Guidehouse

Joint Utility Public Housing Retrofits Impact Evaluation Report

Energy Efficiency / Demand Response Plan: Program Year 2019 (CY2019) (1/1/2019-12/31/2019)

Presented to
ComEd
Peoples Gas
North Shore Gas

FINAL

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Joint Utility Public Housing Retrofits Impact Evaluation Report

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Joint Utility Public Housing Retrofits Impact Evaluation Report

1. Introduction

This report presents the results of the impact evaluation of the Joint Utility CY2019 Public Housing Retrofits (PHR) Program implemented for ComEd, Peoples Gas, and North Shore Gas. This report includes a summary of the energy and demand impacts for the total program broken out by relevant measure and program structure details. The appendix provides the impact analysis methodology and details of the Total Resource Cost (TRC) inputs. CY2019 covers January 1, 2019 through December 31, 2019.

Note, Nicor Gas also implements this program. However, due to the extended time related to aligning program tracking datasets and utility ex ante scorecards, we have removed Nicor Gas results from this report and will deliver Nicor Gas evaluation results in a separate report once the issues have been resolved.

2. Program Description

The PHR Program works with Public Housing Authorities (PHAs) in ComEd, Nicor Gas, Peoples Gas, and North Shore Gas territories to achieve electric and gas savings. The PHA itself is the program participant, though the residents of the properties are directly impacted by the program through in-unit and common area upgrades. In CY2019, the program provided direct install measures to residential units, such as LEDs, advanced power strips, low-flow faucet aerators, and advanced and programmable thermostats. The program also provided in-unit and common area space heating and cooling, refrigeration, lighting, and envelope upgrades. The program completed 105 projects across 69 PHA properties in CY2019, installing over 13,000 in-unit and common area measures. The following table and graph show the number of projects and measures the program provided, for three of the four utilities.

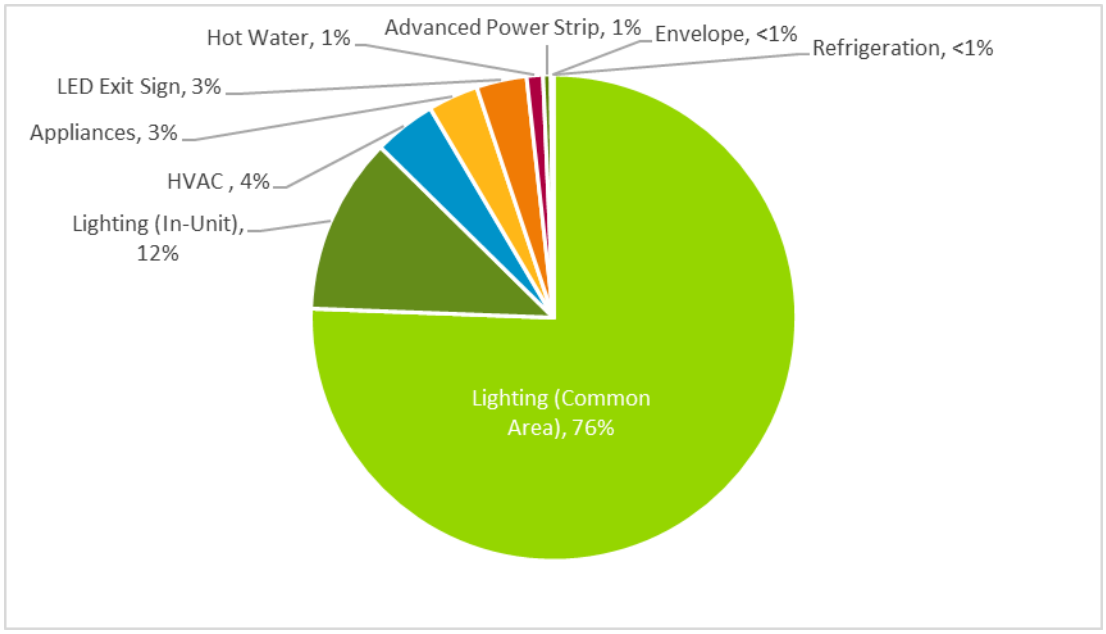
Table 2-1. CY2019 Volumetric Findings Detail

Participation	ComEd	North Shore Gas	Peoples Gas
Total Projects	95	4	41
Total Measures	12,714	153	1,337

Note: Total projects and measures do not sum across columns because, in many cases, projects receive joint utility funds. Counts within each utility's column represent the projects and measures funded by that utility.
Source: Joint utility tracking data and evaluation team analysis.

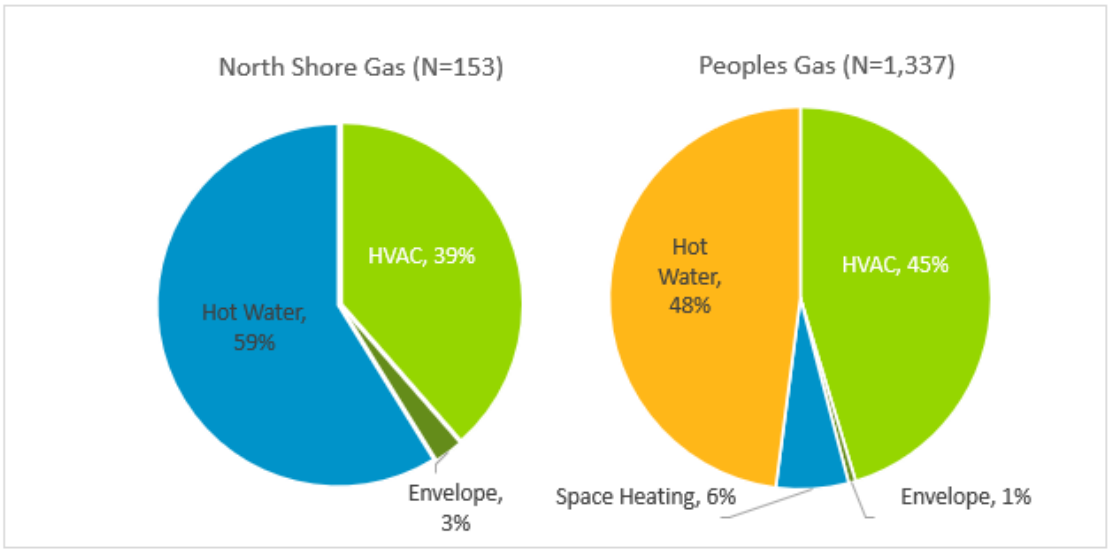
ComEd funds supported measures of a wide variety of end uses, as shown in Figure 2-1 below. Common area lighting was the most common measure by far, representing nearly three-quarters of measures. As shown in Figure 2-2, gas utility funds supported mostly HVAC measures (i.e., advanced or programmable thermostats, thermostat reprogramming, and space heating), but also hot water measures (i.e., low-flow faucet aerators and showerheads) and building envelope measures (i.e., attic and wall insulation).

Figure 2-1. Number of Measures Installed by Type, ComEd Funding (N=12,714)



Source: Joint utility program tracking data

Figure 2-2. Number of Measures Installed by Type, Gas Utilities Funding



Source: Joint utility program tracking data.

3. Program Savings Detail

This section summarizes electric, summer peak demand, and gas savings for the PHR Program. Table 3-1 and Table 3-2 summarizes the incremental electric, peak summer demand, and gas savings that the PHR Program achieved in CY2019. Note, ComEd did not claim gas savings for the CY2019 PHR Program and non-coincident demand savings are not reported for the program. Realization rates were

0.96 and 0.94 for ComEd's electric and demand savings, respectively, and 1.01 for Peoples Gas therms savings, and 1.00 for North Shore Gas therms savings.

Table 3-1. CY2019 Total Annual Incremental Electric Savings

Savings Category	Energy Savings (kWh)	Non-Coincident Demand Savings (kW)	Summer Peak* Demand Savings (kW)
Electricity			
Ex Ante Gross Savings	3,136,747	NR	371
Program Gross Realization Rate	0.96	NA	0.94
Verified Gross Savings	3,023,818	588	351
Program Net-to-Gross Ratio (NTG)	1.00	1.00	1.00
Verified Net Savings	3,023,818	588	351
Converted from Gas†			
Ex Ante Gross Savings	0	NA	NA
Program Gross Realization Rate	NA	NA	NA
Verified Gross Savings	0	NA	NA
Program Net-to-Gross Ratio (NTG)	1.00	NA	NA
Verified Net Savings	0	NA	NA
Total Electric Plus Gas			
Ex Ante Gross Savings	3,136,747	NR	371
Program Gross Realization Rate	0.96	NA	0.94
Verified Gross Savings	3,023,818	588	351
Program Net-to-Gross Ratio (NTG)	1.00	1.00	1.00
Verified Net Savings	3,023,818	588	351

NR = Not reported (refers a piece of data that was not reported, i.e., non-coincident demand savings)
NA = Not applicable (refers a piece of data cannot be produced or does not apply)
* The coincident summer peak period is defined as 1:00-5:00 p.m. Central Prevailing Time on non-holiday weekdays, June through August.
† Gas savings converted to kWh by multiplying therms * 29.31 (which is based on 100,000 Btu/therm and 3,412 Btu/kWh). The evaluation will determine which gas savings will be converted to kWh and counted toward ComEd's electric savings goal while producing the portfolio-wide Summary Report. According to Section 8-103B(b-25) of the Illinois Public Utilities Act, "In no event shall more than 10% of each year's applicable annual incremental goal as defined in paragraph (7) of subsection (g) of this Section be met through savings of fuels other than electricity."
Source: Joint utility program tracking data and evaluation team analysis

Table 3-2. CY2019 Total Annual Incremental Therm Savings

Savings Category	Peoples Gas (Therms)	North Shore Gas (Therms)
Natural Gas*		
Ex Ante Gross Savings	62,461	3,880
Program Gross Realization Rate	1.01	1.00
Verified Gross Savings	63,341	3,875
Program Net-to-Gross Ratio (NTG)	1.00	1.00
Verified Net Savings	63,341	3,875

* Natural gas savings with electric interactive effects removed.
Source: Joint utility program tracking data and evaluation team analysis,

4. Cumulative Persisting Annual Savings

Table 4-1 to Table 4-3 and Figure 4-1 show the measure-specific and total verified gross savings for the PHR Program and the cumulative persisting annual savings (CPAS) for the measures installed in CY2019. The electric CPAS across all measures installed in 2019 is 3,023,818 kWh (Table 4-1). Note, gas CPAS savings (Table 4-2) only includes historic gas savings because ComEd did not claim gas savings in CY2019. As such, the total CY2019 contribution to CPAS (Table 4-3) is 3,023,818 kWh, equivalent to the CY2019 electric contribution to CPAS. The “Program Total Electric CPAS” and the “Program Total Gas CPAS” are the sum of the CY2019 contribution and the historic contribution.

