

ComEd Business Instant Discounts Impact Evaluation Report

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

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1. Introduction

This report presents the results of the impact evaluation of the CY2021 Business Instant Discounts 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 Business Instant Discounts Program provides incentives to increase the market share of energy efficient products commonly sold to business customers. The program is designed to provide an expedited, simple solution to business customers interested in purchasing high efficiency products by providing instant discounts at the point of sale. The program provides incentives for energy efficient LED lamps (screw-based, pin-based, and tubular), Energy Star® (ES) fixtures (primarily trim kits), exit signs, and wall packs as well as reduced-wattage linear fluorescent (LF) lamps. Three-phase, high frequency battery chargers and commercial HVAC equipment are also offered through the program.

The CY2021 program incented 2,204,037 measures, as Table 2-1 shows. An additional 225,380 carryover LED lamps and fixtures (119,476 of which were purchased in CY2019 and 105,904 of which were purchased in CY2020) are expected to be installed in CY2021.

Table 2-1. CY2021 Volumetric Findings Detail

Research Category	CY2021 Incentivized Measures	CY2021 First Year Installed Measures	CY2020 Carryover – CY2021 Installs	CY2019 Carryover – CY2021 Installs	Total Installed Measures in CY2021
LED Lamp	459,098	376,579	33,583	64,737	474,899
TLEDs	1,350,957	1,255,106	33,373	30,305	1,318,784
LED Fixture	261,332	215,354	32,049	17,869	265,271
LED HID	33,948	27,859	3,620	2,990	34,469
LED Exit Signs	35,173	34,987	0	0	34,987
Linear Fluorescents	63,361	59,005	3,280	3,575	65,859
HVAC	141	141	0	0	141
Battery Pack	27	27	0	0	27
Total	2,204,037	1,969,057	105,904	119,476	2,194,437

HID – High intensity discharge

Source: ComEd tracking data and evaluation team analysis

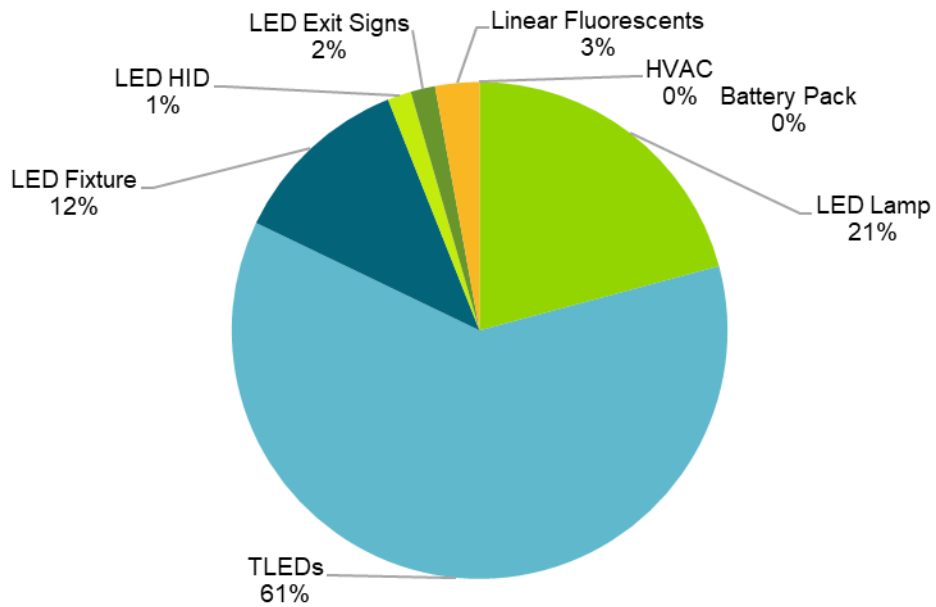
The program included the measures shown in Table 2-2 and Figure 2-1, which were sold through the program in CY2021. This table does not include carryover bulbs sold through the program in CY2019 and CY2020 that are installed in CY2021.

