	<b>-</b>	<b>-</b>		

End Use Type	Research Category	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Lighting	9 W LED												
Lighting	4.5 W Candelabra												
HVAC	Weather Stripping	20,704,397	20,704,397										
Consumer Electronics	7-plug Advanced Power Strip												
Lighting	LED Night Light												
Multiple	COMBO (APS + 3.5 W Desk Lamp)												
Lighting	7 W Battery Back-up												
Lighting	CY2019 & CY2020 Carryover												
<b>CY2021 Program Total Contribution to CPAS</b>		<b>20,704,397</b>	<b>20,704,397</b>	-	-	-	-	-	-	-	-	-	-
<b>Historic Program Total Contribution to CPAS†</b>		<b>265,786</b>	<b>245,692</b>	<b>245,692</b>	-	-	-	-	-	-	-	-	-
<b>Program Total CPAS</b>		<b>20,970,183</b>	<b>20,950,089</b>	<b>245,692</b>	-	-	-	-	-	-	-	-	-
<b>CY2021 Program Incremental Expiring Savings‡</b>		-	-	<b>20,704,397</b>	-	-	-	-	-	-	-	-	-
<b>Historic Program Incremental Expiring Savings</b>		-	<b>20,094</b>	-	<b>245,692</b>	-	-	-	-	-	-	-	-
<b>Program Total Incremental Expiring Savings</b>		-	<b>20,094</b>	<b>20,704,397</b>	<b>245,692</b>	-	-	-	-	-	-	-	-

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>.

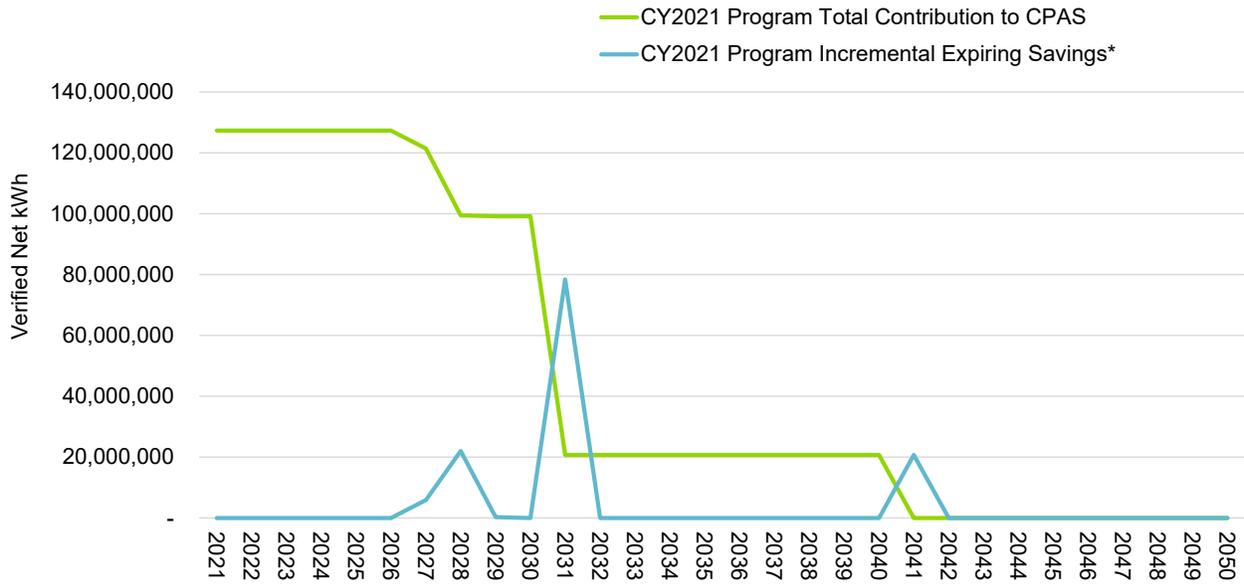
† Lifetime savings are the sum of CPAS savings through the EUL.

‡ 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  $Y_n$ .

