

ComEd Multi-Family Assessments 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 calendar year (CY) 2021 Multi-Family Assessments 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 Multi-Family Assessments Program serves as a one-stop-shop to multi-family building owners and managers to generate electricity and natural gas savings throughout a property. The program is jointly implemented by ComEd and Nicor Gas, and ComEd, Peoples Gas, and North Shore Gas companies. Franklin Energy is the implementation contractor for the joint program. Because this is a joint program, all gas savings (in therms) are claimed by the gas utilities and are reported in the Peoples Gas, North Shore Gas, and Nicor Gas evaluation reports.

In CY2021, the program had 646 participants and distributed 85,431 measures (see Table 2-1).

Table 2-1. Number of Participants, Measures, and Projects

Participation	Direct Distribution	Direct Install	Prescriptive	Total
Total Participants	11	336	299	646
Total Measures	4,121	52,417	28,893	85,431
Installed Projects	11	9,729	308	10,048

Source: ComEd tracking data and evaluation team analysis

The program provided assessment services and installed various energy-saving measures in CY2021. These measures included light-emitting diodes (LEDs) in tenant units and common areas, water-saving devices, lighting controls, programmable thermostats, reprogram thermostats, advanced thermostats, and pipe insulation.

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	LED Exterior HID	2,535 Lamp
Lighting	LED Exit Sign	4,074 Lamp
Lighting	LED 24/7 CA Interior T8	4,897 Lamp
Lighting	LED 24/7 Garage HID	613 Lamp
HVAC	Advanced Thermostat	882 Each
Lighting	LED 24/7 CA Interior T12	2,173 Lamp
Lighting	LED 24/7 Garage T8	2,609 Lamp
Lighting	LED IU Interior Omnidirectional	15,912 Lamp
Lighting	LED 24/7 Garage T12	1,211 Lamp
Lighting	LED IU Interior Decorative	12,727 Lamp
Hot Water	Low Flow Showerhead (IU, Electric)	925 Each
Lighting	LED CA Interior T12	1,960 Lamp
Lighting	LED IU Interior Fixture	5,957 Lamp
Lighting	LED CA Interior Omnidirectional Incandescent	1,104 Lamp
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Lighting	LED CA Interior Decorative Incandescent	393 Lamp
Lighting	LED CA Interior Omnidirectional CFL	2,972 Lamp
Lighting	LED CA Exterior Omnidirectional Incandescent	383 Lamp
Lighting	LED CA Interior Directional Incandescent	160 Lamp
HVAC	IU Programmable Thermostat	574 Each
Hot Water	Faucet Aerator - Bathroom (IU, Electric)	1,029 Each
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Hot Water	CA Pipe Insulation	163 Linear Foot
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Lighting	LED IU Exterior Decorative	66 Lamp
Hot Water	Low Flow Showerhead (CA, Electric)	10 Each
Lighting	LED CA Exterior Decorative Incandescent	28 Lamp
Lighting	LED CA Interior Directional CFL	78 Lamp
Lighting	LED IU Exterior Omnidirectional	32 Lamp
Lighting	LED CA Exterior Directional CFL	90 Lamp
Lighting	LED Garage HID	3 Lamp
Lighting	LED Garage T12	20 Lamp
Lighting	LED CA Interior Decorative CFL	60 Lamp
Hot Water	Faucet Aerator - Bathroom (CA, Electric)	8 Each
Lighting	LED CA Exterior Decorative CFL	24 Lamp
Lighting	LED CA Garage Omnidirectional CFL	12 Lamp
Total		85,431

Note: The rows are sorted by verified gross savings.

HID – High intensity discharge

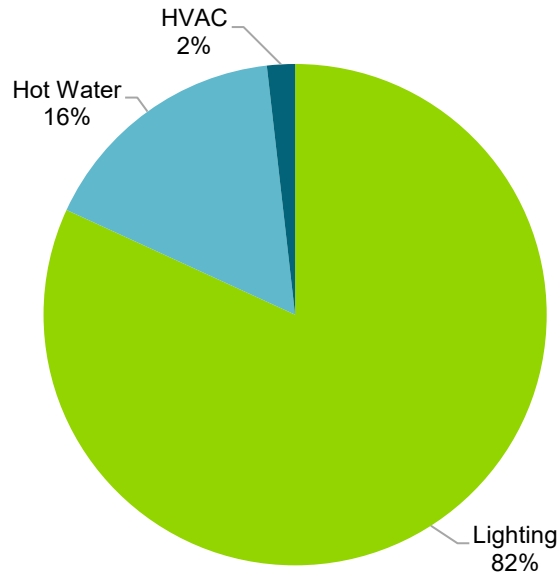
CA – Common area

IU – In-unit

CFL – Compact fluorescent lamp

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 Multi-Family Assessments Program achieved in CY2021. The gas utilities are claiming all gas savings for this program.

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	9,538,796	0.98	9,369,022	Varies	N/A	N/A	8,121,286
Electric Energy Savings - Converted from Gas	kWh	0	N/A	0	N/A	0	0	0
Total Electric Energy Savings	kWh	9,538,796	0.98	9,369,022	Varies	N/A	N/A	8,121,286
Summer Peak§ Demand Savings	kW	1,027	1.00	1,031	Varies	N/A	N/A	903

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

* The "Verified Net Savings" in row one (Electric Energy Savings – Direct) include primary kWh savings as a result of measure implementation. It also includes secondary kWh savings from wastewater treatment and electric heating penalties.

§ 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

4. Cumulative Persisting Annual Savings

Table 4-1 and Figure 4-1 show the measure-specific and total verified gross savings for the Multi-Family Assessment 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 historic rows are the CPAS contribution back to CY2018. The Program Total Electric CPAS is 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.

The gas utilities are claiming all gas savings so electric CPAS is equivalent to total CPAS.

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	LED Exterior HID	11.6	1,651,201	0.83	15,924,901				1,370,497	1,370,497	1,370,497	1,370,497	1,370,497	1,370,497
Lighting	LED Exit Sign	5.0	1,191,114	0.83	4,943,124				988,625	988,625	988,625	988,625	988,625	988,625
Lighting	LED 24/7 CA Interior T8	5.7	1,075,720	0.96	5,890,322				1,032,691	1,032,691	1,032,691	1,032,691	1,032,691	726,866
Lighting	LED 24/7 Garage HID	5.7	868,895	0.83	4,113,524				721,183	721,183	721,183	721,183	721,183	507,609
HVAC	Advanced Thermostat	11.0	712,873	Multiple††	6,961,223				632,838	632,838	632,838	632,838	632,838	632,838
Lighting	LED 24/7 CA Interior T12	5.7	594,790	0.96	2,229,885				570,998	453,397	325,469	325,469	325,469	229,083
Lighting	LED 24/7 Garage T8	5.7	566,973	0.96	3,104,577				544,294	544,294	544,294	544,294	544,294	383,105
Lighting	LED IU Interior Omnidirectional	10.0	543,942	0.67	2,288,692				364,441	364,441	364,441	364,441	138,488	138,488
Lighting	LED 24/7 Garage T12	5.7	364,935	0.96	1,368,152				350,337	278,183	199,692	199,692	199,692	140,555
Lighting	LED IU Interior Decorative	10.0	292,286	0.82	1,835,906				239,674	239,674	239,674	239,674	146,201	146,201
Hot Water	Low Flow Showerhead (IU, Electric)	10.0	218,900	1.03	2,254,668				225,467	225,467	225,467	225,467	225,467	225,467
Lighting	LED CA Interior T12	15.0	216,231	0.96	2,141,921				207,582	207,582	207,582	207,582	128,380	118,321
Lighting	LED IU Interior Fixture	15.0	209,414	0.82	1,820,222				171,719	171,719	171,719	171,719	103,031	103,031
Lighting	LED CA Interior Omnidirectional Incandescent	3.4	208,275	0.67	469,055				139,544	139,544	139,544	50,423		
Lighting	LED CA Interior T8	15.0	168,746	0.96	2,429,937				161,996	161,996	161,996	161,996	161,996	161,996
Lighting	LED CA Interior Decorative Incandescent	2.9	79,629	0.82	186,559				65,296	65,296	55,968			
Lighting	LED CA Interior Omnidirectional CFL	3.4	74,876	0.67	168,629				50,167	50,167	50,167	18,128		
Lighting	LED CA Exterior Omnidirectional Incandescent	4.6	52,163	0.67	148,403				34,949	34,949	34,949	34,949	8,605	
Lighting	LED CA Interior Directional Incandescent	4.2	43,037	0.82	145,432				35,290	35,290	35,290	35,290	4,270	
HVAC	IU Programmable Thermostat	16.0	34,989	0.86	243,134				30,091	30,091	30,091	30,091	30,091	8,425
Hot Water	Faucet Aerator - Bathroom (IU, Electric)	10.0	34,491	1.03	355,257				35,526	35,526	35,526	35,526	35,526	35,526
Hot Water	Low Flow Showerhead (Gas)	10.0	28,069	1.03	289,107				28,911	28,911	28,911	28,911	28,911	28,911
Lighting	Lighting Controls	10.0	17,521	0.83	145,427				14,543	14,543	14,543	14,543	14,543	14,543
HVAC	IU Reprogram Thermostat	2.0	17,270	0.86	29,705				14,852	14,852				
Lighting	LED CA Exterior Directional Incandescent	5.8	16,429	0.82	68,518				13,472	13,472	13,472	13,472	8,083	6,547
Lighting	LED CA Exterior Omnidirectional CFL	4.6	14,679	0.67	45,712				9,835	9,835	9,835	9,835	6,372	
Hot Water	Faucet Aerator - Kitchen (IU, Electric)	10.0	14,298	1.03	147,267				14,727	14,727	14,727	14,727	14,727	14,727
Hot Water	Low Flow Faucet Aerator (Gas)	10.0	12,325	1.03	126,952				12,695	12,695	12,695	12,695	12,695	12,695
Hot Water	CA Pipe Insulation	15.0	8,634	0.83	107,492				7,166	7,166	7,166	7,166	7,166	7,166
Lighting	LED Garage T8	14.7	7,755	0.96	109,449				7,445	7,445	7,445	7,445	7,445	7,445
Lighting	LED IU Exterior Decorative	6.9	5,557	0.82	26,289				4,557	4,557	4,557	4,557	2,780	2,780
Hot Water	Low Flow Showerhead (CA, Electric)	10.0	4,140	1.03	42,643				4,264	4,264	4,264	4,264	4,264	4,264
Lighting	LED CA Exterior Decorative Incandescent	4.0	3,578	0.82	11,593				2,934	2,934	2,934	2,790		
Lighting	LED CA Interior Directional CFL	4.2	2,999	0.82	10,333				2,459	2,459	2,459	2,459	496	
Lighting	LED IU Exterior Omnidirectional	8.0	2,545	0.67	9,411				1,705	1,705	1,705	1,705	648	648
Lighting	LED CA Exterior Directional CFL	5.8	2,283	0.82	10,875				1,872	1,872	1,872	1,872	1,872	1,516
Lighting	LED Garage HID	14.7	2,249	0.83	27,438				1,866	1,866	1,866	1,866	1,866	1,866
Lighting	LED Garage T12	14.7	2,223	0.96	21,480				2,134	2,134	2,134	2,061	1,216	1,216
Lighting	LED CA Interior Decorative CFL	2.9	1,386	0.82	3,248				1,137	1,137	974			
Hot Water	Faucet Aerator - Bathroom (CA, Electric)	10.0	1,024	1.03	10,544				1,054	1,054	1,054	1,054	1,054	1,054
Lighting	LED CA Exterior Decorative CFL	4.0	426	0.82	1,380				349	349	349	332		
Lighting	LED CA Garage Omnidirectional CFL	5.6	152	0.67	575				102	102	102	102	102	66
CY2021 Program Total Electric Contribution to CPAS			9,369,022		60,268,959				8,121,286	7,931,530	7,700,769	7,522,432	6,911,585	5,033,452
Historic Program Total Electric Contribution to CPAS‡						11,768,297	17,484,846	26,770,117	23,482,262	23,367,725	22,851,291	20,792,339	17,238,327	10,817,404
Program Total Electric CPAS						11,768,297	17,484,846	26,770,117	31,603,548	31,299,255	30,552,060	28,314,771	24,149,912	15,850,854
CY2021 Program Incremental Expiring Electric Savings§										189,756	230,761	178,337	610,847	1,878,133
Historic Program Incremental Expiring Electric Savings									3,287,855	114,537	516,434	2,058,952	3,554,012	6,420,925
Program Total Incremental Expiring Electric Savings									3,287,855	304,293	747,195	2,237,289	4,164,859	8,299,058