Table 2-2. Number of Measures by End Use Type

End Use Type	Research Category	Quantity Unit
Lighting	LED Lamp	459,098 Lamps
Lighting	TLEDs	1,350,957 Lamps
Lighting	LED Fixture	261,332 Fixtures
Lighting	LED HID	33,948 Lamps
Lighting	LED Exit Signs	35,173 Lamps
Lighting	Linear Fluorescents	63,361 Lamps
HVAC	HVAC	141 Units
Power Electronics	Battery Pack	27 Units
	Total	2,204,037

Source: ComEd tracking data and evaluation team analysis

Figure 2-1. Share 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 Business Instant Discounts Program achieved in CY2021. There were no gas savings claimed or evaluated in the 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	233,713,154	0.99	232,099,834	Varies	15,972,841	14,827,520	205,628,306
Electric Energy Savings - Converted from Gas	kWh	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Electric Energy Savings	kWh	233,713,154	0.99	232,099,834	Varies	15,972,841	14,827,520	205,628,306
Summer Peak§ Demand Savings	kW	53,261	0.99	52,892	Varies	3,623	3,398	46,863

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 include carryover savings from CY2019 and CY2020. Secondary kWh savings from water and electric heating penalties do not apply to this program and hence are not included.

§ 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 Business Instant Discounts 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 EUL presented in the table below is the weighted annual measure life (WAML) across all of the individual measures that go into each research category. For that reason, the Verified Net Savings often extend to years beyond the EUL shown in the table.

Guidehouse did not evaluate gas savings for this program, 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		Lifetime Net Savings (kWh)†	Verified Net kWh Savings										
			(kWh)	NTG*		2018	2019	2020	2021	2022	2023	2024	2025	2026		
Lighting	LED Lamp	7.0	83,396,610	0.72	346,681,096				60,045,560	60,045,560	60,045,560	60,045,560	34,217,740	33,858,019		
Lighting	TLEDs	15.0	82,843,860	0.76	943,832,799				62,961,334	62,961,334	62,961,334	62,961,334	62,961,334	62,961,334		
Lighting	LED Fixture	13.5	48,059,294	0.80	373,998,768				38,447,435	38,447,435	38,447,435	38,447,435	23,055,499	23,045,349		
Lighting	LED HID	14.5	9,056,697	0.72	94,457,562				6,520,822	6,520,822	6,520,822	6,520,822	6,520,822	6,520,822		
Lighting	LED Exit Signs	5.0	6,513,323	0.80	26,053,294				5,210,659	5,210,659	5,210,659	5,210,659	5,210,659	-		
Lighting	Linear Fluorescents	13.0	1,091,559	0.67	9,520,556				731,345	731,345	731,345	731,345	731,345	731,345		
HVAC	HVAC	15.0	951,373	0.80	11,416,479				761,099	761,099	761,099	761,099	761,099	761,099		
Power Electronics	Battery Pack	15.0	187,117	0.80	2,245,404				149,694	149,694	149,694	149,694	149,694	149,694		
Lighting	Carryover (CY2019)	9.0	19,328,136	0.83	119,064,406				15,972,841	15,972,841	15,972,841	15,972,841	11,004,932	11,004,932		
Lighting	Carryover (CY2020)	10.5	17,953,943	0.83	119,338,679				14,827,520	14,827,520	14,827,520	14,827,520	9,300,649	9,300,649		
CY2021 Program Total Electric Contribution to CPAS			269,381,913		2,046,609,042				205,628,306	205,628,306	205,628,306	205,628,306	153,913,771	148,333,242		
Historic Program Total Electric Contribution to CPAS‡						253,222,349	494,589,366	703,615,299	673,447,061	669,137,184	656,533,851	578,931,641	500,139,252	400,345,929		
Program Total Electric CPAS						253,222,349	494,589,366	703,615,299	879,075,367	874,765,489	862,162,157	784,559,947	654,053,024	548,679,171		
CY2021 Program Incremental Expiring Electric Savings§													51,714,534	5,580,529		
Historic Program Incremental Expiring Electric Savings									30,168,238	4,309,877	12,603,333	77,602,210	78,792,389	99,793,323		
Program Total Incremental Expiring Electric Savings									30,168,238	4,309,877	12,603,333	77,602,210	130,506,923	105,373,853		