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

End Use Type	Research Category	EUL	CY2019 Verified Gross Savings (kWh)	NTG*	Lifetime Net Savings (kWh)†	Verified Net kWh Savings								
						2018	2019	2020	2021	2022	2023	2024	2025	2026
Lighting (Common Area)	Interior LED Lighting - Fixture	5.7	1,121,808	1.00	4,119,154		1,121,808	1,121,808	506,375	506,375	506,375	356,415		
Lighting (Common Area)	Exterior LED Lighting	11.6	609,554	1.00	7,082,900		609,554	609,554	609,554	609,554	609,554	609,554	609,554	609,554
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 Circline	5.7	302,616	1.00	1,726,079		302,616	302,616	302,616	302,616	302,616	212,998		
Lighting (Common Area)	Linear LED Lighting - Linear (4')	9.6	238,004	1.00	2,045,247		238,004	238,004	238,004	212,726	206,591	206,591	206,591	206,591
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (4')	5.7	234,257	1.00	1,302,885		234,257	233,393	225,504	225,504	225,504	158,723		
Appliances	ENERGY STAR Refrigerator	17.0	117,205	1.00	840,162		117,205	117,205	117,205	117,205	117,205	117,205	12,448	12,448
Appliances	Appliance Recycling	6.5	98,364	1.00	639,364		98,364	98,364	98,364	98,364	98,364	98,364	49,182	
Lighting (Common Area)	Linear Fluorescent - Delamping	11.0	50,129	1.00	502,867		50,129	50,129	47,577	44,379	44,379	44,379	44,379	44,379
Lighting (In-Unit)	Interior LED Lighting - Standard	10.0	49,461	1.00	224,277		49,461	49,461	15,669	15,669	15,669	15,669	15,669	15,669
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (2')	5.7	45,359	1.00	257,058		45,359	45,316	44,921	44,921	44,921	31,618		
LED Exit Sign	LED Exit Sign	5.0	23,153	1.00	115,764		23,153	23,153	23,153	23,153	23,153			
Lighting (Common Area)	Linear Fluorescent - Delamping - 24/7	11.0	21,097	1.00	223,784		21,097	20,678	20,223	20,223	20,223	20,223	20,223	20,223
Hot Water	Showerhead	10.0	18,000	1.00	180,002		18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000
Lighting (Common Area)	Interior LED Lighting - Standard	8.4	15,634	1.00	83,945		15,634	15,634	8,226	8,226	8,226	8,226	8,226	8,226
Lighting (Common Area)	Linear LED Lighting - Linear (2')	9.6	12,093	1.00	112,406		12,093	12,093	12,093	11,907	11,861	11,861	11,861	11,861
Hot Water	Kitchen Faucet Aerator	10.0	10,436	1.00	104,359		10,436	10,436	10,436	10,436	10,436	10,436	10,436	10,436
Envelope	Insulation	20.0	8,643	1.00	160,692		8,643	8,643	8,643	8,643	8,643	8,643	8,643	8,643
Refrigeration	Vending Miser	5.0	6,452	1.00	32,259		6,452	6,452	6,452	6,452	6,452			
Lighting (Common Area)	Garage LED Lighting	14.7	6,305	1.00	92,698		6,305	6,305	6,305	6,305	6,305	6,305	6,305	6,305
Lighting (Common Area)	Linear LED Lighting - Linear (8')	9.6	5,395	1.00	34,914		5,395	5,395	5,395	3,341	2,842	2,842	2,842	2,842
HVAC	Reprogram Thermostat	2.0	5,105	1.00	10,210		5,105	5,105						
Advanced Power Strip	APS (Tier 1)	7.0	5,032	1.00	35,225		5,032	5,032	5,032	5,032	5,032	5,032	5,032	
Lighting (Common Area)	Interior LED Lighting - Specialty	8.4	4,132	1.00	22,225		4,132	4,132	4,132	4,132	4,132	460	460	460
HVAC	Programmable Thermostat	8.0	3,680	1.00	29,437		3,680	3,680	3,680	3,680	3,680	3,680	3,680	3,680
Lighting (In-Unit)	Interior LED Lighting - Specialty	10.0	2,940	1.00	16,586		2,940	2,940	2,940	2,940	2,940	378	378	378
HVAC	Room Air Conditioner (TOS)	12.0	2,642	1.00	31,698		2,642	2,642	2,642	2,642	2,642	2,642	2,642	2,642
HVAC	ECM Replacement	15.0	1,872	1.00	28,080		1,872	1,872	1,872	1,872	1,872	1,872	1,872	1,872
HVAC	Room Air Conditioner (Early Retirement)	12.0	1,512	1.00	18,144		1,512	1,512	1,512	1,512	1,512	1,512	1,512	1,512
HVAC	VSD (Hot Water Pump)	15.0	1,340	1.00	20,101		1,340	1,340	1,340	1,340	1,340	1,340	1,340	1,340
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (8')	5.7	852	1.00	4,861		852	852	852	852	852	600		
Lighting (Common Area)	Occupancy Sensors	8.0	677	1.00	5,414		677	677	677	677	677	677	677	677
HVAC	Advanced Thermostat	11.0	70	1.00	775		70	70	70	70	70	70	70	70
CY2019 Program Total Electric Contribution to CPAS			**3,023,818**		**20,103,572**		**3,023,818**	**3,022,492**	**2,349,465**	**2,318,748**	**2,312,070**	**1,956,317**	**1,042,024**	**987,810**
Historic Program Total Electric Contribution to CPAS‡						**2,472,099**	**2,472,099**	**2,470,496**	**2,328,406**	**2,262,701**	**2,199,969**	**2,074,991**	**2,041,126**	**1,480,557**
Program Total Electric CPAS						**2,472,099**	**5,495,917**	**5,492,989**	**4,677,872**	**4,581,450**	**4,512,039**	**4,031,308**	**3,083,150**	**2,468,367**
CY2019 Program Incremental Expiring Electric Savings§								**1,326**	**673,027**	**30,717**	**6,679**	**355,753**	**914,292**	**54,214**
Historic Program Incremental Expiring Electric Savings‡§							**-**	**1,602**	**142,090**	**65,705**	**62,732**	**124,978**	**33,866**	**560,569**
Program Total Incremental Expiring Electric Savings§							**-**	**2,928**	**815,117**	**96,422**	**69,410**	**480,731**	**948,158**	**614,783**

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Lighting (Common Area)	Interior LED Lighting - Fixture												
Lighting (Common Area)	Exterior LED Lighting	609,554	609,554	609,554	377,802								
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 Circline (9')												
Lighting (Common Area)	Linear LED Lighting - Linear (4')	206,591	85,552										
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (4')												
Appliances	ENERGY STAR Refrigerator	12,448	12,448	12,448	12,448	12,448	12,448	12,448	12,448	12,448			
Appliances	Appliance Recycling												
Lighting (Common Area)	Linear Fluorescent - Delamping	44,379	44,379	44,379									
Lighting (In-Unit)	Interior LED Lighting - Standard	15,669	15,669										
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (2')												
LED Exit Sign	LED Exit Sign												
Lighting (Common Area)	Linear Fluorescent - Delamping - 24/7	20,223	20,223	20,223									
Hot Water	Showerhead	18,000	18,000										
Lighting (Common Area)	Interior LED Lighting - Standard	3,318											
Lighting (Common Area)	Linear LED Lighting - Linear (2')	11,861	4,912										
Hot Water	Kitchen Faucet Aerator	10,436	10,436										
Envelope	Insulation	8,643	8,643	7,426	7,426	7,426	7,426	7,426	7,426	7,426	7,426	7,426	7,426
Refrigeration	Vending Miser												
Lighting (Common Area)	Garage LED Lighting	6,305	6,305	6,305	6,305	6,305	6,305	4,424					
Lighting (Common Area)	Linear LED Lighting - Linear (8')	2,842	1,177										
HVAC	Reprogram Thermostat												
Advanced Power Strip	APS (Tier 1)												
Lighting (Common Area)	Interior LED Lighting - Specialty	186											
HVAC	Programmable Thermostat												
Lighting (In-Unit)	Interior LED Lighting - Specialty	378	378										
HVAC	Room Air Conditioner (TOS)	2,642	2,642	2,642	2,642								
HVAC	ECM Replacement	1,872	1,872	1,872	1,872	1,872	1,872	1,872					
HVAC	Room Air Conditioner (Early Retirement	1,512	1,512	1,512	1,512								
HVAC	VSD (Hot Water Pump)	1,340	1,340	1,340	1,340	1,340	1,340	1,340					
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (8')												
Lighting (Common Area)	Occupancy Sensors												
HVAC	Advanced Thermostat	70	70	70									
CY2019 Program Total Electric Contribution to CPAS		**978,271**	**845,113**	**707,772**	**411,347**	**29,392**	**29,392**	**27,510**	**19,875**	**19,875**	**7,426**	**7,426**	**7,426**
Historic Program Total Electric Contribution to CPAS‡		**1,385,283**	**401,328**	**165,053**	**164,092**	**164,092**	**164,092**	**164,092**	**125,897**	**125,897**	**125,897**	**125,897**	**4,181**
Program Total Electric CPAS		**2,363,554**	**1,246,441**	**872,826**	**575,439**	**193,484**	**193,484**	**191,602**	**145,772**	**145,772**	**133,324**	**133,324**	**11,608**
CY2019 Program Incremental Expiring Electric Savings§		**9,539**	**133,158**	**137,340**	**296,425**	**381,955**	**-**	**1,882**	**7,636**	**-**	**12,448**	**-**	**-**
Historic Program Incremental Expiring Electric Savings‡§		**95,274**	**983,954**	**236,275**	**961**	**-**	**-**	**-**	**38,194**	**-**	**-**	**-**	**121,716**
Program Total Incremental Expiring Electric Savings§		**104,813**	**1,117,113**	**373,616**	**297,387**	**381,955**	**-**	**1,882**	**45,830**	**-**	**12,448**	**-**	**121,716**