Source: Evaluation team analysis

## 5. Program Savings by Measure

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

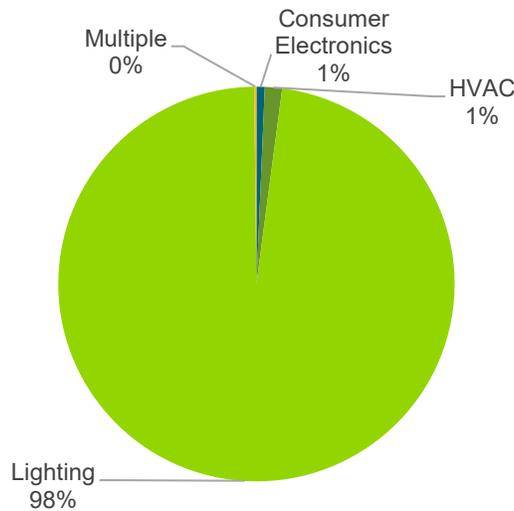
**Table 5-1. Number of Measures by Type**

End Use Type	Research Category	Quantity	Unit
Lighting	9 W LED	2,199,936	Lamp
Lighting	4.5 W Candelabra	486,078	Each
HVAC	Weather Stripping	103,000	Lamp
Consumer Electronics	7-plug Advanced Power Strip	8,000	Lamp
Lighting	LED Night Light	12,000	Each
Multiple	COMBO (APS + 3.5 W Desk Lamp)	2,000	Lamp
Lighting	7 W Battery Back-up	6,000	Each
<b>Total</b>		<b>2,817,014</b>	

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 LED	73,645,058	1.00	73,644,872	1.00	73,644,872	10.0
Lighting	4.5 W Candelabra	14,621,226	1.00	14,621,031	1.00	14,621,031	10.0
HVAC	Weather Stripping	1,561,892	1.00	1,561,332	1.00	1,561,332	20.0
Consumer Electronics	7-plug Advanced Power Strip	749,840	1.00	749,840	1.00	749,840	7.0
Lighting	LED Night Light	283,368	1.00	283,368	1.00	283,368	8.0
Multiple	COMBO (APS + 3.5 W Desk Lamp)	251,000	0.80	201,531	1.00	201,531	15.0
Lighting	7 W Battery Back-up	128,082	1.00	128,082	1.00	128,082	10.0
Lighting	CY2019 & CY2020 Carryover	NR	N/A	16,993,324	1.00	16,993,324	10.0
	<b>Total</b>	<b>91,240,466</b>	<b>1.19</b>	<b>108,183,380</b>	<b>1.00</b>	<b>108,183,380</b>	

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>.

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 LED	8,921.00	1.00	8,920.93	1.00	8,920.93
Lighting	4.5 W Candelabra	1,736.00	1.00	1,736.44	1.00	1,736.44
HVAC	Weather Stripping	0.00	1.00	0.00	1.00	0.00
Consumer Electronics	7-plug Advanced Power Strip	84.14	1.00	84.15	1.00	84.15
Lighting	LED Night Light	0.00	1.00	0.00	1.00	0.00
Multiple	COMBO (APS + 3.5 W Desk Lamp)	31.81	0.74	23.42	1.00	23.42
Lighting	7 W Battery Back-up	15.52	1.00	15.52	1.00	15.52
Lighting	CY2019 & CY2020 Carryover	NR	N/A	2,043.42	1.00	2,043.42
	<b>Total</b>	<b>10,788.47</b>	<b>1.19</b>	<b>12,823.89</b>	<b>1.00</b>	<b>12,823.89</b>

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 Food Bank-LED Distribution Program includes measures that save gas. Table 5-4 shows the measure-level gas savings.

**Table 5-4. 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 LED	0	N/A	0	1.00	0	10.0
Lighting	4.5 W Candelabra	0	N/A	0	1.00	0	10.0
HVAC	Weather Stripping	653,123	1.00	653,124	1.00	653,124	20.0
Consumer Electronics	7-plug Advanced Power Strip	0	N/A	0	1.00	0	7.0
Lighting	LED Night Light	0	N/A	0	1.00	0	8.0
Multiple	COMBO (APS + 3.5 W Desk Lamp)	0	N/A	0	1.00	0	15.0
Lighting	7 W Battery Back-up	0	N/A	0	1.00	0	10.0
Lighting	CY2019 & CY2020 Carryover	NR	N/A	0	1.00	0	10.0
	<b>Total Therms</b>	<b>653,123</b>	<b>1.00</b>	<b>653,124</b>	<b>1.00</b>	<b>653,124</b>	
	<b>Total kWh Converted From Therms†</b>	<b>19,143,035</b>	<b>1.00</b>	<b>19,143,064</b>		<b>19,143,064</b>	

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).