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Lighting	LED Lamp	31,156,423	2,187,327	2,187,327	2,187,327	203,784	176,612	174,434	147,395	2,470	-	-	-
Lighting	TLEDs	62,961,334	62,961,334	62,961,334	62,961,334	62,961,334	62,961,334	62,961,334	62,961,334	62,374,130	-	-	-
Lighting	LED Fixture	23,045,349	23,004,021	22,974,329	22,963,349	19,733,293	16,249,881	16,104,010	16,014,669	14,019,280	-	-	-
Lighting	LED HID	6,515,392	6,451,767	6,451,767	6,451,767	6,451,767	6,445,334	6,444,818	6,068,468	4,051,547	-	-	-
Lighting	LED Exit Signs	-	-	-	-	-	-	-	-	-	-	-	-
Lighting	Linear Fluorescents	731,345	699,133	678,684	612,234	610,483	571,008	535,929	409,579	284,094	-	-	-
HVAC	HVAC	761,099	761,099	761,099	761,099	761,099	761,099	761,099	761,099	761,099	-	-	-
Power Electronics	Battery Pack	149,694	149,694	149,694	149,694	149,694	149,694	149,694	149,694	149,694	-	-	-
Lighting	Carryover (CY2019)	11,004,932	11,004,932	11,004,932	148,383	-	-	-	-	-	-	-	-
Lighting	Carryover (CY2020)	9,300,649	9,300,649	9,300,649	9,300,649	4,224,705	-	-	-	-	-	-	-
CY2021 Program Total Electric Contribution to CPAS		145,626,216	116,519,955	116,469,815	105,535,835	95,096,159	87,314,960	87,131,317	86,512,236	81,642,314	-	-	-
Historic Program Total Electric Contribution to CPAS‡		349,195,696	331,586,788	286,524,637	250,881,907	230,182,155	223,328,478	164,200,415	84,196,968	-	-	-	-
Program Total Electric CPAS		494,821,912	448,106,743	402,994,452	356,417,742	325,278,314	310,643,438	251,331,731	170,709,205	81,642,314	-	-	-
CY2021 Program Incremental Expiring Electric Savings§		2,707,026	29,106,261	50,140	10,933,980	10,439,676	7,781,198	183,644	619,080	4,869,923	81,642,314	-	-
Historic Program Incremental Expiring Electric Savings		51,150,233	17,608,908	45,062,150	35,642,730	20,699,752	6,853,677	59,128,063	80,003,446	84,196,968	-	-	-
Program Total Incremental Expiring Electric Savings		53,857,259	46,715,169	45,112,291	46,576,710	31,139,428	14,634,876	59,311,707	80,622,526	89,066,891	81,642,314	-	-

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>.

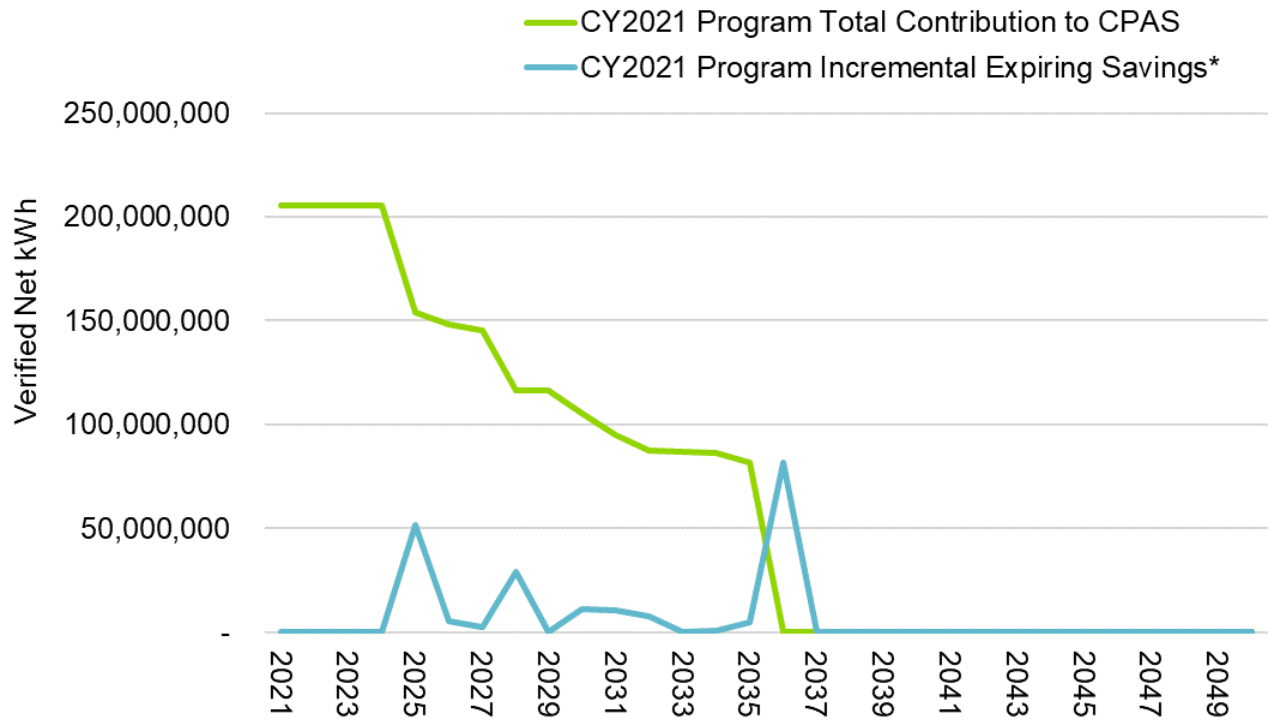
† Lifetime savings are the sum of CPAS savings through the EUL.

