

CONSULTANT TEAM PRESENTATION ON PA 2019 REPORT

▶ June 17, 2020

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INTRODUCTION



- ▶ **Purpose of this presentation is to:**
 - Provide a deeper dive on 2019 results across sectors, initiatives, and PAs
 - Highlight and address most important Council priorities
 - Discuss conclusions drawn from KPI results
 - Identify areas of focus for 2020
- ▶ **MMBtu savings presented based on agreed-upon framework included in 2019-2021 Plan and Term Sheet, in the Plan the EEAC reviewed and approved:**
 - Site energy savings for all measures (based on energy impacts at customer site), except used source energy savings for CHP (consistent with CHP approach used in program)
 - “Adjusted MMBtus” = Site energy savings + CHP source energy savings

SUMMARY OF 2019 YEAR-END/Q4 SAVINGS, BENEFITS, AND COSTS

Electric			
<i>Potential overstatement error in PA fuel oil data may impact MMBtu and Benefits values below</i>	Evaluated Amount	% of Plan (Evaluated)	% of Plan (Q4)
Annual Savings (MWh)	1,189,367	105%	101%
Annual Savings No Fuel Switching (MWh)	1,199,409	105%	101%
Lifetime Savings (MWh)	10,101,565	94%	97%
Lifetime Savings No Fuel Switching (MWh)	10,279,191	95%	98%
Total Adjusted Lifetime MMBtu – site + CHP*	82,487,154	100%	
Summer Capacity Savings (MW)** – EE	180	107%	110%
Summer Capacity Savings (MW) – Active/ADR	87	85%	
Winter Capacity Savings (MW)** – EE	197	109%	114%
Winter Capacity Savings (MW) – Active/ADR	0	-100%	
Benefits (\$ Millions)	\$2,237	101%	97%
Expenditures (\$ Millions)	\$620	98%	98%

*For CHP only, evaluated results were calculated using PA refined methodology for calculating source energy savings

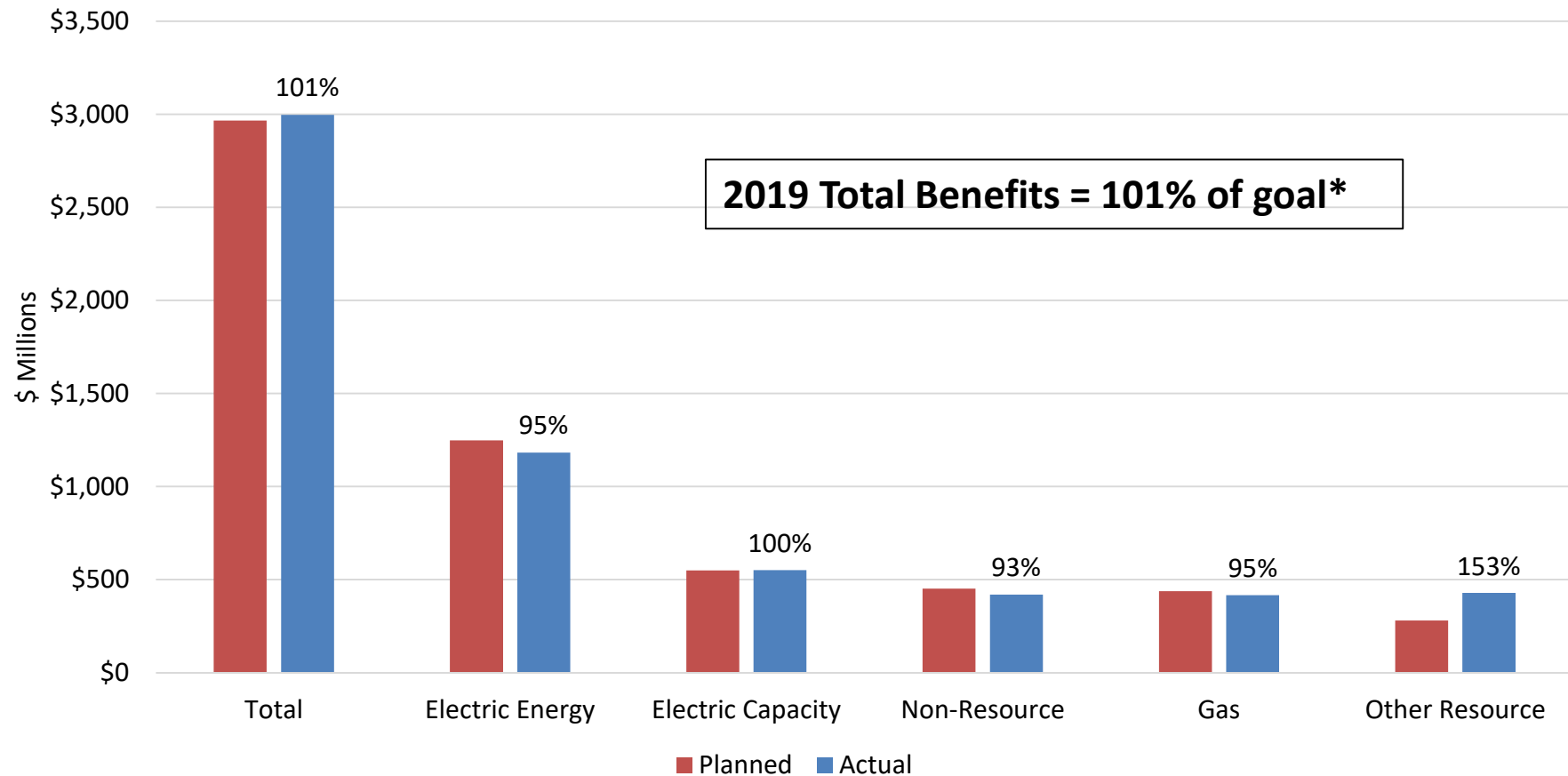
**Does not include active demand savings