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Lighting	LED Exterior HID	1,370,497	1,370,497	1,370,497	1,370,497	1,370,497	849,434						
Lighting	LED Exit Sign												
Lighting	LED 24/7 CA Interior T8												
Lighting	LED 24/7 Garage HID												
HVAC	Advanced Thermostat	632,838	632,838	632,838	632,838	632,838							
Lighting	LED 24/7 CA Interior T12												
Lighting	LED 24/7 Garage T8												
Lighting	LED IU Interior Omnidirectional	138,488	138,488	138,488	138,488								
Lighting	LED 24/7 Garage T12												
Lighting	LED IU Interior Decorative	146,201	146,201	146,201	146,201								
Hot Water	Low Flow Showerhead (IU, Electric)	225,467	225,467	225,467	225,467								
Lighting	LED CA Interior T12	118,321	118,321	118,321	118,321	118,321	118,321	118,321	118,321	118,321			
Lighting	LED IU Interior Fixture	103,031	103,031	103,031	103,031	103,031	103,031	103,031	103,031	103,031			
Lighting	LED CA Interior Omnidirectional Incandescent												
Lighting	LED CA Interior T8	161,996	161,996	161,996	161,996	161,996	161,996	161,996	161,996	161,996			
Lighting	LED CA Interior Decorative Incandescent												
Lighting	LED CA Interior Omnidirectional CFL												
Lighting	LED CA Exterior Omnidirectional Incandescent												
Lighting	LED CA Interior Directional Incandescent												
HVAC	IU Programmable Thermostat	8,425	8,425	8,425	8,425	8,425	8,425	8,425	8,425	8,425	8,425		
Hot Water	Faucet Aerator - Bathroom (IU, Electric)	35,526	35,526	35,526	35,526								
Hot Water	Low Flow Showerhead (Gas)	28,911	28,911	28,911	28,911								
Lighting	Lighting Controls	14,543	14,543	14,543	14,543								
HVAC	IU Reprogram Thermostat												
Lighting	LED CA Exterior Directional Incandescent												
Lighting	LED CA Exterior Omnidirectional CFL												
Hot Water	Faucet Aerator - Kitchen (IU, Electric)	14,727	14,727	14,727	14,727								
Hot Water	Low Flow Faucet Aerator (Gas)	12,695	12,695	12,695	12,695								
Hot Water	CA Pipe Insulation	7,166	7,166	7,166	7,166	7,166	7,166	7,166	7,166	7,166			
Lighting	LED Garage T8	7,445	7,445	7,445	7,445	7,445	7,445	7,445	7,445	7,445	5,223		
Lighting	LED IU Exterior Decorative	2,502											
Hot Water	Low Flow Showerhead (CA, Electric)	4,264	4,264	4,264	4,264								
Lighting	LED CA Exterior Decorative Incandescent												
Lighting	LED CA Interior Directional CFL												
Lighting	LED IU Exterior Omnidirectional	648	648										
Lighting	LED CA Exterior Directional CFL												
Lighting	LED Garage HID	1,866	1,866	1,866	1,866	1,866	1,866	1,866	1,866	1,866	1,309		
Lighting	LED Garage T12	1,216	1,216	1,216	1,216	1,216	1,216	1,216	1,216	1,216	853		
Lighting	LED CA Interior Decorative CFL												
Hot Water	Faucet Aerator - Bathroom (CA, Electric)	1,054	1,054	1,054	1,054								
Lighting	LED CA Exterior Decorative CFL												
Lighting	LED CA Garage Omnidirectional CFL												
CY2021 Program Total Electric Contribution to CPAS		3,037,828	3,035,327	3,034,679	3,034,679	2,412,803	1,258,902	409,468	409,468	406,326	8,425	-	-
Historic Program Total Electric Contribution to CPAS‡		9,125,626	5,664,148	3,878,713	3,192,775	2,349,178	1,423,902	1,380,759	675,633	-	-	-	-
Program Total Electric CPAS		12,163,454	8,699,475	6,913,392	6,227,454	4,761,981	2,682,804	1,790,227	1,085,101	406,326	8,425	-	-
CY2021 Program Incremental Expiring Electric Savings§		1,995,624	2,502	648	-	621,876	1,153,901	849,434	-	3,142	397,900	8,425	-
Historic Program Incremental Expiring Electric Savings		1,691,776	3,461,478	1,785,435	685,938	843,597	925,276	43,143	705,126	675,633	-	-	-
Program Total Incremental Expiring Electric Savings		3,687,400	3,463,980	1,786,083	685,938	1,465,473	2,079,177	892,577	705,126	678,775	397,900	8,425	-

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.

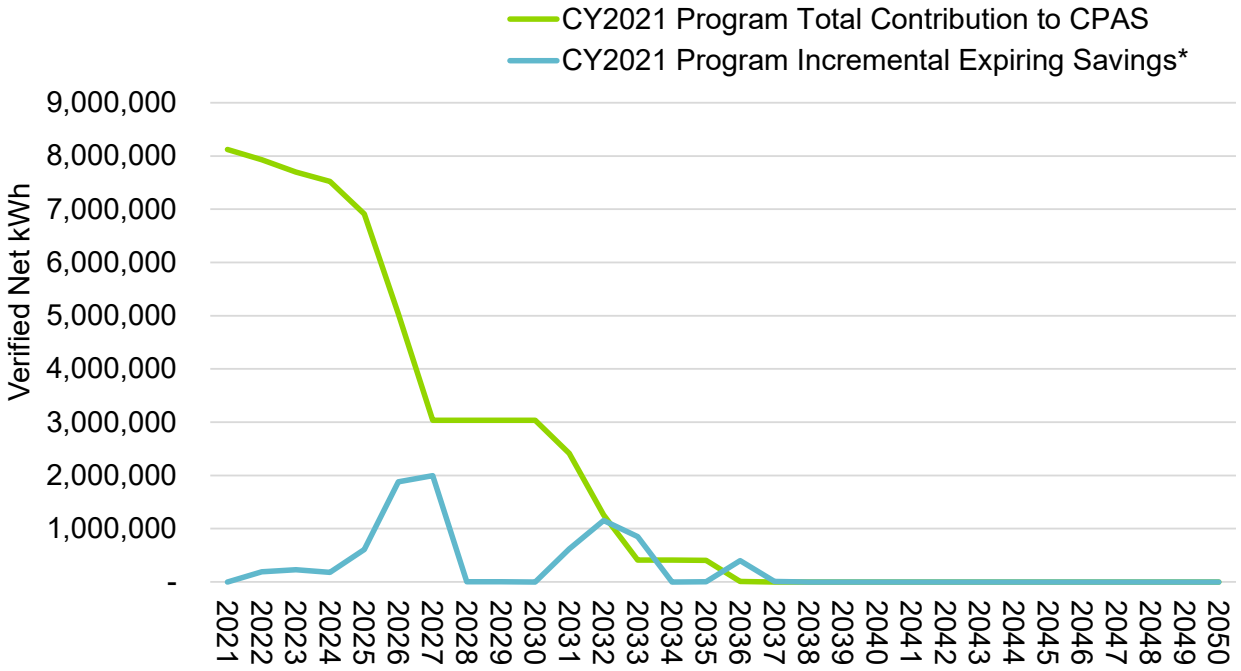
‡ Historic savings go back to CY2018.

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

†† Cooling net-to-gross (NTG) = 0.8, heating NTG = 0.9.

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.

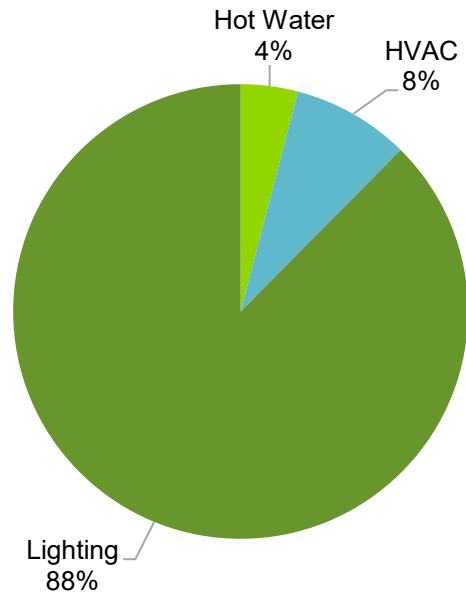
Table 5-1. Number of Measures by End Use Type

End Use Type	Research Category	Quantity Unit
Lighting	LED Exterior HID	2,535 Lamp
Lighting	LED Exit Sign	4,074 Lamp
Lighting	LED 24/7 CA Interior T8	4,897 Lamp
Lighting	LED 24/7 Garage HID	613 Lamp
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Hot Water	Low Flow Showerhead (IU, Electric)	925 Each
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Lighting	LED CA Interior Omnidirectional Incandescent	1,104 Lamp
Lighting	LED CA Interior T8	1,675 Lamp
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HVAC	IU Reprogram Thermostat	77 Each
Lighting	LED CA Exterior Directional Incandescent	64 Lamp
Lighting	LED CA Exterior Omnidirectional CFL	979 Lamp
Hot Water	Faucet Aerator - Kitchen (IU, Electric)	268 Each
Hot Water	Low Flow Faucet Aerator (Gas)	7,654 Each
Hot Water	CA Pipe Insulation	163 Linear Foot
Lighting	LED Garage T8	91 Lamp
Lighting	LED IU Exterior Decorative	66 Lamp
Hot Water	Low Flow Showerhead (CA, Electric)	10 Each
Lighting	LED CA Exterior Decorative Incandescent	28 Lamp
Lighting	LED CA Interior Directional CFL	78 Lamp
Lighting	LED IU Exterior Omnidirectional	32 Lamp
Lighting	LED CA Exterior Directional CFL	90 Lamp
Lighting	LED Garage HID	3 Lamp
Lighting	LED Garage T12	20 Lamp
Lighting	LED CA Interior Decorative CFL	60 Lamp
Hot Water	Faucet Aerator - Bathroom (CA, Electric)	8 Each
Lighting	LED CA Exterior Decorative CFL	24 Lamp
Lighting	LED CA Garage Omnidirectional CFL	12 Lamp
Total		85,431

Note: This is the same table as Table 2-2. The rows are sorted by verified gross savings.