‡ Historic savings go back to CY2018.

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

Source: Evaluation team analysis

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 Business Instant Discounts Program includes several distinct research categories, as Table 5-1 shows. These groups include TLEDs, LED lamps, LED fixtures, LED HIDs, LED exit signs, linear fluorescents, battery chargers, rooftop HVAC, and carryover lamps or fixtures from purchases in CY2019 and CY2020 that were forecasted to be installed in CY2021 based on assumptions from the Illinois Statewide Technical Reference Manual v9.0 (IL-TRM).¹ As Figure 5-1 shows, LED lamps and TLED lamps and fixtures contributed the majority of net savings in CY2021. This program does not produce any secondary electric energy (kWh) savings related to water supply and/or wastewater treatment.

Table 5-1. Number of Measures by Type

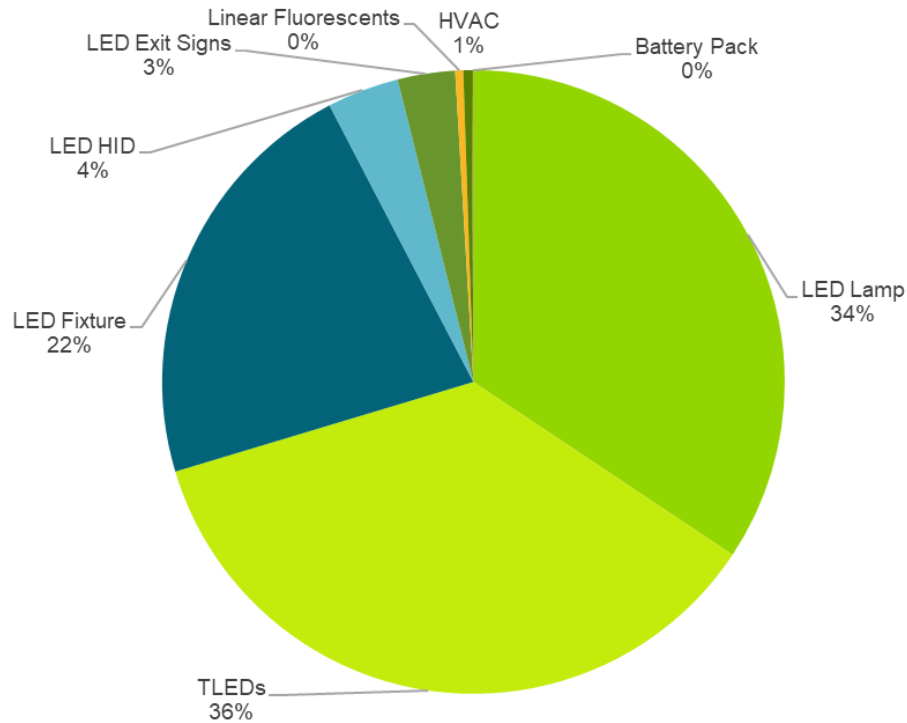
End Use Type	Research Category	Quantity Unit
Lighting	LED Lamp	459,098 Lamps
Lighting	TLEDs	1,350,957 Lamps
Lighting	LED Fixture	261,332 Fixtures
Lighting	LED HID	33,948 Lamps
Lighting	LED Exit Signs	35,173 Lamps
Lighting	Linear Fluorescents	63,361 Lamps
HVAC	HVAC	141 Units
Power Electronics	Battery Pack	27 Units
Total		2,204,037