End Use Type	Research Category	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Lighting (Common Area)	Interior LED Lighting - Fixture												
Lighting (Common Area)	Exterior LED Lighting												
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 Circline (9')												
Lighting (Common Area)	Linear LED Lighting - Linear (4')												
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (4')												
Appliances	ENERGY STAR Refrigerator												
Appliances	Appliance Recycling												
Lighting (Common Area)	Linear Fluorescent - Delamping												
Lighting (In-Unit)	Interior LED Lighting - Standard												
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (2')												
LED Exit Sign	LED Exit Sign												
Lighting (Common Area)	Linear Fluorescent - Delamping - 24/7												
Hot Water	Showerhead												
Lighting (Common Area)	Interior LED Lighting - Standard												
Lighting (Common Area)	Linear LED Lighting - Linear (2')												
Hot Water	Kitchen Faucet Aerator												
Envelope	Insulation												
Refrigeration	Vending Miser												
Lighting (Common Area)	Garage LED Lighting												
Lighting (Common Area)	Linear LED Lighting - Linear (8')												
HVAC	Reprogram Thermostat												
Advanced Power Strip	APS (Tier 1)												
Lighting (Common Area)	Interior LED Lighting - Specialty												
HVAC	Programmable Thermostat												
Lighting (In-Unit)	Interior LED Lighting - Specialty												
HVAC	Room Air Conditioner (TOS)												
HVAC	ECM Replacement												
HVAC	Room Air Conditioner (Early Retirement												
HVAC	VSD (Hot Water Pump)												
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (8')												
Lighting (Common Area)	Occupancy Sensors												
HVAC	Advanced Thermostat												
CY2019 Program Total Electric Contribution to CPAS		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Historic Program Total Electric Contribution to CPAS‡		**4,181**	**4,181**	**4,181**	**4,181**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Program Total Electric CPAS		**4,181**	**4,181**	**4,181**	**4,181**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CY2019 Program Incremental Expiring Electric Savings§		**7,426**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Historic Program Incremental Expiring Electric Savings‡§		**-**	**-**	**-**	**-**	**4,181**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Program Total Incremental Expiring Electric Savings§		**7,426**	**-**	**-**	**-**	**4,181**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Note: The green highlighted cell shows program total first year electric savings. The gray cells are blank, indicating values irrelevant to the CY2019 contribution to CPAS.
* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019. † Lifetime savings are the sum of CPAS savings through the EUL.
‡ Historical savings go back to CY2018 § Incremental expiring savings are equal to CPAS Y_{n-1} - CPAS Y_n
Source: Evaluation team analysis

Table 4-2. Cumulative Persisting Annual Savings (CPAS) – Gas

	Verified Net Therms Savings								
	2018	2019	2020	2021	2022	2023	2024	2025	2026
CY2019 Program Total Gas Contribution to CPAS (Therms)		-	-	-	-	-	-	-	-
CY2019 Program Total Gas Contribution to CPAS (kWh Equivalent)‡		-	-	-	-	-	-	-	-
Historic Program Total Gas Contribution to CPAS (kWh Equivalent)‡§	67,946	67,946	66,925	58,439	58,439	53,976	24,309	24,309	24,309
Program Total Gas CPAS (kWh Equivalent)‡	67,946	67,946	66,925	58,439	58,439	53,976	24,309	24,309	24,309
CY2019 Program Incremental Expiring Gas Savings (Therms)‖			-	-	-	-	-	-	-
CY2019 Program Incremental Expiring Gas Savings (kWh Equivalent)‡‖			-	-	-	-	-	-	-
Historic Program Incremental Expiring Gas Savings (kWh Equivalent)‡§‖		-	1,021	8,486	-	4,463	29,667	-	-
Program Total Incremental Expiring Gas Savings (kWh Equivalent)‡‖		-	1,021	8,486	-	4,463	29,667	-	-

	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
CY2019 Program Total Gas Contribution to CPAS (Therms)	-	-	-	-	-	-	-	-	-	-	-	-
CY2019 Program Total Gas Contribution to CPAS (kWh Equivalent)‡	-	-	-	-	-	-	-	-	-	-	-	-
Historic Program Total Gas Contribution to CPAS (kWh Equivalent)‡§	22,886	16,131	16,131	16,131	16,131	16,131	7,329	7,329	7,329	7,329	7,329	2,664
Program Total Gas CPAS (kWh Equivalent)‡	22,886	16,131	16,131	16,131	16,131	16,131	7,329	7,329	7,329	7,329	7,329	2,664
CY2019 Program Incremental Expiring Gas Savings (Therms)‖	-	-	-	-	-	-	-	-	-	-	-	-
CY2019 Program Incremental Expiring Gas Savings (kWh Equivalent)‡‖	-	-	-	-	-	-	-	-	-	-	-	-
Historic Program Incremental Expiring Gas Savings (kWh Equivalent)‡§‖	1,423	6,755	-	-	-	-	8,802	-	-	-	-	4,665
Program Total Incremental Expiring Gas Savings (kWh Equivalent)‡‖	1,423	6,755	-	-	-	-	8,802	-	-	-	-	4,665

	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
CY2019 Program Total Gas Contribution to CPAS (Therms)	-	-	-	-	-	-	-	-	-	-	-	-
CY2019 Program Total Gas Contribution to CPAS (kWh Equivalent)‡	-	-	-	-	-	-	-	-	-	-	-	-
Historic Program Total Gas Contribution to CPAS (kWh Equivalent)‡§	2,664	2,664	2,664	2,664	-	-	-	-	-	-	-	-
Program Total Gas CPAS (kWh Equivalent)‡	2,664	2,664	2,664	2,664	-	-	-	-	-	-	-	-
CY2019 Program Incremental Expiring Gas Savings (Therms)‖	-	-	-	-	-	-	-	-	-	-	-	-
CY2019 Program Incremental Expiring Gas Savings (kWh Equivalent)‡‖	-	-	-	-	-	-	-	-	-	-	-	-
Historic Program Incremental Expiring Gas Savings (kWh Equivalent)‡§‖	-	-	-	-	2,664	-	-	-	-	-	-	-
Program Total Incremental Expiring Gas Savings (kWh Equivalent)‡‖	-	-	-	-	2,664	-	-	-	-	-	-	-

Note: The green highlighted cell shows program total first year gas savings in kWh equivalents.
* A deemed value. Source: ComEd_NTG_History_and_CY2019_Recommendations_Faucet_Aerator_Showerhead_Correction_2019-04-12.xlsx, which is to be found on the Illinois SAG web site here: http://ilsag.info/net-to-gross-framework.html.
† Lifetime savings are the sum of CPAS savings through the EUL.
‡ kWh equivalent savings are calculated by multiplying therm savings by 29.31.
§ Historic savings go back to CY2018.
‖ Incremental expiring savings are equal to CPAS Yn-1 - CPAS Yn.
Source: Evaluation team analysis