Source: ComEd tracking data and evaluation team analysis

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



Source: ComEd tracking data and evaluation team analysis

Measure-level energy and demand savings are provided in Table 5-2 and Table 5-3.

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	LED Exterior HID	1,651,201	1.00	1,651,201	0.83	1,370,497	11.6
Lighting	LED Exit Sign	1,200,416	0.99	1,191,114	0.83	988,625	5.0
Lighting	LED 24/7 CA Interior T8	1,086,650	0.99	1,075,720	0.96	1,032,691	5.7
Lighting	LED 24/7 Garage HID	868,895	1.00	868,895	0.83	721,183	5.7
HVAC	Advanced Thermostat	713,760	1.00	712,873	Multiple†	632,838	11.0
Lighting	LED 24/7 CA Interior T12	597,798	0.99	594,790	0.96	570,998	5.7
Lighting	LED 24/7 Garage T8	566,972	1.00	566,973	0.96	544,294	5.7
Lighting	LED IU Interior Omnidirectional	575,553	0.95	543,942	0.67	364,441	10.0
Lighting	LED 24/7 Garage T12	364,935	1.00	364,935	0.96	350,337	5.7
Lighting	LED IU Interior Decorative	331,119	0.88	292,286	0.82	239,674	10.0
Hot Water	Low Flow Showerhead (IU, Electric)	210,084	1.04	218,900	1.03	225,467	10.0
Lighting	LED CA Interior T12	222,588	0.97	216,231	0.96	207,582	15.0
Lighting	LED IU Interior Fixture	184,261	1.14	209,414	0.82	171,719	15.0
Lighting	LED CA Interior Omnidirectional Incandescent	212,292	0.98	208,275	0.67	139,544	3.4
Lighting	LED CA Interior T8	169,120	1.00	168,746	0.96	161,996	15.0
Lighting	LED CA Interior Decorative Incandescent	81,185	0.98	79,629	0.82	65,296	2.9
Lighting	LED CA Interior Omnidirectional CFL	76,338	0.98	74,876	0.67	50,167	3.4
Lighting	LED CA Exterior Omnidirectional Incandescent	52,163	1.00	52,163	0.67	34,949	4.6
Lighting	LED CA Interior Directional Incandescent	45,107	0.95	43,037	0.82	35,290	4.2
HVAC	IU Programmable Thermostat	97,998	0.36	34,989	0.86	30,091	16.0
Hot Water	Faucet Aerator - Bathroom (IU, Electric)	32,458	1.06	34,491	1.03	35,526	10.0
Hot Water	Low Flow Showerhead (Gas)	0	N/A	28,069	1.03	28,911	10.0
Lighting	Lighting Controls	17,517	1.00	17,521	0.83	14,543	10.0
HVAC	IU Reprogram Thermostat	90,776	0.19	17,270	0.86	14,852	2.0
Lighting	LED CA Exterior Directional Incandescent	16,429	1.00	16,429	0.82	13,472	5.8
Lighting	LED CA Exterior Omnidirectional CFL	14,679	1.00	14,679	0.67	9,835	4.6
Hot Water	Faucet Aerator - Kitchen (IU, Electric)	13,631	1.05	14,298	1.03	14,727	10.0
Hot Water	Low Flow Faucet Aerator (Gas)	0	N/A	12,325	1.03	12,695	10.0
Hot Water	CA Pipe Insulation	8,634	1.00	8,634	0.83	7,166	15.0
Lighting	LED Garage T8	7,755	1.00	7,755	0.96	7,445	14.7
Lighting	LED IU Exterior Decorative	5,557	1.00	5,557	0.82	4,557	6.9
Hot Water	Low Flow Showerhead (CA, Electric)	4,018	1.03	4,140	1.03	4,264	10.0
Lighting	LED CA Exterior Decorative Incandescent	3,578	1.00	3,578	0.82	2,934	4.0
Lighting	LED CA Interior Directional CFL	3,074	0.98	2,999	0.82	2,459	4.2
Lighting	LED IU Exterior Omnidirectional	2,545	1.00	2,545	0.67	1,705	8.0
Lighting	LED CA Exterior Directional CFL	2,283	1.00	2,283	0.82	1,872	5.8
Lighting	LED Garage HID	2,249	1.00	2,249	0.83	1,866	14.7
Lighting	LED Garage T12	2,223	1.00	2,223	0.96	2,134	14.7
Lighting	LED CA Interior Decorative CFL	1,399	0.99	1,386	0.82	1,137	2.9
Hot Water	Faucet Aerator - Bathroom (CA, Electric)	978	1.05	1,024	1.03	1,054	10.0
Lighting	LED CA Exterior Decorative CFL	426	1.00	426	0.82	349	4.0
Lighting	LED CA Garage Omnidirectional CFL	152	1.00	152	0.67	102	5.6
Total		9,538,796	0.98	9,369,022		8,121,286	

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

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

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

† Cooling NTG = 0.8, heating NTG = 0.9.

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	LED Exterior HID	0.00	N/A	0.00	0.83	0.00
Lighting	LED Exit Sign	141.36	1.00	141.36	0.83	117.33
Lighting	LED 24/7 CA Interior T8	128.22	1.00	128.22	0.96	123.09
Lighting	LED 24/7 Garage HID	99.12	1.00	99.12	0.83	82.27
HVAC	Advanced Thermostat	89.96	1.00	89.87	Multiple†	71.90
Lighting	LED 24/7 CA Interior T12	70.74	1.00	70.74	0.96	67.91
Lighting	LED 24/7 Garage T8	64.68	1.00	64.68	0.96	62.09
Lighting	LED IU Interior Omnidirectional	69.59	1.00	69.60	0.67	46.63
Lighting	LED 24/7 Garage T12	41.63	1.00	41.63	0.96	39.97
Lighting	LED IU Interior Decorative	48.67	1.00	48.67	0.82	39.91
Hot Water	Low Flow Showerhead (IU, Electric)	28.08	1.00	28.08	1.03	28.92
Lighting	LED CA Interior T12	64.19	1.00	64.19	0.96	61.62
Lighting	LED IU Interior Fixture	27.08	1.16	31.29	0.82	25.66
Lighting	LED CA Interior Omnidirectional Incandescent	27.74	1.00	27.74	0.67	18.59
Lighting	LED CA Interior T8	48.62	1.00	48.62	0.96	46.67
Lighting	LED CA Interior Decorative Incandescent	10.80	1.00	10.80	0.82	8.85
Lighting	LED CA Interior Omnidirectional CFL	10.05	1.00	10.05	0.67	6.73
Lighting	LED CA Exterior Omnidirectional Incandescent	0.00	N/A	0.00	0.67	0.00
Lighting	LED CA Interior Directional Incandescent	6.54	1.00	6.54	0.82	5.36
HVAC	IU Programmable Thermostat	0.00	N/A	0.00	0.86	0.00
Hot Water	Faucet Aerator - Bathroom (IU, Electric)	32.46	1.00	32.46	1.03	33.43
Hot Water	Low Flow Showerhead (Gas)	0.00	NA	0.00	1.03	0.00
Lighting	Lighting Controls	7.33	1.00	7.33	0.83	6.08
HVAC	IU Reprogram Thermostat	0.00	N/A	0.00	0.86	0.00
Lighting	LED CA Exterior Directional Incandescent	0.00	N/A	0.00	0.82	0.00
Lighting	LED CA Exterior Omnidirectional CFL	0.00	N/A	0.00	0.67	0.00
Hot Water	Faucet Aerator - Kitchen (IU, Electric)	3.57	1.00	3.57	1.03	3.68
Hot Water	Low Flow Faucet Aerator (Gas)	0.00	N/A	0.00	1.03	0.00
Hot Water	CA Pipe Insulation	0.98	1.00	0.98	0.83	0.82
Lighting	LED Garage T8	2.10	1.00	2.10	0.96	2.01
Lighting	LED IU Exterior Decorative	0.61	1.00	0.61	0.82	0.50
Hot Water	Low Flow Showerhead (CA, Electric)	0.50	1.00	0.50	1.03	0.51
Lighting	LED CA Exterior Decorative Incandescent	0.00	N/A	0.00	0.82	0.00
Lighting	LED CA Interior Directional CFL	0.40	1.00	0.40	0.82	0.33
Lighting	LED IU Exterior Omnidirectional	0.28	1.00	0.28	0.67	0.19
Lighting	LED CA Exterior Directional CFL	0.00	N/A	0.00	0.82	0.00
Lighting	LED Garage HID	0.61	1.00	0.61	0.83	0.50
Lighting	LED Garage T12	0.60	1.00	0.60	0.96	0.58
Lighting	LED CA Interior Decorative CFL	0.18	1.00	0.18	0.82	0.15
Hot Water	Faucet Aerator - Bathroom (CA, Electric)	0.26	1.00	0.26	1.03	0.26
Lighting	LED CA Exterior Decorative CFL	0.00	N/A	0.00	0.82	0.00
Lighting	LED CA Garage Omnidirectional CFL	0.04	1.00	0.04	0.67	0.03
Total		1,026.99	1.00	1,031.12		902.59

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

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

† Cooling NTG = 0.8, heating NTG = 0.9.