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

Source: ComEd tracking data and evaluation team analysis

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

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



Source: ComEd tracking data and evaluation team analysis

Measure-level energy and demand savings are 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 Lamp	84,003,602	0.99	83,396,610	0.72	60,045,560	7.0
Lighting	TLEDs	83,293,851	0.99	82,843,860	0.76	62,961,334	15.0
Lighting	LED Fixture	48,526,948	0.99	48,059,294	0.80	38,447,435	13.5
Lighting	LED HID	9,104,953	0.99	9,056,697	0.72	6,520,822	14.5
Lighting	LED Exit Signs	6,548,028	0.99	6,513,323	0.80	5,210,659	5.0
Lighting	Linear Fluorescents	1,097,375	0.99	1,091,559	0.67	731,345	13.0
HVAC	HVAC	951,280	1.00	951,373	0.80	761,099	15.0
Power Electronics	Battery Pack	187,117	1.00	187,117	0.80	149,694	15.0
Lighting	Carryover (CY2019)	NR	N/A	19,328,136	0.83	15,972,841	9.0
Lighting	Carryover (CY2020)	NR	N/A	17,953,943	0.83	14,827,520	10.5
Total		233,713,154	1.15	269,381,913	0.76	205,628,306	11.2

NR = not reported (refers to a piece of data that was not reported).

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

Note: There are no secondary electric energy (kWh) savings from water supply and wastewater treatment plants for measures claimed by ComEd.

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

† The overall program realization rate of 1.15 is calculated by dividing verified gross savings, which is inclusive of verified gross carryover by ex ante gross savings that does not include ex ante carryover because ex ante carryover is NR. The overall program realization rate excluding verified carryover savings is 0.99.

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 Lamp	18,708	0.99	18,573	0.72	13,372
Lighting	TLEDs	19,880	0.99	19,773	0.76	15,027
Lighting	LED Fixture	11,311	0.99	11,201	0.80	8,961
Lighting	LED HID	2,033	0.99	2,022	0.72	1,456
Lighting	LED Exit Signs	899	0.99	894	0.80	716
Lighting	Linear Fluorescents	262	0.99	261	0.67	175
HVAC	HVAC	168	1.00	168	0.80	135
Power Electronics	Battery Pack	N/A	N/A	N/A	N/A	N/A
Lighting	Carryover (CY2019)	NR	N/A	4,385	0.83	3,623
Lighting	Carryover (CY2020)	NR	N/A	4,116	0.83	3,398
Total		53,261	1.15	61,393	0.76	46,863

NR = not reported (refers to a piece of data that was not reported).

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>.

† The overall program realization rate of 1.15 is calculated by dividing verified gross savings, which is inclusive of verified gross carryover by ex ante gross savings that does not include ex ante carryover because ex ante carryover is NR. The overall program realization rate excluding verified carryover savings is 0.99.

Source: ComEd tracking data and evaluation team analysis

6. Impact Analysis Findings and Recommendations

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

Finding 1. The overall program gross realization rate for the Business Instant Discounts Program excluding carryover (as no ex ante estimate was provided for the carryover savings) is 0.99. The realization rate was primarily driven by the lighting measures, which all had a realization rate of 0.99 and represented 99.5% of the verified gross and net program savings (without carryover). The ex ante savings do not account for program leakage, so they include saving from lamps installed outside of the ComEd service territory. The evaluation team applied a leakage rate of 0.0053 (0.53%)² to the program savings from lighting measures.