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

End Use Type	Research Category	EUL	CY2019 Verified Gross Savings (kWh)	NTG*	Lifetime Net Savings (kWh)†	Verified Net kWh Savings (Including Those Converted from Gas Savings)								
						2018	2019	2020	2021	2022	2023	2024	2025	2026
Lighting (Common Area)	Interior LED Lighting - Fixture	5.7	1,121,808	1.00	4,119,154	-	1,121,808	1,121,808	506,375	506,375	506,375	356,415	-	-
Lighting (Common Area)	Exterior LED Lighting	11.6	609,554	1.00	7,082,900	-	609,554	609,554	609,554	609,554	609,554	609,554	609,554	609,554
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 Circline (	5.7	302,616	1.00	1,726,079	-	302,616	302,616	302,616	302,616	302,616	212,998	-	-
Lighting (Common Area)	Linear LED Lighting - Linear (4')	9.6	238,004	1.00	2,045,247	-	238,004	238,004	238,004	212,726	206,591	206,591	206,591	206,591
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (4')	5.7	234,257	1.00	1,302,885	-	234,257	233,393	225,504	225,504	225,504	158,723	-	-
Appliances	ENERGY STAR Refrigerator	17.0	117,205	1.00	840,162	-	117,205	117,205	117,205	117,205	117,205	117,205	12,448	12,448
Appliances	Appliance Recycling	6.5	98,364	1.00	639,364	-	98,364	98,364	98,364	98,364	98,364	98,364	49,182	
Lighting (Common Area)	Linear Fluorescent - Delamping	11.0	50,129	1.00	502,867	-	50,129	50,129	47,577	44,379	44,379	44,379	44,379	44,379
Lighting (In-Unit)	Interior LED Lighting - Standard	10.0	49,461	1.00	224,277	-	49,461	49,461	15,669	15,669	15,669	15,669	15,669	15,669
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (2')	5.7	45,359	1.00	257,058	-	45,359	45,316	44,921	44,921	44,921	31,618		
LED Exit Sign	LED Exit Sign	5.0	23,153	1.00	115,764	-	23,153	23,153	23,153	23,153	23,153			
Lighting (Common Area)	Linear Fluorescent - Delamping - 24/7	11.0	21,097	1.00	223,784	-	21,097	20,678	20,223	20,223	20,223	20,223	20,223	20,223
Hot Water	Showerhead	10.0	18,000	1.00	180,002	-	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000
Lighting (Common Area)	Interior LED Lighting - Standard	8.4	15,634	1.00	83,945	-	15,634	15,634	8,226	8,226	8,226	8,226	8,226	8,226
Lighting (Common Area)	Linear LED Lighting - Linear (2')	9.6	12,093	1.00	112,406	-	12,093	12,093	12,093	11,907	11,861	11,861	11,861	11,861
Hot Water	Kitchen Faucet Aerator	10.0	10,436	1.00	104,359	-	10,436	10,436	10,436	10,436	10,436	10,436	10,436	10,436
Envelope	Insulation	20.0	8,643	1.00	160,692	-	8,643	8,643	8,643	8,643	8,643	8,643	8,643	8,643
Refrigeration	Vending Miser	5.0	6,452	1.00	32,259	-	6,452	6,452	6,452	6,452	6,452			
Lighting (Common Area)	Garage LED Lighting	14.7	6,305	1.00	92,698	-	6,305	6,305	6,305	6,305	6,305	6,305	6,305	6,305
Lighting (Common Area)	Linear LED Lighting - Linear (8')	9.6	5,395	1.00	34,914	-	5,395	5,395	5,395	3,341	2,842	2,842	2,842	2,842
HVAC	Reprogram Thermostat	2.0	5,105	1.00	10,210	-	5,105	5,105						
Advanced Power Strip	APS (Tier 1)	7.0	5,032	1.00	35,225	-	5,032	5,032	5,032	5,032	5,032	5,032	5,032	
Lighting (Common Area)	Interior LED Lighting - Specialty	8.4	4,132	1.00	22,225	-	4,132	4,132	4,132	4,132	4,132	460	460	460
HVAC	Programmable Thermostat	8.0	3,680	1.00	29,437	-	3,680	3,680	3,680	3,680	3,680	3,680	3,680	3,680
Lighting (In-Unit)	Interior LED Lighting - Specialty	10.0	2,940	1.00	16,586	-	2,940	2,940	2,940	2,940	2,940	378	378	378
HVAC	Room Air Conditioner (TOS)	12.0	2,642	1.00	31,698	-	2,642	2,642	2,642	2,642	2,642	2,642	2,642	2,642
HVAC	ECM Replacement	15.0	1,872	1.00	28,080	-	1,872	1,872	1,872	1,872	1,872	1,872	1,872	1,872
HVAC	Room Air Conditioner (Early Retirement)	12.0	1,512	1.00	18,144	-	1,512	1,512	1,512	1,512	1,512	1,512	1,512	1,512
HVAC	VSD (Hot Water Pump)	15.0	1,340	1.00	20,101	-	1,340	1,340	1,340	1,340	1,340	1,340	1,340	1,340
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (8')	5.7	852	1.00	4,861	-	852	852	852	852	852	600	-	-
Lighting (Common Area)	Occupancy Sensors	8.0	677	1.00	5,414	-	677	677	677	677	677	677	677	677
HVAC	Advanced Thermostat	11.0	70	1.00	775	-	70	70	70	70	70	70	70	70
CY2019 Program Total Contribution to CPAS			**3,023,818**		**20,103,572**		**3,023,818**	**3,022,492**	**2,349,465**	**2,318,748**	**2,312,070**	**1,956,317**	**1,042,024**	**987,810**
Historic Program Total Contribution to CPAS‡						**2,540,045**	**2,540,045**	**2,537,421**	**2,386,845**	**2,321,140**	**2,253,945**	**2,099,300**	**2,065,435**	**1,504,866**
Program Total CPAS						**2,540,045**	**5,563,863**	**5,559,914**	**4,736,311**	**4,639,889**	**4,566,015**	**4,055,617**	**3,107,459**	**2,492,676**
CY2019 Program Incremental Expiring Savings§								**1,326**	**673,027**	**30,717**	**6,679**	**355,753**	**914,292**	**54,214**
Historic Program Incremental Expiring Savings‡§							**-**	**2,623**	**150,576**	**65,705**	**67,195**	**154,645**	**33,866**	**560,569**
Program Total Incremental Expiring Savings§							**-**	**3,949**	**823,603**	**96,422**	**73,873**	**510,398**	**948,158**	**614,783**

End Use Type	Research Category	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Lighting (Common Area)	Interior LED Lighting - Fixture	-	-	-	-	-	-	-	-	-	-	-	-
Lighting (Common Area)	Exterior LED Lighting	609,554	609,554	609,554	377,802								
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 Circline (	-	-	-	-	-	-	-	-	-	-	-	-
Lighting (Common Area)	Linear LED Lighting - Linear (4')	206,591	85,552	-	-	-	-	-	-	-	-	-	-
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (4')	-	-	-	-	-	-	-	-	-	-	-	-
Appliances	ENERGY STAR Refrigerator	12,448	12,448	12,448	12,448	12,448	12,448	12,448	12,448	12,448			
Appliances	Appliance Recycling												
Lighting (Common Area)	Linear Fluorescent - Delamping	44,379	44,379	44,379									
Lighting (In-Unit)	Interior LED Lighting - Standard	15,669	15,669										
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (2')												
LED Exit Sign	LED Exit Sign												
Lighting (Common Area)	Linear Fluorescent - Delamping - 24/7	20,223	20,223	20,223	-	-	-	-	-	-	-	-	-
Hot Water	Showerhead	18,000	18,000										
Lighting (Common Area)	Interior LED Lighting - Standard	3,318											
Lighting (Common Area)	Linear LED Lighting - Linear (2')	11,861	4,912	-	-	-	-	-	-	-	-	-	-
Hot Water	Kitchen Faucet Aerator	10,436	10,436										
Envelope	Insulation	8,643	8,643	7,426	7,426	7,426	7,426	7,426	7,426	7,426	7,426	7,426	7,426
Refrigeration	Vending Miser												
Lighting (Common Area)	Garage LED Lighting	6,305	6,305	6,305	6,305	6,305	6,305	4,424					
Lighting (Common Area)	Linear LED Lighting - Linear (8')	2,842	1,177	-	-	-	-	-	-	-	-	-	-
HVAC	Reprogram Thermostat												
Advanced Power Strip	APS (Tier 1)												
Lighting (Common Area)	Interior LED Lighting - Specialty	186	-	-	-	-	-	-	-	-	-	-	-
HVAC	Programmable Thermostat												
Lighting (In-Unit)	Interior LED Lighting - Specialty	378	378	-	-	-	-	-	-	-	-	-	-
HVAC	Room Air Conditioner (TOS)	2,642	2,642	2,642	2,642								
HVAC	ECM Replacement	1,872	1,872	1,872	1,872	1,872	1,872	1,872					
HVAC	Room Air Conditioner (Early Retirement)	1,512	1,512	1,512	1,512								
HVAC	VSD (Hot Water Pump)	1,340	1,340	1,340	1,340	1,340	1,340	1,340					
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (8')	-	-	-	-	-	-	-	-	-	-	-	-
Lighting (Common Area)	Occupancy Sensors												
HVAC	Advanced Thermostat	70	70	70									
CY2019 Program Total Contribution to CPAS		**978,271**	**845,113**	**707,772**	**411,347**	**29,392**	**29,392**	**27,510**	**19,875**	**19,875**	**7,426**	**7,426**	**7,426**
Historic Program Total Contribution to CPAS‡		**1,408,169**	**417,459**	**181,184**	**180,223**	**180,223**	**180,223**	**171,421**	**133,226**	**133,226**	**133,226**	**133,226**	**6,845**
Program Total CPAS		**2,386,440**	**1,262,572**	**888,957**	**591,570**	**209,615**	**209,615**	**198,931**	**153,101**	**153,101**	**140,653**	**140,653**	**14,272**
CY2019 Program Incremental Expiring Savings§		**9,539**	**133,158**	**137,340**	**296,425**	**381,955**	**-**	**1,882**	**7,636**	**-**	**12,448**	**-**	**-**
Historic Program Incremental Expiring Savings‡§		**96,697**	**990,709**	**236,275**	**961**	**-**	**-**	**8,802**	**38,194**	**-**	**-**	**-**	**126,381**
Program Total Incremental Expiring Savings§		**106,236**	**1,123,868**	**373,616**	**297,387**	**381,955**	**-**	**10,684**	**45,830**	**-**	**12,448**	**-**	**126,381**

End Use Type	Research Category	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Lighting (Common Area)	Interior LED Lighting - Fixture	-	-	-	-	-	-	-	-	-	-	-	-
Lighting (Common Area)	Exterior LED Lighting												
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 Circline (	-	-	-	-	-	-	-	-	-	-	-	-
Lighting (Common Area)	Linear LED Lighting - Linear (4')	-	-	-	-	-	-	-	-	-	-	-	-
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (4')	-	-	-	-	-	-	-	-	-	-	-	-
Appliances	ENERGY STAR Refrigerator												
Appliances	Appliance Recycling												
Lighting (Common Area)	Linear Fluorescent - Delamping												
Lighting (In-Unit)	Interior LED Lighting - Standard												
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (2')												
LED Exit Sign	LED Exit Sign												
Lighting (Common Area)	Linear Fluorescent - Delamping - 24/7	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	Showerhead												
Lighting (Common Area)	Interior LED Lighting - Standard												
Lighting (Common Area)	Linear LED Lighting - Linear (2')	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	Kitchen Faucet Aerator												
Envelope	Insulation												
Refrigeration	Vending Miser												
Lighting (Common Area)	Garage LED Lighting												
Lighting (Common Area)	Linear LED Lighting - Linear (8')	-	-	-	-	-	-	-	-	-	-	-	-
HVAC	Reprogram Thermostat												
Advanced Power Strip	APS (Tier 1)												
Lighting (Common Area)	Interior LED Lighting - Specialty	-	-	-	-	-	-	-	-	-	-	-	-
HVAC	Programmable Thermostat												
Lighting (In-Unit)	Interior LED Lighting - Specialty	-	-	-	-	-	-	-	-	-	-	-	-
HVAC	Room Air Conditioner (TOS)												
HVAC	ECM Replacement												
HVAC	Room Air Conditioner (Early Retirement)												
HVAC	VSD (Hot Water Pump)												
Lighting (Common Area)	Linear LED Lighting - Linear 24/7 (8')	-	-	-	-	-	-	-	-	-	-	-	-
Lighting (Common Area)	Occupancy Sensors												
HVAC	Advanced Thermostat												
CY2019 Program Total Contribution to CPAS		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Historic Program Total Contribution to CPAS‡		**6,845**	**6,845**	**6,845**	**6,845**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Program Total CPAS		**6,845**	**6,845**	**6,845**	**6,845**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CY2019 Program Incremental Expiring Savings§		**7,426**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Historic Program Incremental Expiring Savings‡§		**-**	**-**	**-**	**-**	**6,845**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Program Total Incremental Expiring Savings§		**7,426**	**-**	**-**	**-**	**6,845**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Note: The green highlighted cell shows program total first year electric savings (including direct electric savings and those converted from gas).