SUMMARY OF 2019 YEAR-END/Q4 SAVINGS, BENEFITS, AND COSTS

Gas			
	Amount	Percent of Plan (Evaluated)	Percent of Plan (Q4)
Annual Savings (Therms)	29,634,148	94%	88%
Lifetime Savings (Therms)	400,538,600	97%	97%
Lifetime Savings (MMBtu)	40,547,048	98%	N/A
Benefits (\$ Millions)	\$759	100%	100%
Expenditures (\$ Millions)	\$280	108%	108%

TOTAL PORTFOLIO BENEFITS

2019 Electric and Gas Program Benefits

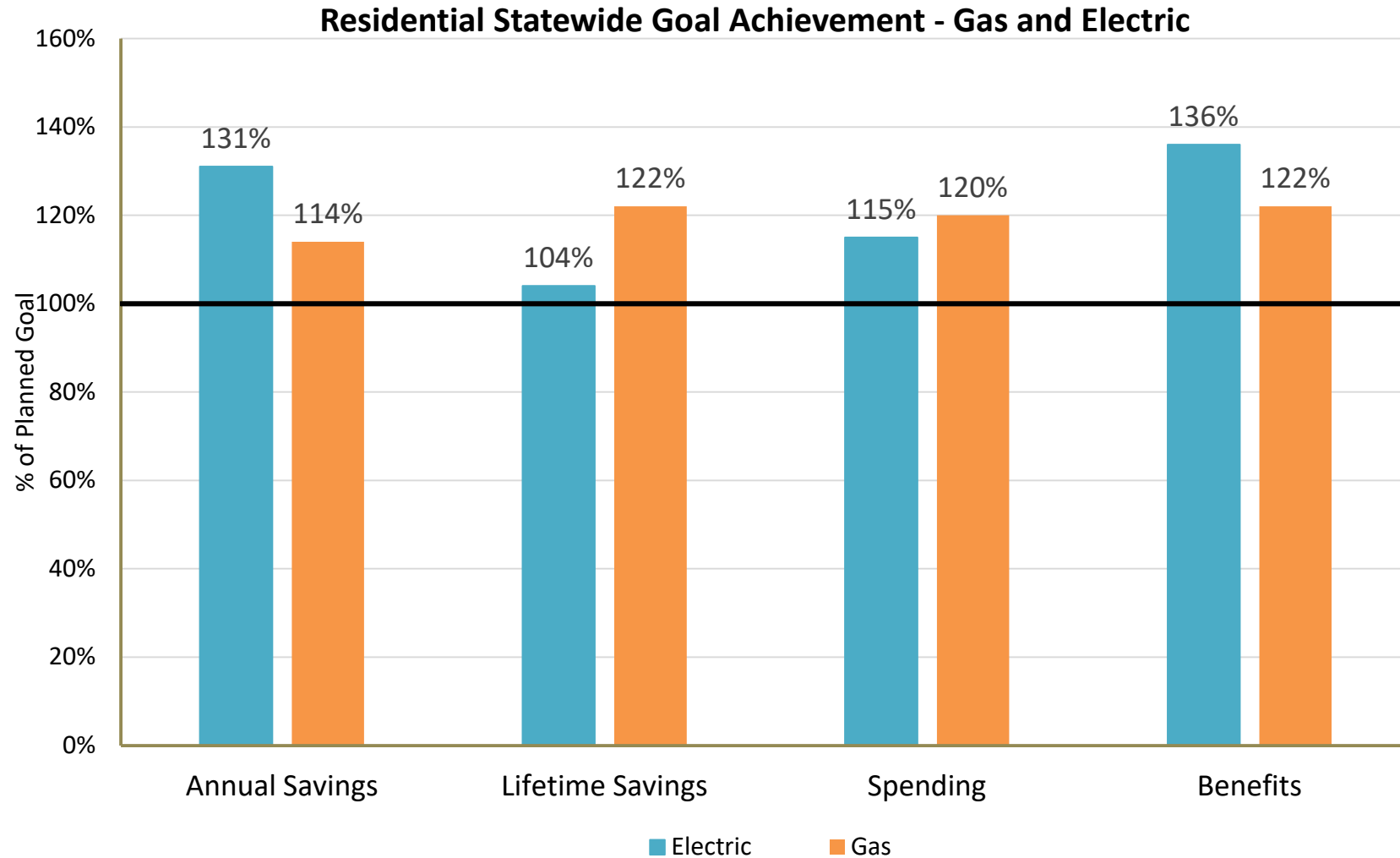


**Potential overstatement error in PA fuel oil data may impact Benefits and MMBtu values in this slide, subsequent slides, and in PAs' presentation*



RESIDENTIAL AND INCOME ELIGIBLE

RESIDENTIAL STATEWIDE GOAL ACHIEVEMENT 2019



KEY FACTORS IN RES SECTOR OVERACHIEVEMENT

Strong retail lighting activity

- Boosted annual electric savings
- Reductions in measure lives and hours of use depressed lifetime savings