Recommendation 1. While there is currently no estimate for leakage in the IL TRM for non-residential lighting measures, the evaluation team recommends the program implementation team apply a leakage rate of 0.53% in order to more closely align the ex ante and verified savings estimates. The evaluation team will continue to assess program leakage on a bi-annual basis to determine if it changes or increases to a level where including it as a parameter in the IL-TRM is warranted.

² Leakage rate is based on PY9 and CY2018 program evaluation research.

Appendix A. Impact Analysis Methodology

A.1 Verified Gross Program Savings Analysis Approach Estimates

The evaluation team calculated verified savings for all measures with available data. For CY2021, the team determined the verified savings for LED lamps, LED fixtures, HID LEDs, LED exit signs, TLEDs, LFs, battery chargers, and HVAC rooftop units using the following steps:

- Reviewing the savings algorithm inputs in the measure workpapers for agreement with the IL-TRM, IL-TRM Errata Memo, or secondary research, where applicable.
- Validating the savings algorithms were applied correctly for all measures.
- Cross-checking the per-unit savings values in the tracking data with the evaluation team's calculations.
- Multiplying the verified per-unit savings value by the quantity reported in the tracking data.

The evaluation team downloaded the final tracking data for the CY2021 impact evaluation from the ComEd Evaluation OneDrive site. The team relied on the following documents to verify the per-unit savings for each program measure:

- Final CY2021 tracking database file: "BILD_CY2021_EOY_Data_Rev1_2022-01-13.xlsx"
- Instant Discounts Measure Workpapers³
- IL-TRM and IL-TRM Errata Memo for deemed input parameters or secondary evaluation research to verify any custom inputs used in the ex ante calculations

A.2 Verified Net Program Savings Analysis Approach

Verified net energy and coincident summer peak demand savings are calculated by multiplying the verified gross savings estimates by a net-to-gross (NTG) ratio. For the CY2021 Business Instant Discounts Program, the NTG ratio estimates are 0.67 for LFs; 0.72 for LED lamps and HID bulbs; 0.76 for TLEDs; and 0.80 for LED fixtures, exit signs, HVAC rooftop units, and battery chargers. These NTG ratio estimates are developed by the evaluation team and approved through the Illinois SAG consensus process.

A.3 Carryover Savings Estimation

A.3.1 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:

³ ComEd Measure Workpapers_InstantDiscounts 2021.pdf

- **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-1 shows that 119,476 lighting measures purchased in CY2019 and 105,904 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 30,800,360 kWh and summer peak carryover savings of 7,021 kW.

Table A-1. CY2021 Carryover Savings from CY2019 and CY2020 Program Lighting Sales

Claimed CY2021 Carryover Savings	Third-Year Installation of CY2019 Bulbs	Second-Year Installation of CY2020 Bulbs	Total CY2021 Carryover
Carryover Bulbs Installed During CY2021	119,476	105,904	225,380
Gross Energy Savings (kWh)	19,328,136	17,953,943	37,282,079
Gross Peak Summer Peak Demand Savings (kW)	4,385	4,116	8,501
Net-to-Gross Ratio	0.83	0.83	0.83
Net Energy Savings (kWh)	15,972,841	14,827,520	30,800,360
Net Summer Peak Demand Savings (kW)	3,623	3,398	7,021
EUL Res	10.0	10.0	10.0
EUL NonRes	9.0	10.5	9.7

Source: ComEd tracking data and evaluation team analysis

A.3.2 CY2022 Lighting Carryover Savings

The evaluation team calculated a preliminary CY2022 carryover savings estimate using the IL-TRM (v8.0, v9.0, and v10.0) and the CY2020 and CY2021 impact evaluation reports. The energy and demand savings from the CY2020 third-year and CY2021 second-year installations are calculated based on the following parameters:

- **Delta watts:** Verified delta watts for bulbs installed in CY2022 based on the baseline wattage values associated with the installation year (source: IL-TRM v10.0)
- **Residential/nonresidential split:** Verified residential/nonresidential split from the year the bulbs were purchased (source: IL-TRM v8.0 and v9.0)
- **HOU and summer peak CF:** Verified HOU and summer peak CF from the installation year (source: IL-TRM v10.0)

- **Energy and demand WHFs:** Verified WHFs from the year the bulbs are installed (source: IL-TRM v10.0)
- **ISR:** Verified ISR from the year the bulbs were purchased (source: IL-TRM v8.0 and v9.0)
- **NTG:** Deemed NTG based on evaluation research from the year the bulbs were purchased (source: SAG consensus)

Table A-2 shows that 217,471 bulbs purchased in CY2020 or CY2021 are expected to be installed in ComEd’s service territory in CY2022 (carryover). The table provides the gross and net energy and demand savings from these carryover bulbs. Total preliminary net carryover savings is estimated to be 28,356,320 kWh and 6,450 summer peak kW.