Source: ComEd tracking data and evaluation team analysis

The Multi-Family Assessments Program includes measures that save water. That reduction in water produces secondary kilowatt-hour (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	LED Exterior HID	0	0	N/A	0	0.83	0
Lighting	LED Exit Sign	0	0	N/A	0	0.83	0
Lighting	LED 24/7 CA Interior T8	0	0	N/A	0	0.96	0
Lighting	LED 24/7 Garage HID	0	0	N/A	0	0.83	0
HVAC	Advanced Thermostat	0	0	N/A	0	Multiple†	0
Lighting	LED 24/7 CA Interior T12	0	0	N/A	0	0.96	0
Lighting	LED 24/7 Garage T8	0	0	N/A	0	0.96	0
Lighting	LED IU Interior Omnidirectional	0	0	N/A	0	0.67	0
Lighting	LED 24/7 Garage T12	0	0	N/A	0	0.96	0
Lighting	LED IU Interior Decorative	0	0	N/A	0	0.82	0
Hot Water	Low Flow Showerhead (IU, Electric)	1,794,500	8,809	1.00	8,815	1.03	9,079
Lighting	LED CA Interior T12	0	0	N/A	0	0.96	0
Lighting	LED IU Interior Fixture	0	0	N/A	0	0.82	0
Lighting	LED CA Interior Omnidirectional Incandescent	0	0	N/A	0	0.67	0
Lighting	LED CA Interior T8	0	0	N/A	0	0.96	0
Lighting	LED CA Interior Decorative Incandescent	0	0	N/A	0	0.82	0
Lighting	LED CA Interior Omnidirectional CFL	0	0	N/A	0	0.67	0
Lighting	LED CA Exterior Omnidirectional Incandescent	0	0	N/A	0	0.67	0
Lighting	LED CA Interior Directional Incandescent	0	0	N/A	0	0.82	0
HVAC	IU Programmable Thermostat	0	0	N/A	0	0.86	0
Hot Water	Faucet Aerator - Bathroom (IU, Electric)	411,600	2,050	0.99	2,033	1.03	2,094
Hot Water	Low Flow Showerhead (Gas)	7,634,710	28,051	1.00	28,069	1.03	28,911
Lighting	Lighting Controls	0	0	N/A	0	0.83	0
HVAC	IU Reprogram Thermostat	0	0	N/A	0	0.86	0
Lighting	LED CA Exterior Directional Incandescent	0	0	N/A	0	0.82	0
Lighting	LED CA Exterior Omnidirectional CFL	0	0	N/A	0	0.67	0
Hot Water	Faucet Aerator - Kitchen (IU, Electric)	139,360	660	1.01	667	1.03	687
Hot Water	Low Flow Faucet Aerator (Gas)	3,569,020	12,310	1.00	12,325	1.03	12,695
Hot Water	CA Pipe Insulation	0	0	N/A	0	0.83	0
Lighting	LED Garage T8	0	0	N/A	0	0.96	0
Lighting	LED IU Exterior Decorative	0	0	N/A	0	0.82	0
Hot Water	Low Flow Showerhead (CA, Electric)	34,300	122	1.00	122	1.03	126
Lighting	LED CA Exterior Decorative Incandescent	0	0	N/A	0	0.82	0
Lighting	LED CA Interior Directional CFL	0	0	N/A	0	0.82	0
Lighting	LED IU Exterior Omnidirectional	0	0	N/A	0	0.67	0
Lighting	LED CA Exterior Directional CFL	0	0	N/A	0	0.82	0
Lighting	LED Garage HID	0	0	N/A	0	0.83	0
Lighting	LED Garage T12	0	0	N/A	0	0.96	0
Lighting	LED CA Interior Decorative CFL	0	0	N/A	0	0.82	0
Hot Water	Faucet Aerator - Bathroom (CA, Electric)	12,320	46	1.00	46	1.03	47
Lighting	LED CA Exterior Decorative CFL	0	0	N/A	0	0.82	0
Lighting	LED CA Garage Omnidirectional CFL	0	0	N/A	0	0.67	0
Total		13,595,810	52,048	1.00	52,077		53,639

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

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.

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

† Cooling NTG = 0.8, heating NTG = 0.9.

Source: ComEd tracking data and evaluation team analysis

6. Impact Analysis Findings and Recommendations

The issues that had the largest effect on adjusting ex ante gross savings were the inclusion of the electric heating penalty in the verified gross savings for lighting measures and quantity adjustments for programmable and reprogram thermostats.

The evaluation team developed several recommendations based on findings from the CY2021 evaluation.

6.1 Cross-Cutting

Finding 1. The ex ante tracking data includes combined kWh that accounts for primary kWh, electric heating penalty, and secondary kWh for water supply and wastewater treatment. The ex ante program savings summary file does not include the combined kWh. Total gross verified electric heating penalty and secondary kWh account for -136,848 kWh and 52,077 kWh, respectively.

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

6.2 LEDs – Electric Heating Penalty

Finding 2. The ex ante electric heating penalty for all common area (CA) lighting measures was calculated using the lighting-HVAC interaction factor for electric resistance heating. For all in-unit (IU) lighting measures, the ex ante electric heating penalty was calculated using the heating efficiency of an electric resistance heating system. The tracking data includes two properties with a heat pump electric heating system type. Between the two properties, 323 interior lamps were installed. Guidehouse calculated the electric heating penalty for these properties for applicable measures using the lighting-HVAC interaction factor and heating efficiency corresponding to the heat pump system type.

Recommendation 2. Calculate the electric heating penalty using the lighting-HVAC interaction factor and heating efficiency corresponding to the heating system type at the property.

6.3 LEDs

Finding 3. The ex ante savings for the IU flood and track lighting fixtures were calculated using the in-service rate (ISR), hours, and coincidence factor (CF) values from Section 5.5.6 of the Illinois Technical Reference Manual v.9.0¹ (IL-TRM). Guidehouse calculated verified savings for these measures using the ISR, hours, and CF values from Section 5.5.9 of the IL-TRM based on the measure description. Section 5.5.9 of the IL-TRM applies specifically to the floodlight and track lighting fixtures included in this measure category. This measure accounted for 2% of the program total gross verified kWh savings and has a realization rate of 1.14.

¹ In this report, unless stated otherwise, IL-TRM refers to version 9.0 (v9.0).

Recommendation 3. Use Section 5.5.9 of the IL-TRM to calculate savings for the IU flood and track lighting fixtures.

Finding 4. The ex ante savings for the mid rise 24/7 interior CA LED replacing 1L 1-foot T10/12 were calculated using an efficient wattage of 7.1 W from IL-TRM v8.0. The efficient wattage for this measure has been updated in v9.0 to 4 W. This specific measure accounted for less than 1% of total gross verified kWh savings and has a realization rate of 1.71.

Recommendation 4. Use an efficient wattage of 4 W from Section 4.5.4 of IL-TRM v9.0 to calculate savings for this measure.

6.4 Advanced Thermostats

Finding 5. The ex ante gas heating consumption for the IU advanced thermostat measure with a fan coil boiler heating system was calculated using a boiler efficiency of 82%. Guidehouse calculated the gas heating consumption for the fan coil boiler heating system using a boiler efficiency of 81.9% per the IL-TRM. This measure accounts for 8% of the program total gross verified kWh savings and has a realization rate of 1.00.

Recommendation 5. Use a boiler efficiency of 81.9% to calculate the gas heating consumption for the fan coil boiler heating system type to be consistent with the IL-TRM.

Finding 6. Ex ante savings were claimed for more than one thermostat per household at one site address for the IU advanced thermostat measure—ex ante savings were claimed for 883 advanced thermostats at 882 unique addresses. Guidehouse identified unique addresses in the tracking data using a combination of property name and apartment number and verified savings for one thermostat per unique address.

Recommendation 6. Claim savings for only one thermostat per household for this measure to be consistent with Section 5.3.16 of the IL-TRM Errata.

6.5 Programmable and Reprogram Thermostats

Finding 7. Ex ante savings were claimed for more than one thermostat per household at 74 site addresses for the IU programmable thermostat measure and at 46 site addresses for the IU reprogram thermostats measure. Ex ante savings were claimed for 762 IU programmable thermostats at 574 unique addresses and for 332 IU reprogram thermostat measures at 77 unique addresses. Guidehouse identified unique addresses in the tracking data using a combination of property name and apartment number and verified savings for one thermostat per unique address. The IU programmable and reprogram thermostat measures account for a combined 1% of the program total gross verified kWh savings and have realization rates of 0.36 and 0.19, respectively.

Recommendation 7. Claim savings for only one thermostat per household for these measures to be consistent with Section 5.3.11 of the IL-TRM.

6.6 Secondary kWh Savings

Finding 8. The ex ante water savings (gallons) from the low flow faucet aerators and low flow showerheads measures were rounded off to the nearest tenth. This resulted in a discrepancy of

29 kWh (<1%) between the total ex ante and verified gross secondary electric energy savings from water reduction.

Recommendation 8. Do not round the ex ante water savings for these measures off to the nearest tenth.

Appendix A. Impact Analysis Methodology

The evaluation team determined verified gross savings for each program measure by:

- Reviewing the savings algorithm inputs in the measure workbook for agreement with the IL-TRM and IL-TRM Errata, where applicable.
- Validating the savings algorithm was applied correctly.
- Cross-checking per-unit savings values in the program tracking data with the verified values in the measure workbook or in Guidehouse's calculations if the workbook did not agree with the IL-TRM.
- Multiplying the verified per-unit savings value by the quantity reported in the tracking data.

The team calculated verified net energy and demand (coincident peak and overall) savings by multiplying the verified gross savings estimates by a NTG ratio. In CY2021, NTG estimates used to calculate the net verified savings were based on past evaluation research and defined by a consensus process through the Illinois SAG.

Appendix B. Impact Findings Detailed Results

Table B-1 shows the per-unit ex ante and verified energy and demand savings for each unique measure in the CY2021 tracking data.