High activity levels in the Residential Coordinated Delivery Initiative

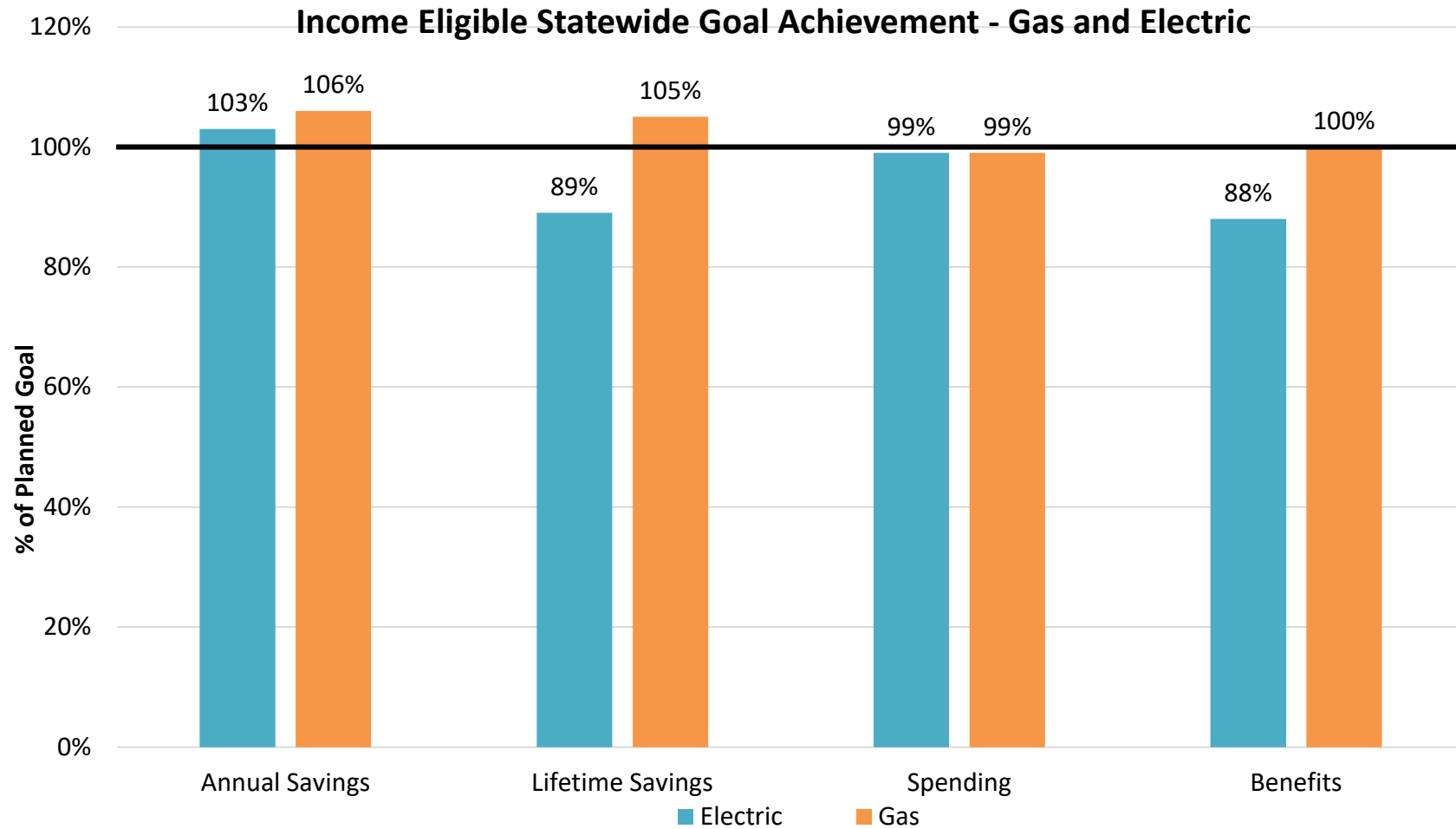
- Results show up in:
- Electric annual savings
 - Electric and gas sector total energy benefits
 - Gas annual and lifetime savings
- Higher than planned participation, esp. major measures

Higher than planned spending

- Linked to larger than planned volume in Participant Incentives



INCOME ELIGIBLE STATEWIDE GOAL ACHIEVEMENT 2019



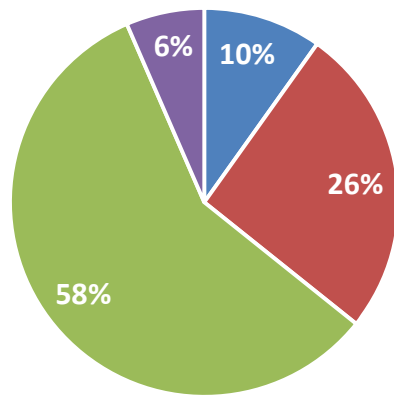
KEY FACTORS IN LOWER THAN PLANNED ELECTRIC INCOME ELIGIBLE RESULTS

- ▶ **Gas savings and benefits goals achieved in 2019**
- ▶ **Statewide annual savings goal achieved, but lower than planned electric lifetime savings and benefits achievements primarily a result of National Grid**
 - Fewer than planned opportunities to replace electric resistance heat with air source heat pumps in multifamily properties
 - Lower savings per job as a result of greater proportion of smaller multifamily jobs
 - Cape Light Compact also failed to meet its lifetime savings goal
 - All PAs failed to meet Income Eligible electric benefits goals

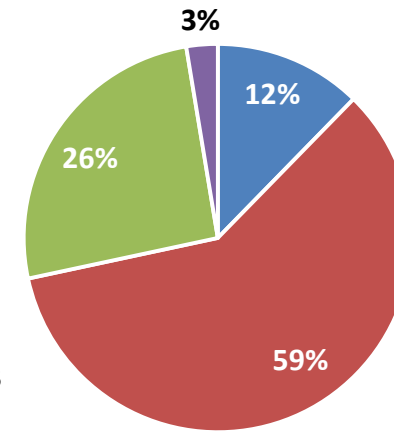


EVERSOURCE RESIDENTIAL LIFETIME SAVINGS BY INITIATIVE 2019

Eversource Residential Electric Lifetime Savings (MWh)