Table A-2. Preliminary CY2022 Carryover Savings from Bulbs Sold in CY2020 and CY2021

Preliminary CY2022 Carryover Savings	Third-Year Installation of CY2020 Bulbs	Second-Year Installation of CY2021 Bulbs	Total Preliminary CY2022 Carryover
Carryover Bulbs Installed During CY2022	119,686	97,785	217,471
Gross Energy Savings (kWh)	19,339,753	16,524,425	35,864,178
Gross Peak Summer Peak Demand Savings (kW)	4,386	3,770	8,156
Net-to-Gross Ratio	0.83	0.75	0.79
Net Energy Savings (kWh)	15,982,483	12,373,836	28,356,320
Net Summer Peak Demand Savings (kW)	3,624	2,826	6,450
EUL Res	10.0	10.0	10.0
EUL NonRes	10.4	9.0	9.7

Source: ComEd tracking data and evaluation team analysis

A.3.3 CY2023 Preliminary Partial Carryover Savings from CY2021

The evaluation team calculated a preliminary partial CY2023 carryover savings estimate based on the bulbs sold during CY2021 (CY2022 sales are not known at this time) that are estimated to be installed in CY2023. This estimate is preliminary because several of the parameters used to estimate these carryover savings are based on deemed parameters from the year of install (delta watts, HOU and peak CF, and WHFs), which would be based on IL-TRM v11.0 for CY2023. Because IL-TRM v11.0 is not finalized, the evaluation team used v10.0 of the IL-TRM to estimate these parameters. The preliminary parameters for the partial CY2023 carryover savings are based on the following:

- **Delta watts:** Verified delta watts for bulbs installed in CY2023 based on the baseline wattage values associated with the installation (source: IL-TRM v10.0); this value is subject to change and will use the values from IL-TRM v11.0.
- **Residential/nonresidential split:** Verified residential/nonresidential split from the year the bulbs were purchased (source: IL-TRM v9.0); this value is not subject to change.
- **HOU and summer peak CF:** Verified HOU and summer peak CF from the installation year (source: IL-TRM v10.0); this value is subject to change and will use the values from IL-TRM v11.0.
- **Energy and demand WHFs:** Verified WHFs from the year the bulbs are installed (source: IL-TRM v10.0); this value is subject to change and will use the values from TRM v11.0.

- **ISR:** Verified ISR from the year the bulbs were purchased (source: IL-TRM v9.0); this value is not subject to change.
- **NTG:** Deemed NTG based on evaluation research from the year the bulbs were purchased (source: SAG consensus); this value is not subject to change.

Table A-3 shows that 82,474 bulbs purchased in CY2021 are expected to be installed in ComEd’s service territory in CY2023. The table provides the preliminary gross and net energy and demand savings from these carryover bulbs. Total preliminary CY2023 partial net carryover energy savings is estimated to be 10,450,223 kWh and 2,386 summer peak kW.

Table A-3. CY2023 Preliminary Carryover Savings Estimates from CY2021 Bulb Sales

Preliminary Partial CY2023 Carryover Savings	Third-Year Installation of CY2021 Bulbs
Carryover Bulbs Installed During CY2023	82,474
Gross Energy Savings (kWh)	13,955,744
Gross Peak Summer Peak Demand Savings (kW)	3,183
Net-to-Gross Ratio	0.75
Net Energy Savings (kWh)	10,450,223
Net Summer Peak Demand Savings (kW)	2,386
EUL Res	10.0
EUL NonRes	10.4

Source: ComEd tracking data and evaluation team analysis

Appendix B. Impact Findings Detailed Results

During CY2021, 2,204,037 lighting, battery charging, and HVAC measures were sold through the Business Instant Discounts Program; this is a 6% reduction from the measures sold in CY2020. Table B-1 shows the volume of measure types incentivized through the program in PY3 through CY2021 (PY9 numbers represent sales over a 19-month period).