* A deemed value. Source: ComEd_NTG_History_and_CY2019_Recommendations_Faucet_Aerator_Showerhead_Correction_2019-04-12.xlsx, which is to be found on the Illinois SAG web site here: http://ilsag.info/net-to-gross-framework.html.

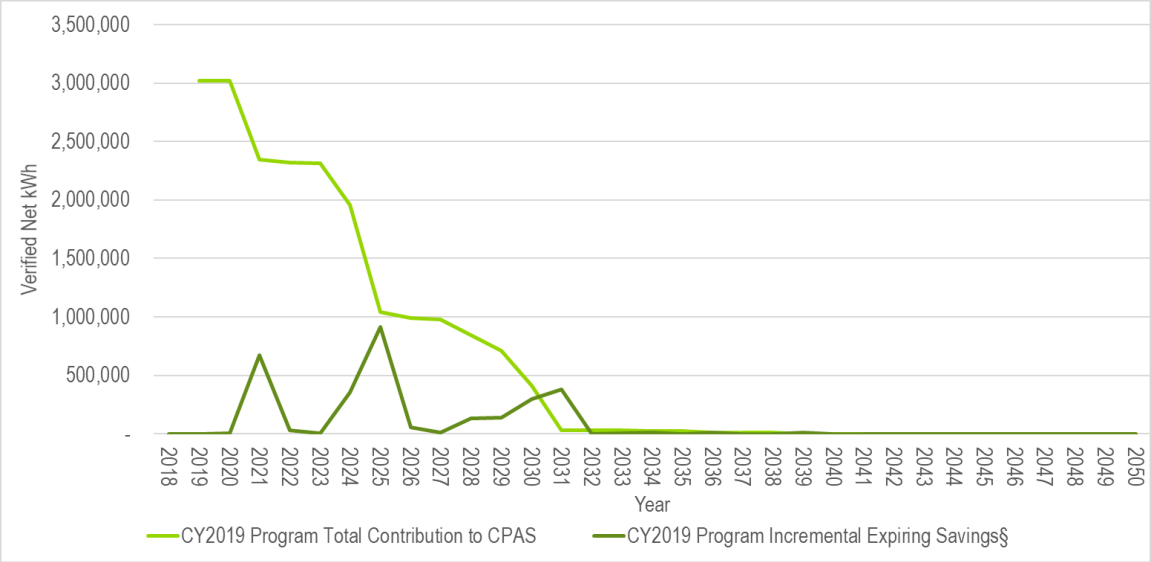
† Lifetime savings are the sum of CPAS savings through the EUL.

‡ Historic savings go back to CY2018.

§ Incremental expiring savings are equal to CPAS Yn-1 - CPAS Yn.

Source: Evaluation team analysis

Figure 4-1. Cumulative Persisting Annual Savings



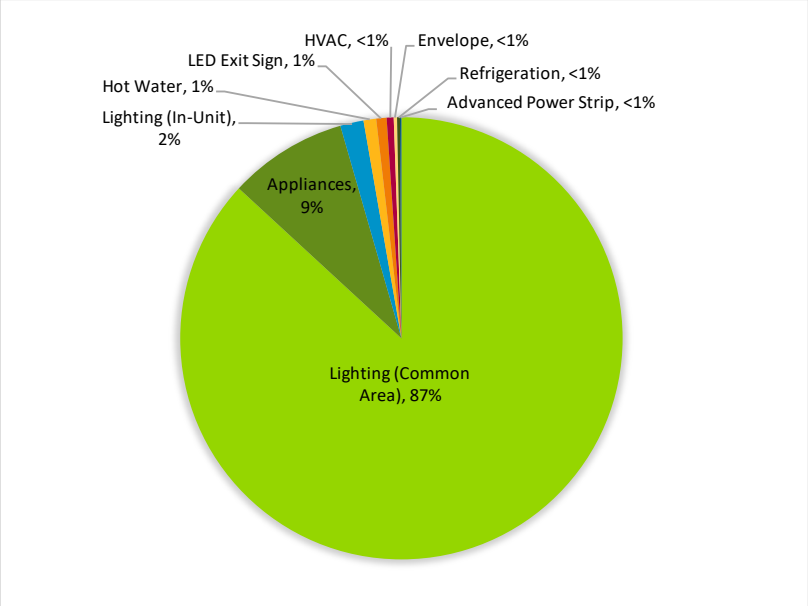
* Expiring savings are equal to CPAS Y_{n-1} - CPAS Y_n

Source: Evaluation team analysis

5. Program Savings by Measure

The program includes nine different end-uses as shown in the following tables and figures. Common area lighting and appliances contributed the most electric savings (95%) to the program. Common area lighting alone accounts for 88% of electric savings (see Figure 5-1). Table 5-1 though Table 5-3 provide more detail on electric, demand, and summer peak demand savings from the PHR Program.

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



Source: Joint utility program tracking data and evaluation team analysis

Table 5-1. CY2019 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 (Common Area)	Interior LED Lighting	1,141,573	1.00	1,141,573	1.00	1,141,573	5.8
Lighting (Common Area)	Linear LED Lighting	838,577	1.00	838,577	1.00	838,577	6.9
Lighting (Common Area)	Exterior LED Lighting	609,554	1.00	609,554	1.00	609,554	11.6
Appliances	ENERGY STAR Refrigerator	117,994	0.99	117,205	1.00	117,205	17.0
Appliances	Appliance Recycling	98,364	1.00	98,364	1.00	98,364	6.5
Lighting (Common Area)	Linear Fluorescent - Delamping	115,222	0.62	71,226	1.00	71,226	11.0
Lighting (In-Unit)	Interior LED Lighting	52,400	1.00	52,401	1.00	52,401	10.0
LED Exit Sign	LED Exit Sign	87,981	0.26	23,153	1.00	23,153	5.0
Hot Water	Showerhead	18,000	1.00	18,000	1.00	18,000	10.0
Hot Water	Kitchen Faucet Aerator	10,436	1.00	10,436	1.00	10,436	10.0
Envelope	Insulation	10,836	0.80	8,643	1.00	8,643	20.0
Refrigeration	Vending Miser	6,452	1.00	6,452	1.00	6,452	5.0
Lighting (Common Area)	Garage LED Lighting	6,305	1.00	6,305	1.00	6,305	14.7
HVAC	Reprogram Thermostat	5,105	1.00	5,105	1.00	5,105	2.0
Advanced Power Strip	APS (Tier 1)	5,032	1.00	5,032	1.00	5,032	7.0
HVAC	Room Air Conditioner	4,154	1.00	4,154	1.00	4,154	12.0
HVAC	Programmable Thermostat	4,807	0.77	3,680	1.00	3,680	8.0
HVAC	ECM Replacement	1,872	1.00	1,872	1.00	1,872	15.0
HVAC	VSD (Hot Water Pump)	1,340	1.00	1,340	1.00	1,340	15.0
Lighting (Common Area)	Occupancy Sensors	677	1.00	677	1.00	677	8.0
HVAC	Advanced Thermostat	67	1.05	70	1.00	70	11.0
	Total	**3,136,747**	**0.96**	**3,023,818**	**1.00**	**3,023,818**	**8.0**

* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
Note: The savings in this table includes secondary electric energy (kWh) savings from water supply and wastewater treatment plants for measures claimed by ComEd.
Source: Joint utility program tracking data and evaluation team analysis

Table 5-2. CY2019 Demand Savings by Measure

End Use Type	Research Category	Ex Ante Gross Non-Coincident Demand Reduction (kW)	Verified Gross Realization Rate	Verified Gross Non-Coincident Demand Reduction (kW)	NTG*	Verified Net Non-Coincident Demand Reduction (kW)
Lighting (Common Area)	Interior LED Lighting	-	NA	163.99	1.00	163.99
Lighting (Common Area)	Linear LED Lighting	-	NA	142.85	1.00	142.85
Hot Water	Kitchen Faucet Aerator	-	NA	124.24	1.00	124.24
Hot Water	Showerhead	-	NA	86.54	1.00	86.54
HVAC	Room Air Conditioner	-	NA	22.40	1.00	22.40
Appliances	ENERGY STAR Refrige	-	NA	17.67	1.00	17.67
Lighting (Common Area)	Linear Fluorescent - De	-	NA	15.02	1.00	15.02
Lighting (In-Unit)	Interior LED Lighting	-	NA	6.62	1.00	6.62
LED Exit Sign	LED Exit Sign	-	NA	3.30	1.00	3.30
Lighting (Common Area)	Occupancy Sensors	-	NA	3.02	1.00	3.02
Lighting (Common Area)	Garage LED Lighting	-	NA	1.85	1.00	1.85
Advanced Power Strip	APS (Tier 1)	-	NA	0.54	1.00	0.54
HVAC	ECM Replacement	-	NA	0.12	1.00	0.12
	Total	**0.00**	**NA**	**588.15**	**1.00**	**588.15**