Table B-1. Verified Measure Per-Unit Impact Detail – Electric

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	11W LED (CA Exterior, 18W CFL)	Lamp	24.85	0.00	24.85	1.00	0.00	N/A	4.5.4
Lighting	11W LED (CA Exterior, 75W CFL)	Lamp	149.10	0.00	149.10	1.00	0.00	N/A	4.5.4
Lighting	11W LED (CA Interior High Rise, 18W CFL)	Lamp	41.23	0.01	41.23	1.00	0.01	1.00	4.5.4
Lighting	11W LED (CA Interior High Rise, 75W Incandescent)	Lamp	224.93	0.04	247.40	1.10	0.04	1.00	4.5.4
Lighting	11W LED (CA Interior, 18W CFL)	Lamp	38.14	0.00	38.14	1.00	0.00	1.00	4.5.4
Lighting	15W LED (CA Exterior, 100W CFL)	Lamp	202.35	0.00	202.35	1.00	0.00	N/A	4.5.4
Lighting	15W LED (CA Exterior, 23W CFL)	Lamp	28.40	0.00	28.40	1.00	0.00	N/A	4.5.4
Lighting	15W LED (CA Interior High Rise, 100W Incandescent)	Lamp	305.26	0.05	335.76	1.10	0.05	1.00	4.5.4
Lighting	15W LED (CA Interior High Rise, 23W CFL)	Lamp	47.12	0.01	47.12	1.00	0.01	1.00	4.5.4
Lighting	15W LED (CA Interior, 100W Incandescent)	Lamp	310.58	0.03	310.58	1.00	0.03	1.00	4.5.4
Lighting	15W LED (CA Interior, 23W CFL)	Lamp	43.59	0.00	43.59	1.00	0.00	1.00	4.5.4
Lighting	15W LED (Garage, 23W CFL)	Lamp	23.36	0.01	23.36	1.00	0.01	1.00	4.5.4
Lighting	15W LED Flood (CA Exterior, 100W Incandescent)	Lamp	301.75	0.00	301.75	1.00	0.00	N/A	4.5.4
Lighting	15W LED Flood (CA Exterior, 23W CFL)	Lamp	28.40	0.00	28.40	1.00	0.00	N/A	4.5.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	1L 1ft TLED (CA Interior 24/7, T12)	Lamp	42.23	0.01	72.39	1.71	0.01	1.72	4.5.4
Lighting	1L 2ft TLED (CA Interior 24/7, T12)	Lamp	84.65	0.01	84.65	1.00	0.01	1.00	4.5.4
Lighting	1L 2ft TLED (CA Interior 24/7, T8)	Lamp	50.40	0.01	50.40	1.00	0.01	1.00	4.5.4
Lighting	1L 2ft TLED (CA Interior High Rise 24/7, T12)	Lamp	91.52	0.01	91.52	1.00	0.01	1.00	4.5.4
Lighting	1L 2ft TLED (CA Interior High Rise 24/7, T8)	Lamp	54.49	0.01	54.49	1.00	0.01	1.00	4.5.4
Lighting	1L 2ft TLED (CA Interior High Rise 24/7, T8)	Lamp	54.49	0.01	54.49	1.00	0.01	1.00	4.5.4
Lighting	1L 2ft TLED (CA Interior High Rise, T12)	Lamp	33.85	0.01	33.85	1.00	0.01	1.00	4.5.4
Lighting	1L 2ft TLED (CA Interior High Rise, T8)	Lamp	20.15	0.01	20.15	1.00	0.01	1.00	4.5.4
Lighting	1L 3ft TLED (CA Interior 24/7, T12)	Lamp	126.98	0.02	126.98	1.00	0.02	1.00	4.5.4
Lighting	1L 3ft TLED (CA Interior 24/7, T8)	Lamp	67.04	0.01	67.04	1.00	0.01	1.00	4.5.4
Lighting	1L 3ft TLED (CA Interior High Rise 24/7, T12)	Lamp	137.28	0.02	137.28	1.00	0.02	1.00	4.5.4
Lighting	1L 3ft TLED (CA Interior High Rise 24/7, T8)	Lamp	72.48	0.01	72.48	1.00	0.01	1.00	4.5.4
Lighting	1L 3ft TLED (CA Interior, T12)	Lamp	46.96	0.01	46.96	1.00	0.01	1.00	4.5.4
Lighting	1L 4ft TLED (CA Interior 24/7, T12)	Lamp	44.56	0.01	79.01	1.77	0.01	1.00	4.5.4
Lighting	1L 4ft TLED (CA Interior 24/7, T8)	Lamp	71.23	0.01	71.23	1.00	0.01	1.00	4.5.4
Lighting	1L 4ft TLED (CA Interior High Rise 24/7, Delamp 2L 4ft T8)	Lamp	363.12	0.04	363.12	1.00	0.04	1.00	4.5.4
Lighting	1L 4ft TLED (CA Interior High Rise 24/7, T12)	Lamp	85.42	0.01	85.42	1.00	0.01	1.00	4.5.4
Lighting	1L 4ft TLED (CA Interior High Rise 24/7, T8)	Lamp	77.00	0.01	77.00	1.00	0.01	1.00	4.5.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	1L 4ft TLED (CA Interior High Rise 24/7, T8)	Lamp	77.00	0.01	77.00	1.00	0.01	1.00	4.5.4
Lighting	1L 4ft TLED (CA Interior High Rise, Delamp 2L 4ft T12)	Lamp	147.99	0.04	147.99	1.00	0.04	1.00	4.5.4
Lighting	1L 4ft TLED (CA Interior High Rise, T12)	Lamp	31.59	0.01	31.59	1.00	0.01	1.00	4.5.4
Lighting	1L 4ft TLED (CA Interior, Delamp 2L 4ft T12)	Lamp	136.89	0.04	136.89	1.00	0.04	1.00	4.5.4
Lighting	1L 4ft TLED (CA Interior, T12)	Lamp	29.22	0.01	29.22	1.00	0.01	1.00	4.5.4
Lighting	1L 4ft TLED (CA Interior, T8)	Lamp	26.34	0.01	26.34	1.00	0.01	1.00	4.5.4
Lighting	1L 4ft TLED (Garage 24/7, Delamp 2L 4ft T8)	Lamp	302.60	0.03	302.60	1.00	0.03	1.00	4.5.4
Lighting	1L 4ft TLED (Garage 24/7, T12)	Lamp	71.18	0.01	71.18	1.00	0.01	1.00	4.5.4
Lighting	1L 4ft TLED (Garage 24/7, T8)	Lamp	64.17	0.01	64.17	1.00	0.01	1.00	4.5.4
Lighting	1L 4ft TLED (Garage 24/7, T8)	Lamp	64.17	0.01	64.17	1.00	0.01	1.00	4.5.4
Lighting	1L 8ft TLED (CA Interior High Rise 24/7, T8)	Lamp	228.57	0.03	251.41	1.10	0.03	1.00	4.5.4
Lighting	1L 8ft TLED (CA Interior High Rise, T12)	Lamp	127.22	0.04	127.22	1.00	0.04	1.00	4.5.4
Lighting	1L 8ft TLED (CA Interior High Rise, T8)	Lamp	28.48	0.01	28.48	1.00	0.01	1.00	4.5.4
Lighting	1L 8ft TLED (CA Interior High Rise, T8)	Lamp	28.48	0.01	28.48	1.00	0.01	1.00	4.5.4
Lighting	1L 8ft TLED (CA Interior, T12)	Lamp	66.37	0.03	117.67	1.77	0.03	1.00	4.5.4
Lighting	1L 8ft TLED (Garage 24/7, T8)	Lamp	209.51	0.02	209.51	1.00	0.02	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior 24/7, Delamp 2L U-Tube T12)	Lamp	437.86	0.05	437.86	1.00	0.05	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior 24/7, Delamp 2L U-Tube T8)	Lamp	249.48	0.03	249.48	1.00	0.03	1.00	4.5.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	2L 2ft TLED (CA Interior 24/7, T12)	Lamp	169.31	0.02	169.31	1.00	0.02	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior High Rise 24/7, Delamp 2L U-Tube T12)	Lamp	473.36	0.06	473.36	1.00	0.06	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior High Rise 24/7, Delamp 2L U-Tube T8)	Lamp	269.71	0.03	269.71	1.00	0.03	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior High Rise 24/7, Delamp 2L U-Tube T8)	Lamp	269.71	0.03	269.71	1.00	0.03	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior High Rise 24/7, T12)	Lamp	183.03	0.02	183.03	1.00	0.02	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior High Rise 24/7, T8)	Lamp	128.33	0.02	128.33	1.00	0.02	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior High Rise 24/7, T8)	Lamp	128.33	0.02	128.33	1.00	0.02	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior High Rise, Delamp 2L U-Tube T12)	Lamp	175.07	0.05	175.07	1.00	0.05	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior High Rise, T12)	Lamp	67.69	0.02	67.69	1.00	0.02	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior High Rise, T8)	Lamp	47.46	0.01	47.46	1.00	0.01	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior, Delamp 2L U-Tube T12)	Lamp	161.94	0.05	161.94	1.00	0.05	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior, T12)	Lamp	62.62	0.02	62.62	1.00	0.02	1.00	4.5.4
Lighting	2L 2ft TLED (CA Interior, T8)	Lamp	43.90	0.01	43.90	1.00	0.01	1.00	4.5.4
Lighting	2L 2ft TLED (Garage 24/7, T12)	Lamp	152.53	0.02	152.53	1.00	0.02	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior 24/7, Delamp 4L 4ft T12)	Lamp	840.50	0.10	840.50	1.00	0.10	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior 24/7, Delamp 4L 4ft T8)	Lamp	435.38	0.09	772.00	1.77	0.09	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior 24/7, T12)	Lamp	238.39	0.03	238.39	1.00	0.03	1.00	4.5.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	2L 4ft TLED (CA Interior 24/7, T8)	Lamp	230.22	0.03	230.22	1.00	0.03	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior 24/7, T8)	Lamp	230.22	0.03	230.22	1.00	0.03	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior High Rise 24/7, Delamp 2L 8ft T12)	Lamp	1,038.25	0.12	1,038.25	1.00	0.12	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior High Rise 24/7, T12)	Lamp	257.72	0.03	257.72	1.00	0.03	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior High Rise 24/7, T8)	Lamp	248.88	0.03	248.88	1.00	0.03	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior High Rise 24/7, T8)	Lamp	248.88	0.03	248.88	1.00	0.03	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior High Rise, Delamp 3L 4ft T8)	Lamp	199.11	0.06	199.11	1.00	0.06	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior High Rise, Delamp 4L 4ft T12)	Lamp	336.05	0.10	336.05	1.00	0.10	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior High Rise, Delamp 4L 4ft T8)	Lamp	308.67	0.09	308.66	1.00	0.09	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior High Rise, Delamp 4L 4ft T8)	Lamp	308.67	0.09	308.66	1.00	0.09	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior High Rise, T12)	Lamp	95.32	0.03	95.31	1.00	0.03	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior High Rise, T8)	Lamp	92.05	0.03	92.05	1.00	0.03	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior High Rise, T8)	Lamp	92.05	0.03	92.05	1.00	0.03	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior, Delamp 3L 4ft T8)	Lamp	184.18	0.05	184.18	1.00	0.05	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior, Delamp 4L 4ft T12)	Lamp	310.85	0.09	310.85	1.00	0.09	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior, Delamp 4L 4ft T8)	Lamp	285.52	0.08	285.51	1.00	0.08	1.00	4.5.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	2L 4ft TLED (CA Interior, T12)	Lamp	88.17	0.03	88.17	1.00	0.03	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior, T8)	Lamp	85.14	0.02	85.14	1.00	0.02	1.00	4.5.4
Lighting	2L 4ft TLED (CA Interior, T8)	Lamp	85.14	0.02	85.14	1.00	0.02	1.00	4.5.4
Lighting	2L 4ft TLED (Garage, T8)	Lamp	80.47	0.02	80.47	1.00	0.02	1.00	4.5.4
Lighting	2L 4ft TLED (Garage 24/7, Delamp 3L 4ft T8)	Lamp	448.64	0.05	448.64	1.00	0.05	1.00	4.5.4
Lighting	2L 4ft TLED (Garage 24/7, Delamp 4L 4ft T8)	Lamp	695.50	0.08	695.49	1.00	0.08	1.00	4.5.4
Lighting	2L 4ft TLED (Garage 24/7, T12)	Lamp	214.77	0.02	214.77	1.00	0.02	1.00	4.5.4
Lighting	2L 4ft TLED (Garage 24/7, T8)	Lamp	207.40	0.02	207.40	1.00	0.02	1.00	4.5.4
Lighting	2L 4ft TLED (Garage 24/7, T8)	Lamp	207.40	0.02	207.40	1.00	0.02	1.00	4.5.4
Lighting	2L 4ft TLED (Garage, T12)	Lamp	83.33	0.02	83.32	1.00	0.02	1.00	4.5.4
Lighting	2L 8ft TLED (CA Interior 24/7, T12)	Lamp	636.36	0.08	636.36	1.00	0.08	1.00	4.5.4
Lighting	2L 8ft TLED (CA Interior 24/7, T8)	Lamp	465.11	0.06	465.11	1.00	0.06	1.00	4.5.4
Lighting	2L 8ft TLED (CA Interior High Rise 24/7, T12)	Lamp	687.96	0.08	687.96	1.00	0.08	1.00	4.5.4
Lighting	2L 8ft TLED (CA Interior High Rise 24/7, T8)	Lamp	502.82	0.06	502.82	1.00	0.06	1.00	4.5.4
Lighting	2L 8ft TLED (CA Interior High Rise, T12)	Lamp	254.43	0.07	254.43	1.00	0.07	1.00	4.5.4
Lighting	2L 8ft TLED (CA Interior High Rise, T8)	Lamp	185.96	0.05	185.96	1.00	0.05	1.00	4.5.4
Lighting	2L 8ft TLED (CA Interior, T12)	Lamp	235.35	0.07	235.35	1.00	0.07	1.00	4.5.4
Lighting	2L 8ft TLED (CA Interior, T8)	Lamp	172.01	0.05	172.01	1.00	0.05	1.00	4.5.4
Lighting	2L 8ft TLED (Garage, T12)	Lamp	222.43	0.06	222.43	1.00	0.06	1.00	4.5.4