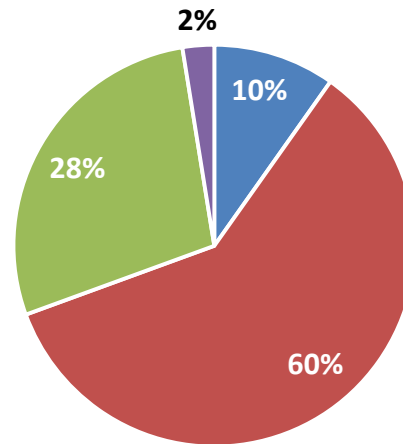


Eversource Residential Gas Lifetime Savings (Therms)



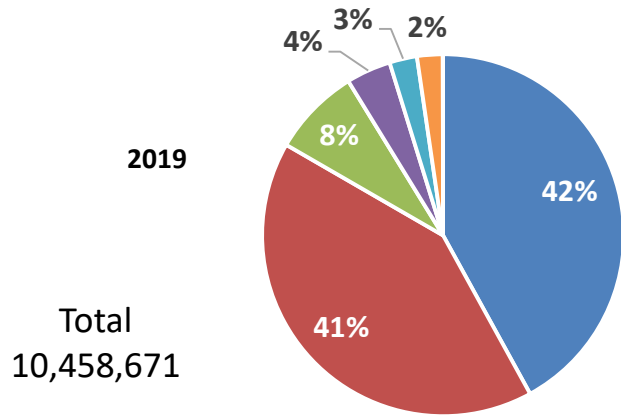
- New Homes & Renovations
- Coordinated Delivery
- Retail
- Behavior

Eversource Residential Total Lifetime Savings (Site MMBtu)



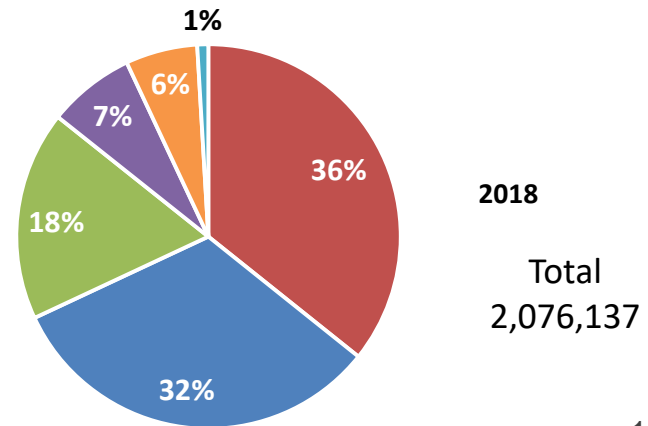
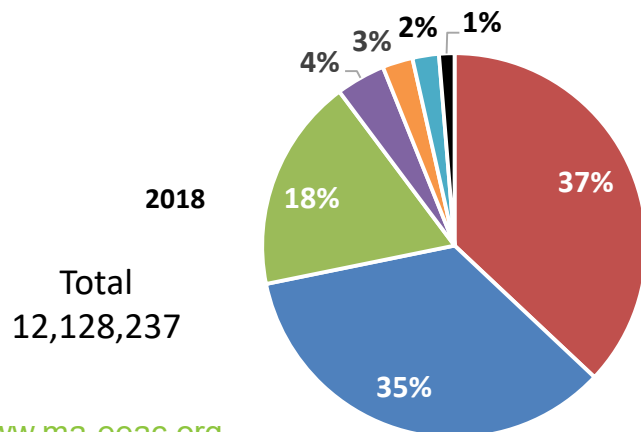
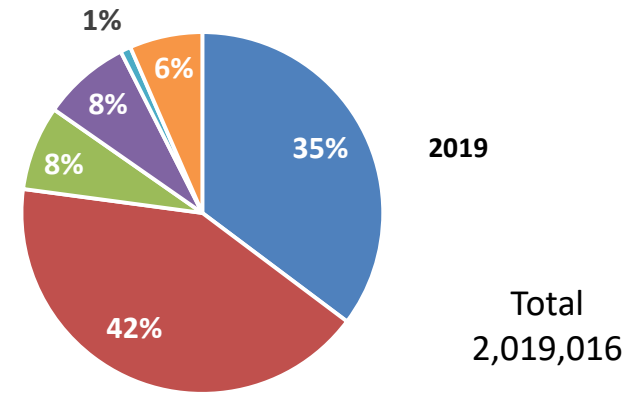
2019 EVERSOURCE LIFETIME SAVINGS BY END USE (ALL FUELS)