*NA = Not applicable
A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
Source: Joint utility program tracking data and evaluation team analysis

Table 5-3. CY2019 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 (Common Area)	Interior LED Lighting	163.37	1.00	163.37	1.00	163.37
Lighting (Common Area)	Linear LED Lighting	133.35	1.00	133.35	1.00	133.35
Appliances	ENERGY STAR Refrigerator	17.78	0.99	17.67	1.00	17.67
Lighting (Common Area)	Linear Fluorescent - Delamping	21.50	0.57	12.32	1.00	12.32
HVAC	Room Air Conditioner	6.72	1.00	6.72	1.00	6.72
Lighting (In-Unit)	Interior LED Lighting	6.41	1.00	6.41	1.00	6.41
LED Exit Sign	LED Exit Sign	12.55	0.26	3.30	1.00	3.30
Hot Water	Kitchen Faucet Aerator	2.60	1.05	2.73	1.00	2.73
Hot Water	Showerhead	2.31	1.04	2.41	1.00	2.41
Lighting (Common Area)	Garage LED Lighting	1.71	1.00	1.71	1.00	1.71
Lighting (Common Area)	Occupancy Sensors	0.45	1.00	0.45	1.00	0.45
Advanced Power Strip	APS (Tier 1)	0.43	1.00	0.43	1.00	0.43
HVAC	ECM Replacement	0.12	1.00	0.12	1.00	0.12
Envelope	Insulation	2.16	0.00	-	1.00	0.00
	Total	**371.47**	**0.94**	**350.99**	**1.00**	**350.99**

* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
Source: Joint utility program tracking data and evaluation team analysis

The PHR Program includes water savings measures which produce secondary kWh savings from reduced water supply and reduced wastewater treatment. Table 5-4 shows the secondary water reduction kWh savings. The savings in this table are included within 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)
Hot Water	Kitchen Faucet Aerator	102,403	513	1.00	513	1.00	513
Hot Water	Showerhead	147,530	739	1.00	739	1.00	739
	Total	**249,934**	**1,252**	**1.00**	**1,252**	**1.00**	**1,252**

Note: The savings in this table reflects only secondary electric energy (kWh) savings from water supply and wastewater treatment plants for measures claimed by ComEd, not those claimed by gas utilities.
* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
Source: Joint utility program tracking data and evaluation team analysis

Peoples Gas projects achieved 63,341 therms in verified net savings. More than half of savings (53%) came from steam trap retrofits.

Table 5-5. CY2019 Natural Gas Energy Savings by Measure – Peoples Gas

End Use Type	Research Category	Ex Ante Gross Savings (Therms)	Verified Gross Realization Rate	Verified Gross Savings (Therms)	NTG*	Verified Net Savings (Therms)
Space Heating	Steam Trap	32,436	1.03	33,455	1.00	33,455
Envelope	Air Sealing	7,293	1.00	7,293	1.00	7,293
HVAC	Reprogram Thermostat	6,278	1.00	6,278	1.00	6,278
HVAC	Programmable Thermostat	4,091	1.00	4,091	1.00	4,091
HVAC	Room AC Cover/Gap Sealer	3,986	0.99	3,963	1.00	3,963
Hot Water	Showerhead	3,429	1.00	3,429	1.00	3,429
Envelope	Insulation	2,931	0.96	2,815	1.00	2,815
Hot Water	Kitchen Faucet Aerator	1,849	1.00	1,849	1.00	1,849
Hot Water	Bathroom Faucet Aerator	169	1.00	169	1.00	169
	Total	**62,461**	**1.01**	**63,341**	**1.00**	**63,341**

* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
† The total excludes the electric interactive effects on the total therms.
Source: Joint utility program tracking data and evaluation team analysis

North Shore Gas projects achieved 3,875 therms in verified net savings. Most savings (81%) came from installing programmable thermostats.

Table 5-6. CY2019 Natural Gas Energy Savings by Measure – North Shore Gas

End Use Type	Research Category	Ex Ante Gross Savings (Therms)	Verified Gross Realization Rate	Verified Gross Savings (Therms)	NTG*	Verified Net Savings (Therms)
HVAC	Programmable Thermostat	2,349	1.00	2,349	1.00	2,349
Envelope	Air Sealing	653	1.00	653	1.00	653
Hot Water	Showerhead	555	1.00	555	1.00	555
Hot Water	Kitchen Faucet Aerator	165	1.00	165	1.00	165
Envelope	Insulation	85	0.94	80	1.00	80
HVAC	Reprogram Thermostat	41	1.00	41	1.00	41
Hot Water	Bathroom Faucet Aerator	33	1.00	33	1.00	33
	Total	**3,880**	**1.00**	**3,875**	**1.00**	**3,875**

* A deemed value. Source: is to be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
† The total excludes the electric interactive effects on the total therms.
Source: Joint utility program tracking data and evaluation team analysis

6. Impact Analysis Findings and Recommendations

6.1 Impact Parameter Estimates

The evaluation team calculated verified savings for the PHR Program by applying savings algorithms from the Illinois Technical Reference Manual (TRM) v7.0. The team leveraged program tracking data to inform savings assumptions – for example, LED wattage, LED lamp type, installed measure location, boiler capacities and efficiencies, and insulation R-values. For savings calculation inputs that were not in the tracking data, the evaluation team relied on default assumptions from the TRM v7.0. The lifetime energy and demand savings are estimated by multiplying the verified savings by the effective useful life for each measure.

Table 6-1. Savings Parameters

Gross Savings Input Parameters	Value	Units	Deemed * or Evaluated?	Source
Quantity	Varies	# measures	Evaluated	Tracking Database
NTG	100	%	Deemed	SAG Consensus†
Gross Savings per Unit, Deemed Measures	Varies	kWh	Deemed	TRM v7.0
Effective Useful Life (EUL)	Varies	Years	Deemed	TRM v7.0

* TRM is the State of Illinois Technical Reference Manual version 7.0 from http://www.ilsag.info/technical-reference-manual.html. The NTG values can be found on the Illinois SAG web site here: https://www.ilsag.info/ntg_2019.
† A deemed value. NTG ratios for ComEd, Peoples Gas and North Shore Gas are available on the Illinois SAG web site here: http://ilsag.info/net-to-gross-framework.html.

6.2 Other Impact Findings and Recommendations

The evaluation team developed several high level recommendations based on findings from the CY2019 evaluation.

Finding 1. Ex ante savings totals in the initial joint utility program tracking dataset for this evaluation did not match the ex ante savings estimates in the utility scorecards. There was an especially large discrepancy for Nicor Gas savings; the joint utility dataset included only 25% of ex ante therms reported in the scorecard. The evaluation team attempted to rectify this issue through multiple communications with the implementation team and multiple data requests. We were ultimately able to resolve the discrepancies for ComEd, Peoples Gas, and North Shore Gas in time for this evaluation, but not for Nicor Gas. The evaluation team will continue to work with Nicor Gas and the implementation team to resolve the discrepancies and submit a separate report for Nicor Gas.

Recommendation 1. The evaluation team recommends that the implementation team reviews ex ante spreadsheets (i.e., "scorecards") and ensures that the joint program tracking dataset's ex ante savings totals match the utilities' ex ante scorecard savings totals *prior* to providing tracking data to the evaluation team. While data security protocols prevent the implementation team from sending one combined dataset containing both ComEd and gas utility data, we recommend that the implementation team ensure that the ComEd and gas utility datasets contain identical fields, such that the evaluation team can merge the data sets for evaluation.

Finding 2. Realization rates for the savings included in the joint utility tracking data were close to 1.0. However, there were discrepancies between ex ante assumptions and the TRM v7.0 for several prescriptive measures, including lighting, showerheads, kitchen faucet aerators, and programmable and advanced thermostats. Refer to Appendix 2 (Section 8) for more detail regarding the discrepancies for each measure.

Recommendation 2. The evaluation team recommends that the implementation team reviews ex ante assumptions for prescriptive measures to ensure alignment with applicable version of the TRM. Refer to Appendix 2 (Section 8) for specific recommendations by measure.

Finding 3. There was insufficient documentation to replicate custom ex ante calculations for some measures, including refrigerators, insulation, boilers, furnaces, stream traps, and AC covers/gap sealers. The spreadsheets documenting ex ante assumptions provided by the implementation team includes the equations and methodologies for determining ex ante savings, but do not include all variable inputs for these measures specified in the TRM. Therefore, we are unable to pinpoint specific reasons for differences between ex ante and verified savings estimates for these custom-calculated measures. See Appendix 2 (Section 8) for more detail regarding discrepancies for each measure.

Recommendation 3. The evaluation team recommends that the implementation team documents and provides all necessary inputs for custom savings calculations to assist the evaluation team with replicating and verifying ex ante savings calculations.

7. Appendix 1. Impact Analysis Methodology

The evaluation team calculated gross verified savings for the PHR Program by applying savings algorithms from the TRM v7.0. The team prioritized project-specific information to inform savings calculations where the TRM advises to use actual values. For variables where project information did not include project-specific actual values, the evaluation team relied on defaults from the TRM v7.0.

The evaluation team calculated verified net energy and demand savings by multiplying the verified gross savings estimates by a deemed NTG of 1.0. In CY2019, the NTG estimates used to calculate the verified net savings were approved through a consensus process managed through the Illinois Energy Efficiency Stakeholder Advisory Group (SAG).

The evaluation team conducted an interim analysis on Wave One program tracking data in November 2019. For this report, the evaluation team applied a realization rate of 1.00 for all the measures that achieved a realization rate in the interim analysis.

8. Appendix 2. Impact Analysis Detail

The evaluation team developed several measure-specific recommendations based on findings from the CY2019 evaluation. The sections below organize the findings and recommendations by utility, in descending order of their contribution to ex ante program savings. Findings and recommendations are repeated across sections when they apply to measures funded by more than one utility.