Lighting	2L 8ft TLED (Garage 24/7, T12)	Lamp	573.30	0.07	573.30	1.00	0.07	1.00	4.5.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	2L 8ft TLED (Garage 24/7, T8)	Lamp	419.02	0.05	419.01	1.00	0.05	1.00	4.5.4
Lighting	2L 8ft TLED (Garage 24/7, T8)	Lamp	419.02	0.05	419.01	1.00	0.05	1.00	4.5.4
Lighting	3L 4ft TLED (CA Interior 24/7, T12)	Lamp	437.47	0.05	437.47	1.00	0.05	1.00	4.5.4
Lighting	3L 4ft TLED (CA Interior High Rise 24/7, Delamp 2L U-Tube T12)	Lamp	593.91	0.07	593.91	1.00	0.07	1.00	4.5.4
Lighting	3L 4ft TLED (CA Interior High Rise 24/7, Delamp 2L U-Tube T8)	Lamp	538.37	0.06	538.37	1.00	0.06	1.00	4.5.4
Lighting	3L 4ft TLED (CA Interior High Rise 24/7, T12)	Lamp	429.99	0.06	472.94	1.10	0.06	1.00	4.5.4
Lighting	3L 4ft TLED (CA Interior High Rise 24/7, T8)	Lamp	417.40	0.05	417.40	1.00	0.05	1.00	4.5.4
Lighting	3L 4ft TLED (CA Interior High Rise 24/7, T8)	Lamp	417.40	0.05	417.40	1.00	0.05	1.00	4.5.4
Lighting	3L 4ft TLED (CA Interior High Rise, T8)	Lamp	154.37	0.04	154.37	1.00	0.04	1.00	4.5.4
Lighting	3L 4ft TLED (CA Interior High Rise, T8)	Lamp	154.37	0.04	154.37	1.00	0.04	1.00	4.5.4
Lighting	3L 4ft TLED (CA Interior, Delamp 4L 4ft T12)	Lamp	151.97	0.08	269.46	1.77	0.08	1.00	4.5.4
Lighting	3L 4ft TLED (CA Interior, T8)	Lamp	142.79	0.04	142.79	1.00	0.04	1.00	4.5.4
Lighting	3L 4ft TLED (Garage 24/7, Delamp 4L 4ft T8)	Lamp	594.69	0.07	594.69	1.00	0.07	1.00	4.5.4
Lighting	3L 4ft TLED (Garage 24/7, T8)	Lamp	347.83	0.04	347.83	1.00	0.04	1.00	4.5.4
Lighting	3L 4ft TLED (Garage 24/7, T8)	Lamp	347.83	0.04	347.83	1.00	0.04	1.00	4.5.4
Lighting	3L 8ft TLED (Garage 24/7, T8)	Lamp	628.52	0.07	628.52	1.00	0.07	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior 24/7, T12)	Lamp	607.95	0.07	607.95	1.00	0.07	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior 24/7, T8)	Lamp	539.45	0.06	539.45	1.00	0.06	1.00	4.5.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	4L 4ft TLED (CA Interior High Rise 24/7, Delamp 4L 4ft T12)	Lamp	908.65	0.11	908.65	1.00	0.11	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior High Rise 24/7, Delamp 4L 4ft T8)	Lamp	834.59	0.10	834.59	1.00	0.10	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior High Rise 24/7, Delamp 4L 4ft T8)	Lamp	834.59	0.10	834.59	1.00	0.10	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior High Rise 24/7, T12)	Lamp	657.24	0.08	657.24	1.00	0.08	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior High Rise 24/7, T8)	Lamp	583.18	0.07	583.18	1.00	0.07	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior High Rise 24/7, T8)	Lamp	583.18	0.07	583.18	1.00	0.07	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior High Rise, T12)	Lamp	243.07	0.07	243.07	1.00	0.07	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior High Rise, T8)	Lamp	215.68	0.06	215.68	1.00	0.06	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior, T12)	Lamp	470.70	0.14	470.70	1.00	0.14	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior, T12)	Lamp	470.70	0.14	470.70	1.00	0.14	1.00	4.5.4
Lighting	4L 4ft TLED (CA Interior, T8)	Lamp	199.51	0.06	199.51	1.00	0.06	1.00	4.5.4
Lighting	4L 4ft TLED (Garage, T8)	Lamp	188.55	0.05	188.55	1.00	0.05	1.00	4.5.4
Lighting	4L 4ft TLED (Garage 24/7, T12)	Lamp	547.70	0.06	547.70	1.00	0.06	1.00	4.5.4
Lighting	4L 4ft TLED (Garage 24/7, T8)	Lamp	485.99	0.06	485.99	1.00	0.06	1.00	4.5.4
Lighting	4L 8ft TLED (CA Interior High Rise 24/7, T8)	Lamp	1,005.64	0.12	1,005.64	1.00	0.12	1.00	4.5.4
Lighting	4W LED Candelabra (CA Exterior, 40W Incandescent)	Lamp	127.80	0.00	127.80	1.00	0.00	N/A	4.5.4
Lighting	4W LED Candelabra (CA Exterior, 9W CFL)	Lamp	17.75	0.00	17.75	1.00	0.00	N/A	4.5.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	4W LED Candelabra (CA Interior High Rise, 40W Incandescent)	Lamp	212.06	0.03	212.06	1.00	0.03	1.00	4.5.4
Lighting	4W LED Candelabra (CA Interior High Rise, 9W CFL)	Lamp	29.45	0.00	29.45	1.00	0.00	1.00	4.5.4
Lighting	4W LED Candelabra (CA Interior, 40W Incandescent)	Lamp	110.62	0.02	196.15	1.77	0.02	1.00	4.5.4
Lighting	4W LED Candelabra (CA Interior, 9W CFL)	Lamp	27.24	0.00	27.24	1.00	0.00	1.00	4.5.4
Lighting	4W LED Candelabra (IU Exterior, 40W Incandescent)	Lamp	84.20	0.01	84.20	1.00	0.01	1.00	5.5.6
Lighting	4W LED Candelabra (IU Interior, 40W Incandescent)	Lamp	27.00	0.00	27.00	1.00	0.00	1.00	5.5.6
Lighting	5W LED Mini-Globe (CA Interior, 25W Incandescent)	Lamp	108.97	0.01	108.97	1.00	0.01	1.00	4.5.4
Lighting	5W LED Mini-Globe (IU Interior, 25W Incandescent)	Lamp	15.00	0.00	15.00	1.00	0.00	1.00	5.5.6
Lighting	5W Mini-Globe (CA Interior High Rise, 25W Incandescent)	Lamp	107.11	0.02	117.81	1.10	0.02	1.00	4.5.4
Lighting	6/12/19W 3-Way LED (IU Interior, 50/100/150W)	Lamp	50.99	0.01	50.99	1.00	0.01	1.00	5.5.6
Lighting	6W LED (CA Exterior, 9W CFL)	Lamp	10.65	0.00	10.65	1.00	0.00	N/A	4.5.4
Lighting	6W LED (CA Interior High Rise, 40W Incandescent)	Lamp	135.48	0.02	135.48	1.00	0.02	1.00	4.5.4
Lighting	6W LED (CA Interior High Rise, 9W CFL)	Lamp	17.67	0.00	17.67	1.00	0.00	1.00	4.5.4
Lighting	6W LED (CA Interior, 40W Incandescent)	Lamp	125.32	0.01	125.32	1.00	0.01	1.00	4.5.4
Lighting	6W LED (CA Interior, 9W CFL)	Lamp	16.35	0.00	16.35	1.00	0.00	1.00	4.5.4
Lighting	6W LED (IU Interior, 40W Incandescent)	Lamp	24.62	0.00	24.62	1.00	0.00	1.00	5.5.8
Lighting	6W LED Globe (CA Interior High Rise, 40/60W Incandescent)	Lamp	259.18	0.04	259.18	1.00	0.04	1.00	4.5.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	6W LED Globe (CA Interior High Rise, 9W Incandescent)	Lamp	17.67	0.00	17.67	1.00	0.00	1.00	4.5.4
Lighting	6W LED Globe (CA Interior, 40/60W Incandescent)	Lamp	239.74	0.03	239.74	1.00	0.03	1.00	4.5.4
Lighting	6W LED Globe (CA Interior, 9W CFL)	Lamp	16.35	0.00	16.35	1.00	0.00	1.00	4.5.4
Lighting	6W LED Globe (IU Interior, 40/60W Incandescent)	Lamp	25.50	0.00	25.50	1.00	0.00	1.00	5.5.6
Lighting	7W LED (CA Interior, 50W Incandescent)	Lamp	234.30	0.03	234.29	1.00	0.03	1.00	4.5.4
Lighting	7W LED (CA Interior, 50W)	Lamp	234.30	0.03	234.29	1.00	0.03	1.00	4.5.4
Lighting	7W LED Tracklight GU 10 (IU Interior, 50W Incandescent)	Lamp	32.25	0.00	41.41	1.28	0.01	1.16	5.5.9
Lighting	7W LED Tracklight GU 3.5 (CA Interior High Rise, 50W Incandescent)	Lamp	253.29	0.04	253.29	1.00	0.04	1.00	4.5.4
Lighting	7W LED Tracklight GU 5.3 (IU Interior, 50W Incandescent)	Lamp	32.25	0.00	41.41	1.28	0.01	1.16	5.5.9
Lighting	7W Mini-Flood PAR20 (CA Interior High Rise, 45W Incandescent)	Lamp	223.84	0.03	223.84	1.00	0.03	1.00	4.5.4
Lighting	7W Mini-Flood PAR20 (CA Interior Mid Rise, 45W Incandescent)	Lamp	207.05	0.02	207.05	1.00	0.02	1.00	4.5.4
Lighting	7W Mini-Flood PAR20 (IU Interior, 45W)	Lamp	28.50	0.00	36.60	1.28	0.00	1.15	5.5.9
Lighting	8W LED Flood (CA Exterior, 15W CFL)	Lamp	24.85	0.00	24.85	1.00	0.00	N/A	4.5.4
Lighting	8W LED Flood (CA Exterior, 65W Incandescent)	Lamp	202.35	0.00	202.35	1.00	0.00	N/A	4.5.4
Lighting	8W LED Flood (CA Interior High Rise, 15W CFL)	Lamp	37.49	0.01	41.23	1.10	0.01	1.00	4.5.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	8W LED Flood (CA Interior High Rise, 65W Incandescent)	Lamp	305.26	0.05	335.76	1.10	0.05	1.00	4.5.4
Lighting	8W LED Flood (CA Interior, 15W CFL)	Lamp	38.14	0.00	38.14	1.00	0.00	1.00	4.5.4
Lighting	8W LED Flood (CA Interior, 65W Incandescent)	Lamp	310.58	0.03	310.58	1.00	0.03	1.00	4.5.4
Lighting	8W LED Flood (IU Interior, 65W Incandescent)	Lamp	42.74	0.01	54.89	1.28	0.01	1.16	5.5.9
Lighting	9W LED (CA Exterior, 13W CFL)	Lamp	14.20	0.00	14.20	1.00	0.00	N/A	4.5.4
Lighting	9W LED (CA Exterior, 60W Incandescent)	Lamp	120.70	0.00	120.70	1.00	0.00	N/A	4.5.4
Lighting	9W LED (CA Interior High Rise, 13W CFL)	Lamp	23.56	0.00	23.56	1.00	0.00	1.00	4.5.4
Lighting	9W LED (CA Interior High Rise, 60W Incandescent)	Lamp	200.28	0.03	200.28	1.00	0.03	1.00	4.5.4
Lighting	9W LED (CA Interior, 13W CFL)	Lamp	21.80	0.00	21.79	1.00	0.00	1.00	4.5.4
Lighting	9W LED (CA Interior, 60W Incandescent)	Lamp	185.26	0.02	185.26	1.00	0.02	1.00	4.5.4
Lighting	9W LED (Garage, 13W CFL)	Lamp	11.68	0.00	11.68	1.00	0.00	1.00	4.5.4
Lighting	9W LED (IU Exterior, 60W Incandescent)	Lamp	79.52	0.01	79.52	1.00	0.01	1.00	5.5.8
Lighting	9W LED (IU Interior, 60W Incandescent)	Lamp	36.39	0.00	36.39	1.00	0.00	1.00	5.5.8
Lighting	LED (Exterior DD Outdoor, <=175W HID)	Lamp	454.40	0.00	454.40	1.00	0.00	N/A	4.5.4
Lighting	LED (Exterior DD Outdoor, <=175W HID)	Lamp	454.40	0.00	454.40	1.00	0.00	N/A	4.5.4
Lighting	LED (Exterior DD Outdoor, 176-250W HID)	Lamp	660.51	0.00	660.51	1.00	0.00	N/A	4.5.4
Lighting	LED (Exterior DD Outdoor, 176-250W HID)	Lamp	660.51	0.00	660.51	1.00	0.00	N/A	4.5.4
Lighting	LED (Exterior DD Outdoor, 251-400W HID)	Lamp	959.35	0.00	959.35	1.00	0.00	N/A	4.5.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	LED (Exterior DD Outdoor, 401-650W HID)	Lamp	1,730.02	0.00	1,730.02	1.00	0.00	N/A	4.5.4
Lighting	LED (Exterior DD Outdoor, 651-800W HID)	Lamp	2,312.22	0.00	2,312.22	1.00	0.00	N/A	4.5.4
Lighting	LED (Exterior DD Outdoor, 801-1000W HID)	Lamp	2,498.86	0.00	2,498.84	1.00	0.00	N/A	4.5.4
Lighting	LED (Garage 24/7 Outdoor, <=175W HID)	Lamp	925.69	0.11	925.69	1.00	0.11	1.00	4.5.4
Lighting	LED (Garage 24/7 Outdoor, <=175W HID)	Lamp	925.69	0.11	925.69	1.00	0.11	1.00	4.5.4
Lighting	LED (Garage 24/7 Outdoor, 176-250W HID)	Lamp	522.05	0.14	522.05	1.00	0.14	1.00	4.5.4
Lighting	LED (Garage 24/7 Outdoor, 176-250W HID)	Lamp	522.05	0.14	522.05	1.00	0.14	1.00	4.5.4
Lighting	LED (Garage 24/7 Outdoor, 251-400W HID)	Lamp	1,954.38	0.22	1,954.38	1.00	0.22	1.00	4.5.4
Lighting	LED (Garage 24/7 Outdoor, 401-650W HID)	Lamp	3,524.37	0.40	3,524.37	1.00	0.40	1.00	4.5.4
Lighting	LED (Garage 24/7 Outdoor, 401-650W HID)	Lamp	3,524.37	0.40	3,524.37	1.00	0.40	1.00	4.5.4
Lighting	LED Exit Sign (Garage 24/7, CFL Single Sided)	Lamp	43.83	0.01	43.83	1.00	0.01	1.00	4.5.5
Lighting	LED Exit Sign (Garage 24/7, CFL Single Sided)	Lamp	43.83	0.01	43.83	1.00	0.01	1.00	4.5.5
Lighting	LED Exit Sign (Garage 24/7, Incandescent)	Lamp	271.75	0.03	271.75	1.00	0.03	1.00	4.5.5
Lighting	LED Exit Sign (Garage 24/7, Incandescent)	Lamp	271.75	0.03	271.75	1.00	0.03	1.00	4.5.5
Lighting	LED Exit Sign (High Rise, CFL Double Sided)	Lamp	105.19	0.01	105.19	1.00	0.01	1.00	4.5.5
Lighting	LED Exit Sign (High Rise, CFL Double Sided)	Lamp	105.19	0.01	105.19	1.00	0.01	1.00	4.5.5
Lighting	LED Exit Sign (High Rise, CFL Single Sided)	Lamp	52.60	0.01	52.60	1.00	0.01	1.00	4.5.5
Lighting	LED Exit Sign (High Rise, CFL Single Sided)	Lamp	52.60	0.01	52.60	1.00	0.01	1.00	4.5.5