Source: ComEd tracking data and evaluation team analysis

Table 5-5 is combined savings from Table 5-2 and Table 5-4.

**Table 5-5. 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 LED	73,645,058	1.00	73,644,872	1.00	73,644,872
Lighting	4.5 W Candelabra	14,621,226	1.00	14,621,031	1.00	14,621,031
HVAC	Weather Stripping	20,704,927	1.00	20,704,397	1.00	20,704,397
Consumer Electronics	7-plug Advanced Power Strip	749,840	1.00	749,840	1.00	749,840
Lighting	LED Night Light	283,368	1.00	283,368	1.00	283,368
Multiple	COMBO (APS + 3.5 W Desk Lamp)	251,000	0.80	201,531	1.00	201,531
Lighting	7 W Battery Back-up	128,082	1.00	128,082	1.00	128,082
Lighting	CY2019 & CY2020 Carryover	NR	N/A	16,993,324	1.00	16,993,324
	<b>Total†</b>	<b>110,383,501</b>	<b>1.15</b>	<b>127,326,444</b>	<b>1.00</b>	<b>127,326,444</b>

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 issue that had the largest effect on the program realization rate was several modifications to the savings calculations for the COMBO (APS + 3.5 W Desk Lamp) measure.

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

**Finding 1.** The COMBO (APS + 3.5 W Desk Lamp) measure includes a standalone desk lamp. The ex ante savings were calculated assuming that this desk lamp would replace an inefficient desk lamp in every case. The evaluation team believes that these desk lamps are equally likely to be used without replacing an existing lamp. Given the uncertainty, the evaluation team used a new construction baseline for task lighting in the verified savings.

**Recommendation 1.** Calculate savings for the desk lamp using a baseline wattage of 15.0 W, sourced from the new construction baseline for a task light in Section 5.5.9 of the Illinois Technical Reference Manual v9.0 (IL-TRM).<sup>2</sup>

**Finding 2.** Ex ante savings for the COMBO (APS + 3.5 W Desk Lamp) measure are calculated using an in-service rate (ISR) of 100%. While this ISR is sourced from Section 5.5.9 of the IL-TRM v9.0, the evaluation team does not agree that an ISR of 100% is appropriate for a kits program.

**Recommendation 2.** Calculate savings for this measure using the Food Bank / Pantry Distribution ISR from Section 5.5.8 of the IL-TRM (80.3%) to align with all other lighting measures in this program.

**Finding 3.** Ex ante and verified savings calculations use Methodology 2 from Section 5.6.1 of the IL-TRM for the weatherstripping measure and apply the %ElectricHeat value for Unknown heating fuel (13%). There is no recommended change to savings calculations for this measure. The evaluation team agrees that although the %ElectricHeat value is not included in the Methodology 2 savings formula in Section 5.6.1 of the IL-TRM, it is correct to include it in the savings calculation for the weatherstripping measure in this program as the heating fuel is unknown for all participants. The team will work with the Illinois SAG to update the Methodology 2 savings formula to include the %ElectricHeat value in future iterations of the IL-TRM.

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

## Appendix A. Impact Analysis Methodology

The evaluation team verified unit savings for each program measure using the impact algorithm sources found in the IL-TRM. 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 the 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 Omnidirectional Bulb Measures	Varies	kWh	Deemed	IL-TRM – Errata Sept. 10, 2021 – Section 5.5.8
Specialty LED Measures	Varies	kWh	Mixture	IL-TRM
LED Nightlight Measures	23.61	kWh	Mixture	IL-TRM – Section 5.5.11
3.5 W LED Desk Lamp Measures	7.04	kWh	Mixture	IL-TRM – Section 5.5.9
Weatherstripping Measures	15.16	kWh	Deemed	IL-TRM – Section 5.6.1
EUL	Varies	kWh	Mixture	IL-TRM

Source: Evaluation team analysis

### A.1 CY2021 Lighting 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 A-2 shows that 152,269 lighting measures purchased in CY2019 and 236,344 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 16,993,324 kWh and summer peak carryover savings of 15,980 kW.