8.1 ComEd Findings

This section describes all discrepancies between ComEd's ex ante and verified electric and summer peak demand savings estimates.

8.1.1 ENERGY STAR Refrigerator

This measure represents 4% of ex ante electric savings and 4% of ex ante summer peak demand savings for the PHR Program. The realization rate for electric and demand savings was 99%.

Finding 4. The spreadsheet documenting ex ante assumptions includes the equation and methodology for determining ex ante savings but does not include all variable inputs for these measures specified in the TRM. Therefore, we are unable to pinpoint specific reasons for differences between ex ante and verified savings. Verified savings uses the assumptions recommended by the TRM v.7.0, reducing electric and demand savings compared to ex ante.

Recommendation 4. The evaluation team recommends that the implementation team provides all necessary inputs for custom refrigerator savings calculations recommended by the TRM to assist the evaluation team with replicating and verifying ex ante savings calculations.

8.1.2 Linear Fluorescent - Delamping

This measure represents 4% of ex ante electric savings and 6% of ex ante summer peak demand savings for the PHR Program. The realization rate for electric savings was 62% and for demand it was 57%.

Finding 5. The joint ex ante tracking data savings estimates applied the incorrect baseline and efficient wattages to one measure, "2L 2ft T8U_Delamp 2L 2ft Linear Retrofit_CA Std SPIA". Ex ante estimates assumed a baseline wattage of 229W and efficient wattage of 75W when this measure should have a baseline assumption of 56W and efficient wattage assumption of 19W according to the TRM v.7.0. Verified savings estimates correct for this issue, reducing electric and demand savings compared to ex ante.

Recommendation 5. The evaluation team recommends that the implementation team ensures it is using the correct baseline and efficient wattage assumptions for linear fluorescent – delamping measures in accordance with the applicable version of the TRM.

8.1.3 LED Exit Signs

This measure represents 3% of ex ante electric savings and 3% of ex ante summer peak demand savings for the PHR Program. The realization rate for electric savings was 26% and for demand it was 26%.

Finding 6. Ex ante savings estimates used an assumed baseline wattage of 21W when the baseline lighting type is unknown, which is the average of a 35W incandescent and a 7W CFL for a one-sided exit sign. However, the TRM v.7.0 recommends using an assumption of 7W when the baseline lighting type is unknown. Verified savings estimates used the 7W baseline assumption, reducing electric savings compared to ex ante.

Recommendation 6. The evaluation team recommends that the implementation team uses baseline wattage assumptions for LED Exit Signs in accordance with the applicable version TRM when the actual baseline wattage is unknown.

8.1.4 Insulation

This measure represents less than 1% of ex ante electric savings and less than 1% of ex ante summer peak demand savings for the PHR Program. The realization rate for electric savings was 80% and for demand it was 0%.

Finding 7. The spreadsheet documenting ex ante assumptions includes the equation and methodology for determining ex ante savings but does not include all variable inputs for these measures specified in the TRM. Therefore, we are unable to pinpoint specific reasons for differences between ex ante and verified savings. Verified savings uses the assumptions recommended by the TRM v.7.0, reducing electric and demand savings compared to ex ante.

Recommendation 7. The evaluation team recommends that the implementation team provides all necessary inputs for custom insulation savings calculations recommended by the TRM to assist the evaluation team with replicating and verifying ex ante savings calculations.

Finding 8. Ex ante estimates included kWh savings for three projects with boiler heating type. In accordance with the TRM v.7.0, projects with boiler heating type should not receive kWh savings. Verified savings excluded kWh savings for these projects, reducing electric savings compared to ex ante.

Recommendation 8. The evaluation team recommends that the implementation team ensures that projects with boiler heating type do not receive kWh savings.

Finding 9. Ex ante estimates included summer peak demand savings for one insulation measure. However, the joint utility program tracking data indicates that this measure was installed on a building that was cooled by a window air conditioner, which does not qualify for demand savings. Verified savings estimates do not include demand savings for this measure, resulting in a 0% realization rate.

Recommendation 9. The evaluation team recommends that the implementation team ensure it is not claiming summer peak demand savings for insulation in cases where the building/residence is using window air conditioners for space conditioning.

8.1.5 Showerheads and Kitchen Faucet Aerators

These measures represent less than 1% of ex ante electric savings and less than 1% of ex ante summer peak demand savings for the PHR Program. The realization rate for electric savings was 100% and for demand it was 105% for faucet aerators and 104% for showerheads.

Finding 10. The tracking data provides the gallons of water saved but does not calculate the secondary electric energy (kWh) savings from water supply and wastewater treatment plants for measures claimed by ComEd. The additional verified savings increased the gross savings realization rates for the measures.

Recommendation 10. The tracking data should produce the eligible secondary ex ante kWh savings from gallons of water reported in the tracking data using the TRM guidelines and algorithm on the conversion of gallons of water to kWh.

8.1.6 Programmable Thermostats

This measure represents less than 1% of ex ante electric savings and does not contribute ex-ante summer peak demand savings for the PHR Program. The realization rate for electric savings was 77%.

Finding 11. Ex ante estimates included fan runtime reduction kWh savings for a project labeled as a furnace thermostats, however, project records indicate that the heating type was boiler. IN accordance with the TRM v.7.0, projects with boiler heating type should not receive fan runtime savings. Verified savings excluded runtime savings for this project, reducing electric savings compared to ex ante.

Recommendation 11. The evaluation team recommends that the implementation team ensures that measure labeling reflect the actual heating type for the project and that projects with boiler heating type do not receive kWh fan runtime savings.

8.1.7 Advanced Thermostats

This measure represents less than 1% of ex ante electric savings and does not contribute ex ante summer peak demand savings for the PHR Program. The realization rate for electric savings was 105%.

Finding 12. Ex ante applies values for Chicago, but the zip codes indicate the property is in Rockford. Verified savings apply Rockford assumptions in accordance with the TRM, increasing electric savings compared to ex ante.

Recommendation 12. The evaluation team recommends that the implementation team ensures it is applying the correct advanced thermostat assumptions based on zip code.

8.2 Peoples Gas Findings

This section describes all discrepancies between Peoples Gas's ex ante and verified gas savings estimates.

8.2.1 Steam Traps

This measure represents 52% of Peoples Gas ex ante gas savings for the PHR Program. The realization rate for gas savings was 103%.

Finding 18. The spreadsheet documenting ex ante assumptions includes the equation and methodology for determining ex ante savings but does not include all variable inputs for these measures specified in the TRM. Therefore, we are unable to pinpoint specific reasons for differences between ex ante and verified savings. Verified savings uses the assumptions recommended by the TRM v.7.0, increasing gas saving compared to ex ante.

Recommendation 18. The evaluation team recommends that the implementation team provides all TRM formula inputs for steam trap measures to assist with verifying correct application of the TRM.

8.2.2 Insulation

This measure represents 5% of Peoples Gas ex ante gas savings for the PHR Program. The realization rate for gas savings was 96%.

Finding 19. The spreadsheet documenting ex ante assumptions includes the equation and methodology for determining ex ante savings but does not include all variable inputs for these measures specified in the TRM. Therefore, we are unable to pinpoint specific reasons for differences between ex ante and verified savings. Verified savings uses the assumptions recommended by the TRM v.7.0 assumption, reducing gas savings compared to ex ante.

Recommendation 19. The evaluation team recommends that the implementation team provides all necessary inputs for custom insulation savings calculations recommended by the TRM to assist the evaluation team with replicating and verifying ex ante savings calculations.

8.2.3 Room AC Cover/Gap Sealer

This measure represents 6% of Peoples Gas ex ante gas savings for the PHR Program. The realization rate for gas savings was 99%.

Finding 20. The spreadsheet documenting ex ante assumptions includes the equation and methodology for determining ex ante savings but does not include all variable inputs for these measures specified in the TRM. Therefore, we are unable to pinpoint specific reasons for differences between ex ante and verified savings. Verified savings uses the assumptions recommended by the TRM v.7.0 assumption, reducing gas savings compared to ex ante.

Recommendation 20. The evaluation team recommends that the implementation team provides all necessary inputs for custom insulation savings calculations recommended by the TRM to assist the evaluation team with replicating and verifying ex ante savings calculations.

8.3 North Shore Gas Findings

This section describes all discrepancies between North Shore Gas's ex ante and verified gas savings estimates.

8.3.1 Insulation

This measure represents 2% of North Shore Gas ex ante gas savings for the PHR Program. The realization rate for gas savings was 94%.

Finding 21. The spreadsheet documenting ex ante assumptions provided by the implementation team includes the equation and methodology for determining ex ante savings but does not include all variable inputs for these measures specified in the TRM. Therefore, we are unable to pinpoint specific reasons for differences between ex ante and verified savings. Verified savings uses the assumptions recommended by the TRM v.7.0 assumption, reducing gas savings compared to ex ante.

Recommendation 22. The evaluation team recommends that the implementation team provides all necessary inputs for custom insulation savings calculations recommended by the RM to assist the evaluation team with replicating and verifying ex ante savings calculations.

9. Appendix 3. Total Resource Cost Detail

Table 9-1 shows the Total Resource Cost (TRC) cost-effectiveness analysis inputs available at the time of finalizing this impact evaluation report. Additional required cost data (e.g., measure costs, program level incentive and non-incentive costs) are not included in this table and will be provided to the evaluation team later.