Eversource Res Lifetime Savings by End Use (Total Site MMBtu)



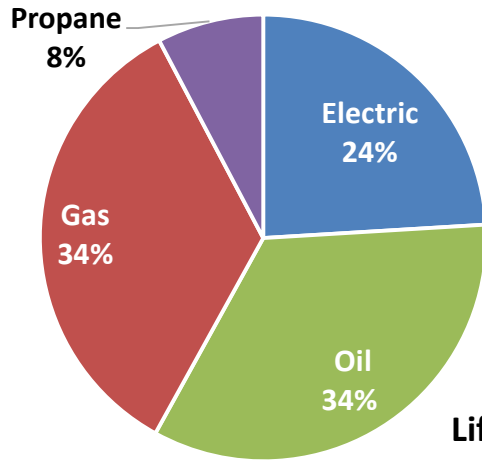
Eversource Income Eligible Lifetime Savings by End Use (Total Site MMBtu)

- Envelope
- HVAC
- Lighting
- Hot Water
- Energy Star Homes
- Behavior
- Process

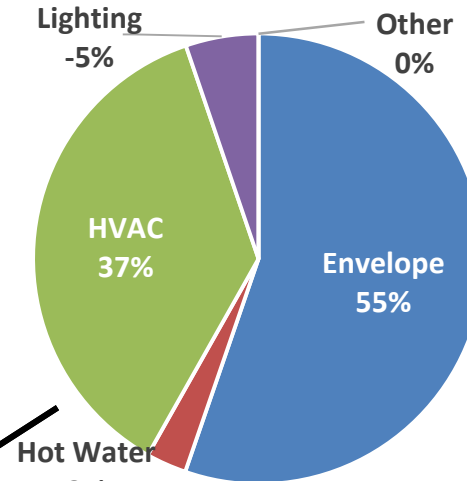


FOCUS ON OIL: LARGE ELEMENT OF MMBTU SUCCESS IN 2019

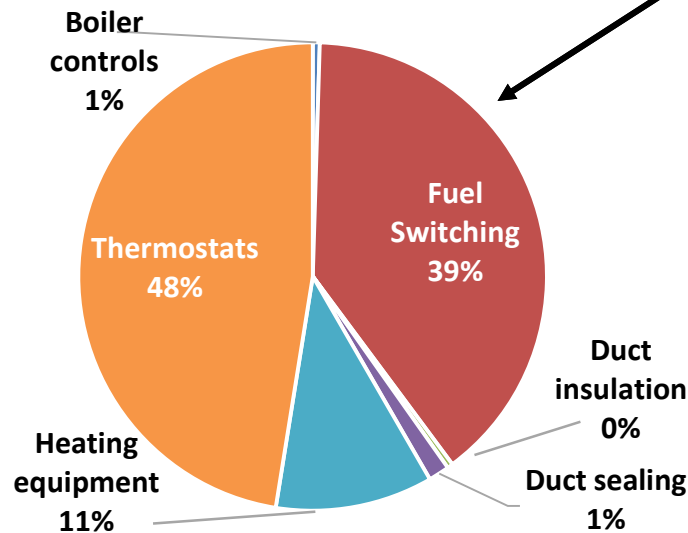
2019 Residential Savings by Fuel (Site MMBtu)