Table B-1. PY3 through CY2021 Volumetric Findings Detail

Program Year	Standard CFLs	Specialty CFLs	LEDs	Linear FLs	HIDs	LF Ballasts	Battery Chargers	HVAC RTUs	Total
CY2021	0	0	2,106,560	63,361	33,948	0	27	141	2,204,037
CY2020	0	0	2,166,976	138,867	43,324	0	287	0	2,349,454
CY2019	0	0	2,695,948	178,955	0	0	130	0	2,875,033
CY2018	0	0	2,399,886	186,701	0	0	121	0	2,586,708
PY9 †	0	0	1,749,883	303,331	0	0	169	0	2,053,383
PY8	0	0	1,131,992	503,948	0	0	76	0	1,636,016
PY7	279,320	261,262	1,109,148	791,443	2,025	67,331	160	0	2,510,689
PY6	343,577	362,332	804,299	840,903	2,607	67,391	0	0	2,421,109
PY5	249,799	347,639	211,955	503,627	2,799	0	0	0	1,315,819
PY4	194,180	381,072	0	0	0	0	0	0	575,252
PY3	4,173	929	0	0	0	0	0	0	5,102

CFL – Compact fluorescent lamp

RTU – Rooftop unit

† PY9 consisted of a 19-month program year; all prior program years consisted of 12 months.

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 Lamp	Lamp	459,098	7.0	No	83,396,610	18,573	N/A	N/A	N/A	-1,160,887	0.72	0.72	0.72	60,045,560	13,372	N/A	N/A	N/A	-835,838
Lighting	TLEDs	Lamp	1,350,957	15.0	No	82,843,860	19,773	N/A	N/A	N/A	-1,150,609	0.76	0.76	0.76	62,961,334	15,027	N/A	N/A	N/A	-874,463
Lighting	LED Fixture	Fixture	261,332	13.5	No	48,059,294	11,201	N/A	N/A	N/A	-655,423	0.80	0.80	0.80	38,447,435	8,961	N/A	N/A	N/A	-524,338
Lighting	LED HID	Lamp	33,948	14.5	No	9,056,697	2,022	N/A	N/A	N/A	-125,787	0.72	0.72	0.72	6,520,822	1,456	N/A	N/A	N/A	-90,567
Lighting	LED Exit Signs	Lamp	35,173	5.0	No	6,513,323	894	N/A	N/A	N/A	-90,463	0.80	0.80	0.80	5,210,659	716	N/A	N/A	N/A	-72,370
Lighting	Linear Fluorescents	Lamp	63,361	13.0	No	1,091,559	261	N/A	N/A	N/A	-15,161	0.67	0.67	0.67	731,345	175	N/A	N/A	N/A	-10,158
HVAC	HVAC	Units	141	15.0	No	951,373	168	N/A	N/A	N/A	0	0.80	0.80	0.80	761,099	135	N/A	N/A	N/A	0
Power Electronics	Battery Pack	Units	27	15.0	No	187,117	N/A	N/A	N/A	N/A	0	0.80	0.80	0.80	149,694	N/A	N/A	N/A	N/A	0
Lighting	Carryover (CY2019)	Lamp	N/A	9.0	No	19,328,136	4,385	N/A	N/A	N/A	-267,797	0.83	0.83	0.83	15,972,841	3,623	N/A	N/A	N/A	-221,309
Lighting	Carryover (CY2020)	Lamp	N/A	10.5	No	17,953,943	4,116	N/A	N/A	N/A	-247,500	0.83	0.83	0.83	14,827,520	3,398	N/A	N/A	N/A	-204,402
Total				11.2		269,381,913	61,393	N/A	N/A	N/A	-3,713,627	N/A	N/A	N/A	205,628,306	46,863	N/A	N/A	N/A	-2,833,444

Note: To avoid double counting, the verified gross kilowatt-hour (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 kWh savings account for electric heating penalties, where applicable. Gas heating penalties represent the program therms heating penalties. The therms penalties are not required to be applied to the program savings.

Source: ComEd tracking data and evaluation team analysis