Table 9-1. Total Resource Cost Savings Summary – Electric

End Use Type	Research Category	Units	Quantity	EUL (years)*	ER Flag†	Verified Gross Electric Energy Savings (kWh)	Verified Gross Peak Demand Reduction (kW)	Verified Gross Gas Savings (Therms)	Gross Heating Penalty (kWh)	Gross Heating Penalty (Therms)	NTG (kWh)	NTG (kW)	NTG (Therms)	Verified Net Electric Energy Savings (kWh)	Verified Net Peak Demand Reduction (kW)	Verified Net Gas Savings (Therms)	Net Heating Penalty (kWh)	Net Heating Penalty (Therms)
Lighting (Common Area)	Interior LED Lighting	Lamps	3,636	5.8	No‡	1,141,573	163.37	0	0	-29,460	1.00	1.00	1.00	1,141,573	163.37	0	0	-29,460
Lighting (Common Area)	Linear LED Lighting	Fixtures	4,325	6.9	No‡	838,577	133.35	0	-89,894	-16,217	1.00	1.00	1.00	838,577	133.35	0	-89,894	-16,217
Lighting (Common Area)	Exterior LED Lighting	Lamps	1,461	11.6	No‡	609,554	0.00	0	0	0	1.00	1.00	1.00	609,554	0.00	0	0	0
Appliances	ENERGY STAR Refrigerator	Each	281	17.0	Yes	117,205	17.67	0	0	0	1.00	1.00	1.00	117,205	17.67	0	0	0
Appliances	Appliance Recycling	Each	145	6.5	No	98,364	0.00	0	0	0	1.00	1.00	1.00	98,364	0.00	0	0	0
Lighting (Common Area)	Linear Fluorescent - Delamping	Lamps	171	11.0	No‡	71,226	12.32	0	0	-1,838	1.00	1.00	1.00	71,226	12.32	0	0	-1,838
Lighting (In-Unit)	Interior LED Lighting	Lamps	1,497	10.0	No‡	52,401	6.41	0	-1,978	-1,080	1.00	1.00	1.00	52,401	6.41	0	-1,978	-1,080
LED Exit Sign	LED Exit Sign	Each	426	5.0	No	23,153	3.30	0	0	-597	1.00	1.00	1.00	23,153	3.30	0	0	-597
Hot Water	Showerhead	Each	76	10.0	No	17,261	2.41	0	0	0	1.00	1.00	1.00	17,261	2.41	0	0	0
Hot Water	Kitchen Faucet Aerator	Each	63	10.0	No	9,923	2.73	0	0	0	1.00	1.00	1.00	9,923	2.73	0	0	0
Envelope	Insulation	Sq. Ft.	183,651	20.0	No‡	8,643	0.00	0	0	0	1.00	1.00	1.00	8,643	0.00	0	0	0
Refrigeration	Vending Miser	Each	4	5.0	No	6,452	0.00	0	0	0	1.00	1.00	1.00	6,452	0.00	0	0	0
Lighting (Common Area)	Garage LED Lighting	Fixtures	12	14.7	No	6,305	1.71	0	0	0	1.00	1.00	1.00	6,305	1.71	0	0	0
HVAC	Reprogram Thermostat	Each	137	2.0	No	5,105	0.00	0	0	0	1.00	1.00	1.00	5,105	0.00	0	0	0
Advanced Power Strip	APS (Tier 1)	Each	65	7.0	No	5,032	0.43	0	0	0	1.00	1.00	1.00	5,032	0.43	0	0	0
HVAC	Room Air Conditioner	Each	254	12.0	Yes	4,154	6.72	0	0	0	1.00	1.00	1.00	4,154	6.72	0	0	0
HVAC	Programmable Thermostat	Each	129	8.0	No	3,680	0.00	0	0	0	1.00	1.00	1.00	3,680	0.00	0	0	0
HVAC	ECM Replacement	Each	4	15.0	No	1,872	0.12	0	0	-8	1.00	1.00	1.00	1,872	0.12	0	0	-8
HVAC	VSD (Hot Water Pump)	Each	1	15.0	No	1,340	0.00	0	0	0	1.00	1.00	1.00	1,340	0.00	0	0	0
Lighting (Common Area)	Occupancy Sensors	Each	6	8.0	No	677	0.45	0	-10	0	1.00	1.00	1.00	677	0.45	0	-10	0
HVAC	Advanced Thermostat	Each	2	11.0	No	70	0.00	0	0	0	1.00	1.00	1.00	70	0.00	0	0	0
	Total			**8.0**		**3,022,566**	**350.99**	**NA**	**-91,881**	**-49,201**	**1.00**	**1.00**	**1.00**	**3,022,566**	**350.99**	**NA**	**-91,881**	**-49,201**

NA = Not applicable

Note: To avoid double counting, the verified gross kWh and net kWh used in the TRC analysis excludes secondary energy savings from water reduction measures .Table 9-1 represents the kWh savings from Table 5-1 minus those shown in Table 5-4.

* The total of the EUL column is the weighted average measure life (WAML) and is calculated as the sum product of EUL and measure savings divided by total program savings.

† Early Replacement (ER) measures are flagged as YES, otherwise a NO is indicated in the column.

‡ The EUL for this measure varies over time. See the CPAS tables (Table 4-1 to Table 4-3).

Source: Evaluation team analysis

Table 9-2. Total Resource Cost Savings Summary for Peoples Gas

End Use Type	Research Category	Units	Quantity	EUL (years)*	ER Flag†	Verified Gross Electric Energy Savings (kWh)	Verified Gross Peak Demand Reduction (kW)	Verified Gross Gas Savings (Therms)	Gross Heating Penalty (kWh)	Gross Heating Penalty (Therms)	NTG (kWh)	NTG (kW)	NTG (Therms)	Verified Net Electric Energy Savings (kWh)	Verified Net Peak Demand Reduction (kW)	Verified Net Gas Savings (Therms)	Net Heating Penalty (kWh)	Net Heating Penalty (Therms)
Space Heating	Steam Trap	Each	82	6.0	No	NA	NA	33,455	NA	NA	NA	NA	1.00	NA	NA	33,455	NA	NA
Envelope	Air Sealing	Linear feet	17,532	20.0	No	NA	NA	7,293	NA	NA	NA	NA	1.00	NA	NA	7,293	NA	NA
HVAC	Reprogram Thermostat	Each	155	2.0	No	NA	NA	6,278	NA	NA	NA	NA	1.00	NA	NA	6,278	NA	NA
HVAC	Programmable Thermostat	Each	101	8.0	No	NA	NA	4,091	NA	NA	NA	NA	1.00	NA	NA	4,091	NA	NA
HVAC	Room AC Cover/Gap Sealer	Each	350	5.0	No	NA	NA	3,963	NA	NA	NA	NA	1.00	NA	NA	3,963	NA	NA
Hot Water	Showerhead	Each	303	10.0	No	NA	NA	3,429	NA	NA	NA	NA	1.00	NA	NA	3,429	NA	NA
Envelope	Insulation	Sq. Ft.	54,063	20.0	No‡	NA	NA	2,815	NA	NA	NA	NA	1.00	NA	NA	2,815	NA	NA
Hot Water	Kitchen Faucet Aerator	Each	235	10.0	No	NA	NA	1,849	NA	NA	NA	NA	1.00	NA	NA	1,849	NA	NA
Hot Water	Bathroom Faucet Aerator	Each	103	10.0	No	NA	NA	169	NA	NA	NA	NA	1.00	NA	NA	169	NA	NA
	Total		**72,924**	**8.2**		**NA**	**NA**	**63,341**	**NA**	**NA**	**NA**	**NA**	**1.00**	**NA**	**NA**	**63,341**	**NA**	**NA**

NA = Not applicable

* The total of the EUL column is the weighted average measure life (WAML) and is calculated as the sum product of EUL and measure savings divided by total program savings.

† Early Replacement (ER) measures are flagged as YES, otherwise a NO is indicated in the column.

‡ The EUL for this measure varies over time. See the CPAS tables (Table 4-1 to Table 4-3).

Source: Evaluation team analysis

Table 9-3. Total Resource Cost Savings Summary for North Shore Gas

End Use Type	Research Category	Units	Quantity	EUL (years)*	ER Flag†	Verified Gross Electric Energy Savings (kWh)	Verified Gross Peak Demand Reduction (kW)	Verified Gross Gas Savings (Therms)	Gross Heating Penalty (kWh)	Gross Heating Penalty (Therms)	NTG (kWh)	NTG (kW)	NTG (Therms)	Verified Net Electric Energy Savings (kWh)	Verified Net Peak Demand Reduction (kW)	Verified Net Gas Savings (Therms)	Net Heating Penalty (kWh)	Net Heating Penalty (Therms)
HVAC	Programmable Thermostat	Each	58	8.0	No	NA	NA	2,349	NA	NA	NA	NA	1.00	NA	NA	2,349	NA	NA
Envelope	Air Sealing	Linear feet	1,570	20.0	No	NA	NA	653	NA	NA	NA	NA	1.00	NA	NA	653	NA	NA
Hot Water	Showerhead	Each	49	10.0	No	NA	NA	555	NA	NA	NA	NA	1.00	NA	NA	555	NA	NA
Hot Water	Kitchen Faucet Aerator	Each	21	10.0	No	NA	NA	165	NA	NA	NA	NA	1.00	NA	NA	165	NA	NA
Envelope	Insulation	Sq. Ft.	2,473	20.0	No‡	NA	NA	80	NA	NA	NA	NA	1.00	NA	NA	80	NA	NA
HVAC	Reprogram Thermostat	Each	1	2.0	No	NA	NA	41	NA	NA	NA	NA	1.00	NA	NA	41	NA	NA
Hot Water	Bathroom Faucet Aerator	Sq. Ft.	20	10.0	No	NA	NA	33	NA	NA	NA	NA	1.00	NA	NA	33	NA	NA
	Total		**4,192**	**10.6**		**NA**	**NA**	**3,875**	**NA**	**NA**	**NA**	**NA**	**1.00**	**NA**	**NA**	**3,875**	**NA**	**NA**

NA = Not applicable

* The total of the EUL column is the weighted average measure life (WAML) and is calculated as the sum product of EUL and measure savings divided by total program savings.

† Early Replacement (ER) measures are flagged as YES, otherwise a NO is indicated in the column.

‡ The EUL for this measure varies over time. See the CPAS tables (Table 4-1 to Table 4-3).

Source: Guidehouse analysis of tracking data.

Source: Evaluation team analysis