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Lighting	LED Exit Sign (High Rise, Incandescent)	Lamp	326.10	0.04	326.10	1.00	0.04	1.00	4.5.5
Lighting	LED Exit Sign (High Rise, Incandescent)	Lamp	326.10	0.04	326.10	1.00	0.04	1.00	4.5.5
Lighting	LED Exit Sign (High Rise, Incandescent)	Lamp	326.10	0.04	326.10	1.00	0.04	1.00	4.5.5
Lighting	LED Exit Sign (High Rise, Incandescent)	Lamp	326.10	0.04	326.10	1.00	0.04	1.00	4.5.5
Lighting	LED Exit Sign (Mid Rise, CFL Double Sided)	Lamp	54.87	0.01	97.30	1.77	0.01	1.00	4.5.5
Lighting	LED Exit Sign (Mid Rise, CFL Single Sided)	Lamp	48.65	0.01	48.65	1.00	0.01	1.00	4.5.5
Lighting	LED Exit Sign (Mid Rise, CFL Single Sided)	Lamp	48.65	0.01	48.65	1.00	0.01	1.00	4.5.5
Lighting	LED Exit Sign (Mid Rise, CFL Single Sided)	Lamp	48.65	0.01	48.65	1.00	0.01	1.00	4.5.5
Lighting	LED Exit Sign (Mid Rise, Incandescent)	Lamp	301.64	0.04	301.64	1.00	0.04	1.00	4.5.5
Lighting	LED Exit Sign (Mid Rise, Incandescent)	Lamp	301.64	0.04	301.64	1.00	0.04	1.00	4.5.5
Lighting	LED Exit Sign (Mid Rise, Incandescent)	Lamp	301.64	0.04	301.64	1.00	0.04	1.00	4.5.5
Lighting	LED Exit Sign (Mid Rise, Incandescent)	Lamp	301.64	0.04	301.64	1.00	0.04	1.00	4.5.5
Lighting	Occupancy Sensor (High Rise 24/7, CA)	kW Controlled	2.52	0.00	2.52	1.00	0.00	1.00	4.5.10
Lighting	Occupancy Sensor (High Rise 24/7, CA)	kW Controlled	2.52	0.00	2.52	1.00	0.00	1.00	4.5.10
Lighting	Occupancy Sensor (Mid Rise 24/7, CA)	kW Controlled	2.34	0.00	2.34	1.00	0.00	1.00	4.5.10
Hot Water	Electric Aerator - Bathroom (CA)	Each	129.97	0.03	129.96	1.00	0.03	1.00	4.3.2
Hot Water	Electric Aerator - Bathroom (CA, Cook County)	Each	126.78	0.03	126.77	1.00	0.03	1.00	4.3.2
Hot Water	Electric Aerator - Bathroom (IU)	Each	33.55	0.03	33.53	1.00	0.03	1.00	5.4.4

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Hot Water	Electric Aerator - Bathroom (IU, Cook County)	Each	32.72	0.03	32.71	1.00	0.03	1.00	5.4.4
Hot Water	Electric Aerator - Kitchen (IU)	Each	53.47	0.01	53.49	1.00	0.01	1.00	5.4.4
Hot Water	Electric Aerator - Kitchen (IU, Cook County)	Each	52.39	0.01	52.40	1.00	0.01	1.00	5.4.4
Hot Water	Electric Pipe Insulation - DHW (CA, Small <=1.25)	Each	52.97	0.01	52.97	1.00	0.01	1.00	4.4.14
Hot Water	Electric Showerhead (CA)	Each	418.98	0.05	419.00	1.00	0.05	1.00	4.3.3
Hot Water	Electric Showerhead (CA, Cook County)	Each	411.87	0.05	411.88	1.00	0.05	1.00	4.3.3
Hot Water	Electric Showerhead (CA, Cook County)	Each	411.87	0.05	411.88	1.00	0.05	1.00	4.3.3
Hot Water	Electric Showerhead (IU)	Each	236.84	0.03	236.84	1.00	0.03	1.00	5.4.5
Hot Water	Electric Showerhead (IU, Cook County)	Each	232.82	0.03	232.82	1.00	0.03	1.00	5.4.5
Hot Water	Electric Showerhead (IU, Cook County)	Each	232.82	0.03	232.82	1.00	0.03	1.00	5.4.5
Hot Water	Gas Aerator - Bathroom (CA)	Each	7.72	0.00	7.70	1.00	0.00	N/A	4.3.2
Hot Water	Gas Aerator - Bathroom (CA, Cook County)	Each	4.52	0.00	4.52	1.00	0.00	N/A	4.3.2
Hot Water	Gas Aerator - Bathroom (IU)	Each	2.00	0.00	1.99	0.99	0.00	N/A	5.4.4
Hot Water	Gas Aerator - Bathroom (IU, Cook County)	Each	1.18	0.00	1.17	0.99	0.00	N/A	5.4.4
Hot Water	Gas Aerator - Kitchen (CA)	Each	7.72	0.00	7.70	1.00	0.00	N/A	4.3.2
Hot Water	Gas Aerator - Kitchen (CA, Cook County)	Each	4.52	0.00	4.52	1.00	0.00	N/A	4.3.2
Hot Water	Gas Aerator - Kitchen (IU)	Each	2.61	0.00	2.63	1.01	0.00	N/A	5.4.4
Hot Water	Gas Aerator - Kitchen (IU, Cook County)	Each	1.53	0.00	1.54	1.01	0.00	N/A	5.4.4
Hot Water	Gas Showerhead (CA)	Each	17.18	0.00	17.20	1.00	0.00	N/A	4.3.3
Hot Water	Gas Showerhead (CA, Cook County)	Each	10.07	0.00	10.09	1.00	0.00	N/A	4.3.3