**Table A-2. 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	152,269	236,344	388,613
Average Delta Watts	34.2	40.6	38.1
Average Annual Hours of Use	1,145	1,098	1,116
Average Energy Interactive Effects	1.050	1.049	1.049
Average Demand Interactive Effects	1.092	1.088	1.090
Summer Peak Load Coincidence Factor	0.133	0.126	0.129
Carryover Gross Energy Savings (kWh)	6,200,849	10,792,474	16,993,324
Carryover Gross Demand Savings (kW)	5,631	10,350	15,980
Carryover Gross Summer Peak Demand Savings (kW)	750	1,294	2,043
Net-to-Gross Ratio	1.00	1.00	1.00
Carryover Net Energy Savings (kWh)	6,200,849	10,792,474	16,993,324
Carryover Net Demand Savings (kW)	5,631	10,350	15,980
Carryover Net Summer Peak Demand Savings (kW)	750	1,294	2,043
Average Effective Useful Life	10.0	10.0	10.0

Source: Evaluation team analysis

## A.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 A-3 shows that 455,369 bulbs distributed during CY2020 and CY2021 are expected to be installed in CY2022 in 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 20,301,222 kWh and 2,419 peak demand kW.

**Table A-3. CY2022 Carryover Savings from CY2020 and CY2021 Program Distribution**

CY2022 Verified Savings Carryover Estimate	CY2020 Bulbs	CY2021 Bulbs	Carryover in CY2022
Carryover Bulbs Installed During CY2022	236,344	219,025	455,369
Average Delta Watts	40.6	34.5	37.7
Average Annual Hours of Use	1,098	1,035	1,068
Average Energy Interactive Effects	1.049	1.046	1.047
Average Demand Interactive Effects	1.088	1.083	1.086
Summer Peak Load Coincidence Factor	0.126	0.117	0.122
Carryover Gross Energy Savings (kWh)	10,792,474	9,508,748	20,301,222
Carryover Gross Demand Savings (kW)	10,350	9,624	19,973
Carryover Gross Summer Peak Demand Savings (kW)	1,294	1,125	2,419
Net-to-Gross Ratio	1.00	1.00	1.00
Carryover Net Energy Savings (kWh)	10,792,474	9,508,748	20,301,222
Carryover Net Demand Savings (kW)	10,350	9,624	19,973
Carryover Net Summer Peak Demand Savings (kW)	1,294	1,125	2,419
Average Effective Useful Life	10.0	10.0	10.0

Source: 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. 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 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	9 W LED‡	Lamp	2,199,936	10.0	No	73,644,872	8,920.93	0	0	0	-1,434,498	1.00	1.00	1.00	73,644,872	8,920.93	0	0	0	-1,434,498
Lighting	4.5 W Candelabra‡	Lamp	486,078	10.0	No	14,621,031	1,736.44	0	0	0	-286,158	1.00	1.00	1.00	14,621,031	1,736.44	0	0	0	-286,158
HVAC	Weather Stripping	Each	103,000	20.0	No	1,561,332	0.00	653,124	0	0	0	1.00	1.00	1.00	1,561,332	0.00	653,124	0	0	0
Consumer Electronics	7-plug Advanced Power Strip	Each	8,000	7.0	No	749,840	84.15	0	0	0	0	1.00	1.00	1.00	749,840	84.15	0	0	0	0
Lighting	LED Night Light	Lamp	12,000	8.0	No	283,368	0.00	0	0	0	-6,421	1.00	1.00	1.00	283,368	0.00	0	0	0	-6,421
Multiple	COMBO (APS + 3.5 W Desk Lamp)‡	Lamp	2,000	15.0	No	201,531	23.42	0	0	0	-274	1.00	1.00	1.00	201,531	23.42	0	0	0	-274
Lighting	7 W Battery Back-up‡	Lamp	6,000	10.0	No	128,082	15.52	0	0	0	-2,495	1.00	1.00	1.00	128,082	15.52	0	0	0	-2,495
Lighting	CY2019 & CY2020 Carryover‡	Lamp	324,330	10.0	No	16,993,324	2,043.42	0	0	0	-177,519	1.00	1.00	1.00	16,993,324	2,043.42	0	0	0	-177,519
<b>Total</b>				<b>10.1</b>		<b>108,183,380</b>	<b>12,824</b>	<b>653,124</b>	<b>0</b>	<b>0</b>	<b>-1,907,366</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>108,183,380</b>	<b>12,824</b>	<b>653,124</b>	<b>0</b>	<b>0</b>	<b>-1,907,366</b>

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