End Use Type	Research Category	Unit	Ex Ante Gross kWh/Unit Savings	Ex Ante Gross Peak kW/Unit Savings	Verified Gross kWh/Unit Savings	kWh Savings Realization Rate	Verified Gross Peak kW/Unit	Peak kW Savings Realization Rate	Source (IL-TRM Section*)
Hot Water	Gas Showerhead (IU)	Each	9.72	0.00	9.73	1.00	0.00	N/A	5.4.5
Hot Water	Gas Showerhead (IU)	Each	9.72	0.00	9.73	1.00	0.00	N/A	5.4.5
Hot Water	Gas Showerhead (IU, Cook County)	Each	5.70	0.00	5.70	1.00	0.00	N/A	5.4.5
Hot Water	Gas Showerhead (IU, Cook County)	Each	5.70	0.00	5.70	1.00	0.00	N/A	5.4.5
HVAC	Manual T-Stat Nest - Electric - Furnace & AC (IU)	Each	1,477.23	0.10	1,476.76	1.00	0.10	1.00	5.3.16
HVAC	Manual T-Stat Nest - Electric - Heat Pump (IU)	Each	909.59	0.10	909.49	1.00	0.10	1.00	5.3.16
HVAC	Manual T-Stat Nest - Gas - Furnace & AC (IU)	Each	160.52	0.10	160.48	1.00	0.10	1.00	5.3.16
HVAC	Prog. T-Stat - Electric - Resistance (IU)	Each	837.31	0.00	837.31	1.00	0.00	N/A	5.3.11
HVAC	Prog. T-Stat - Electric - Resistance (IU)	Each	837.31	0.00	837.31	1.00	0.00	N/A	5.3.11
HVAC	Prog. T-Stat - Gas - Furnace (IU)	Each	37.26	0.00	37.26	1.00	0.00	N/A	5.3.11
HVAC	Prog. T-Stat Nest - Electric - Furnace & AC (IU)	Each	1,057.64	0.10	1,058.08	1.00	0.10	1.00	5.3.16
HVAC	Prog. T-Stat Nest - Gas - Boiler & Chiller (IU)	Each	162.22	0.10	162.32	1.00	0.10	1.00	5.3.16
HVAC	Prog. T-Stat Nest - Gas - Furnace & AC (IU)	Each	141.86	0.10	141.85	1.00	0.10	1.00	5.3.16
HVAC	Prog. T-Stat Nest - Gas - Furnace & AC (IU)	Each	141.86	0.10	141.85	1.00	0.10	1.00	5.3.16
HVAC	Prog. T-Stat Nest - Gas - Furnace & AC (IU)	Each	141.86	0.10	141.85	1.00	0.10	1.00	5.3.16
HVAC	Reprogram T-Stat - Gas - Furnace (IU)	Each	37.26	0.00	37.26	1.00	0.00	N/A	5.3.11

DD – Dawn to dusk

* IL-TRM v9.0 and IL-TRM v9.0 Errata, where applicable.

Source: ComEd tracking data and 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 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	LED Exterior HID	Lamp	2,535	11.6	No	1,651,201	0.00	0	0	0	0	0.83	0.83	0.85	1,370,497	0.00	0	0	0	0
Lighting	LED Exit Sign	Lamp	4,074	5.0	No	1,191,114	141.36	0	0	-9,301	-6,808	0.83	0.83	0.85	988,625	117.33	0	0	-7,720	-5,787
Lighting	LED 24/7 CA Interior T8	Lamp	4,897	5.7	No	1,075,720	128.22	0	0	-10,930	-5,459	0.96	0.96	0.85	1,032,691	123.09	0	0	-10,493	-4,640
Lighting	LED 24/7 Garage HID	Lamp	613	5.7	No	868,895	99.12	0	0	0	0	0.83	0.83	0.85	721,183	82.27	0	0	0	0
HVAC	Advanced Thermostat	Each	882	11.0	No	712,873	89.87	0	0	0	Multiple	Multiple	0.85	632,838	71.90	0	0	0	0	0
Lighting	LED 24/7 CA Interior T12‡	Lamp	2,173	5.7	No	594,790	70.74	0	0	-3,037	-5,298	0.96	0.96	0.85	570,998	67.91	0	0	-2,916	-4,504
Lighting	LED 24/7 Garage T8	Lamp	2,609	5.7	No	566,973	64.68	0	0	0	0	0.96	0.96	0.85	544,294	62.09	0	0	0	0
Lighting	LED IU Interior Omnidirectional‡	Lamp	15,912	10.0	No	543,942	69.60	0	0	-31,597	-11,659	0.67	0.67	0.85	364,441	46.63	0	0	-21,170	-9,910
Lighting	LED 24/7 Garage T12‡	Lamp	1,211	5.7	No	364,935	41.63	0	0	0	0	0.96	0.96	0.85	350,337	39.97	0	0	0	0
Lighting	LED IU Interior Decorative‡	Lamp	12,727	10.0	No	292,286	48.67	0	0	-38,834	-5,711	0.82	0.82	0.85	239,674	39.91	0	0	-31,844	-4,855
Hot Water	Low Flow Showerhead (IU, Electric)	Each	925	10.0	No	210,085	28.08	0	8,815	0	0	1.03	1.03	0.85	216,387	28.92	0	9,079	0	0
Lighting	LED CA Interior T12‡	Lamp	1,960	15.0	No	216,231	64.19	0	0	-6,357	-2,189	0.96	0.96	0.85	207,582	61.62	0	0	-6,102	-1,861
Lighting	LED IU Interior Fixture‡	Lamp	5,957	15.0	No	209,414	31.29	0	0	-27,228	-4,097	0.82	0.82	0.85	171,719	25.66	0	0	-22,327	-3,482
Lighting	LED CA Interior Omnidirectional Incandescent‡	Lamp	1,104	3.4	No	208,275	27.74	0	0	-4,017	-2,401	0.67	0.67	0.85	139,544	18.59	0	0	-2,691	-2,041
Lighting	LED CA Interior T8	Lamp	1,675	15.0	No	168,746	48.62	0	0	-374	-1,167	0.96	0.96	0.85	161,996	46.67	0	0	-359	-992
Lighting	LED CA Interior Decorative Incandescent‡	Lamp	393	2.9	No	79,629	10.80	0	0	-1,556	-858	0.82	0.82	0.85	65,296	8.85	0	0	-1,276	-729
Lighting	LED CA Interior Omnidirectional CFL	Lamp	2,972	3.4	No	74,876	10.05	0	0	-1,459	-836	0.67	0.67	0.85	50,167	6.73	0	0	-977	-710
Lighting	LED CA Exterior Omnidirectional Incandescent‡	Lamp	383	4.6	No	52,163	0.00	0	0	0	0	0.67	0.67	0.85	34,949	0.00	0	0	0	0
Lighting	LED CA Interior Directional Incandescent‡	Lamp	160	4.2	No	43,037	6.54	0	0	-2,070	-253	0.82	0.82	0.85	35,290	5.36	0	0	-1,698	-215
HVAC	IU Programmable Thermostat‡	Each	574	16.0	No	34,989	0.00	0	0	0	0	0.86	0.86	0.85	30,091	0.00	0	0	0	0
Hot Water	Faucet Aerator - Bathroom (IU, Electric)	Each	1,029	10.0	No	32,458	32.46	0	2,033	0	0	1.03	1.03	0.85	33,432	33.43	0	2,094	0	0
Hot Water	Low Flow Showerhead (Gas)	Each	3,907	10.0	No	0	0.00	0	28,069	0	0	1.03	1.03	0.85	0	0.00	0	28,911	0	0
Lighting	Lighting Controls	Watts Controlled	7,032	10.0	No	17,521	7.33	0	0	0	-115	0.83	0.83	0.85	14,543	6.08	0	0	0	-98
HVAC	IU Reprogram Thermostat	Each	77	2.0	No	17,270	0.00	0	0	0	0	0.86	0.86	0.85	14,852	0.00	0	0	0	0
Lighting	LED CA Exterior Directional Incandescent‡	Lamp	64	5.8	No	16,429	0.00	0	0	0	0	0.82	0.82	0.85	13,472	0.00	0	0	0	0
Lighting	LED CA Exterior Omnidirectional CFL	Lamp	979	4.6	No	14,679	0.00	0	0	0	0	0.67	0.67	0.85	9,835	0.00	0	0	0	0
Hot Water	Faucet Aerator - Kitchen (IU, Electric)	Each	268	10.0	No	13,631	3.57	0	667	0	0	1.03	1.03	0.85	14,040	3.68	0	687	0	0
Hot Water	Low Flow Faucet Aerator (Gas)	Each	7,654	10.0	No	0	0.00	0	12,325	0	0	1.03	1.03	0.85	0	0.00	0	12,695	0	0
Hot Water	CA Pipe Insulation	Linear Foot	163	15.0	No	8,634	0.98	0	0	0	0	0.83	0.83	0.85	7,166	0.82	0	0	0	0
Lighting	LED Garage T8	Lamp	91	14.7	No	7,755	2.10	0	0	0	0	0.96	0.96	0.85	7,445	2.01	0	0	0	0
Lighting	LED IU Exterior Decorative‡	Lamp	66	6.9	No	5,557	0.61	0	0	0	0	0.82	0.82	0.85	4,557	0.50	0	0	0	0
Hot Water	Low Flow Showerhead (CA, Electric)	Each	10	10.0	No	4,018	0.50	0	122	0	0	1.03	1.03	0.85	4,138	0.51	0	126	0	0
Lighting	LED CA Exterior Decorative Incandescent‡	Lamp	28	4.0	No	3,578	0.00	0	0	0	0	0.82	0.82	0.85	2,934	0.00	0	0	0	0
Lighting	LED CA Interior Directional CFL	Lamp	78	4.2	No	2,999	0.40	0	0	-75	-35	0.82	0.82	0.85	2,459	0.33	0	0	-61	-30
Lighting	LED IU Exterior Omnidirectional‡	Lamp	32	8.0	No	2,545	0.28	0	0	0	0	0.67	0.67	0.85	1,705	0.19	0	0	0	0
Lighting	LED CA Exterior Directional CFL	Lamp	90	5.8	No	2,283	0.00	0	0	0	0	0.82	0.82	0.85	1,872	0.00	0	0	0	0
Lighting	LED Garage HID	Lamp	3	14.7	No	2,249	0.61	0	0	0	0	0.83	0.83	0.85	1,866	0.50	0	0	0	0
Lighting	LED Garage T12‡	Lamp	20	14.7	No	2,223	0.60	0	0	0	0	0.96	0.96	0.85	2,134	0.58	0	0	0	0
Lighting	LED CA Interior Decorative CFL	Lamp	60	2.9	No	1,386	0.18	0	0	-13	-16	0.82	0.82	0.85	1,137	0.15	0	0	-11	-14
Hot Water	Faucet Aerator - Bathroom (CA, Electric)	Each	8	10.0	No	978	0.26	0	46	0	0	1.03	1.03	0.85	1,007	0.26	0	47	0	0
Lighting	LED CA Exterior Decorative CFL	Lamp	24	4.0	No	426	0.00	0	0	0	0	0.82	0.82	0.85	349	0.00	0	0	0	0
Lighting	LED CA Garage Omnidirectional CFL	Lamp	12	5.6	No	152	0.04	0	0	0	0	0.67	0.67	0.85	102	0.03	0	0	0	0
Total				8.1		9,316,945	1,031	0	52,077	-136,848	-46,903				8,067,647	903	0	53,639	-109,645	-39,867

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 table (Table 4-1).

§ 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.

|| Cooling NTG = 0.8, heating NTG = 0.9

Source: ComEd tracking data and evaluation team analysis