Lifetime Oil Savings by End Use



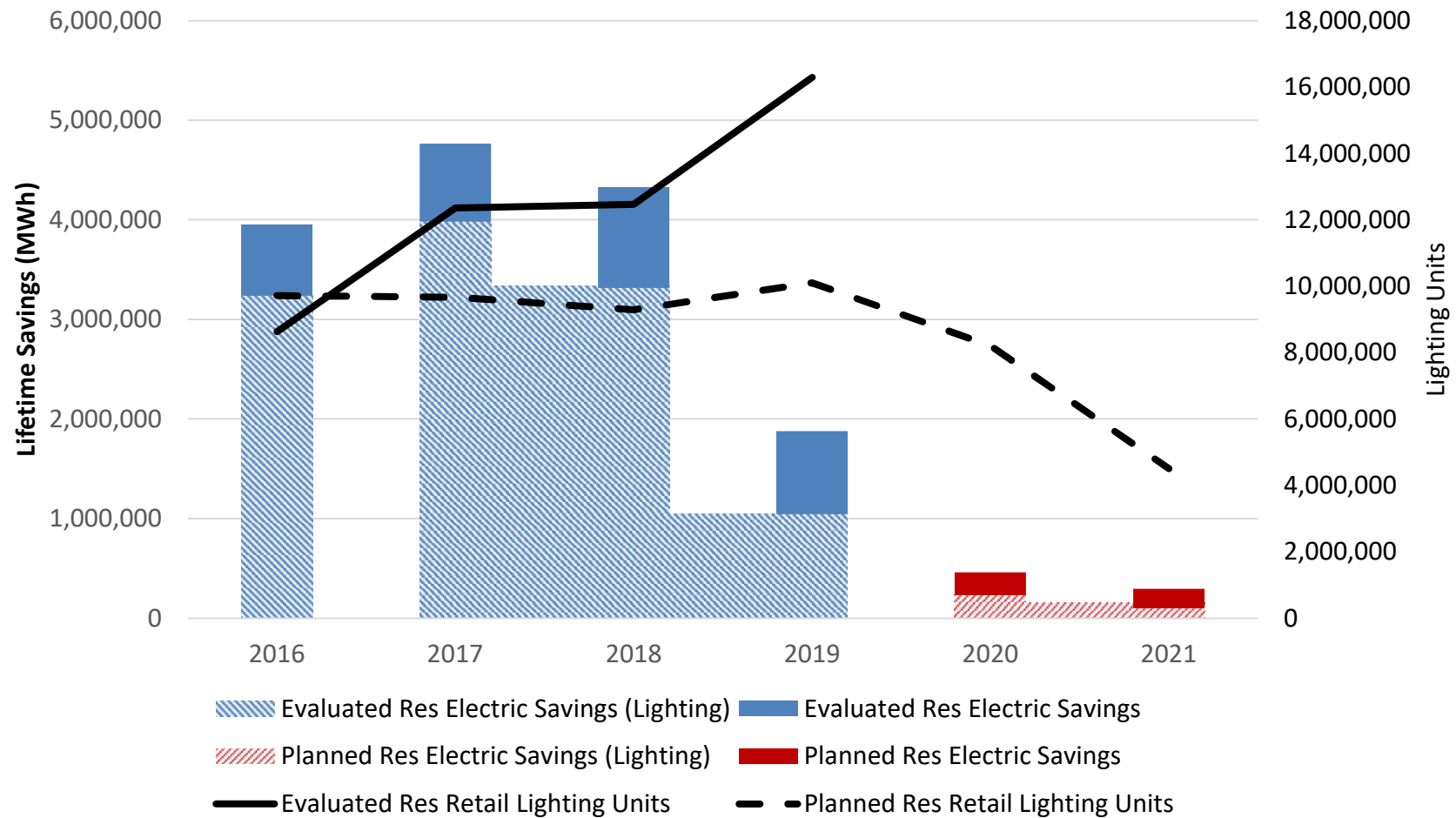
Lifetime Oil HVAC Savings by Measure



All data are for Eversource only

RESIDENTIAL LIFETIME ELECTRIC SAVINGS AND RETAIL LIGHTING UNITS

Residential Lifetime Electric Savings and Retail Lighting Units





RESIDENTIAL AND INCOME ELIGIBLE:
Data Reported for the First Time for 2019
Support Assessment of PA Progress in
Achieving EEAC Priorities

RESIDENTIAL CONVERSION RATES ARE GENERALLY GOOD

Statewide, combined electric and gas

Measures	# of Recommendations	Total # of Conversions (Cumulative)	Conversion Rate
	2019 Q1	2019 Q1-2020 Q1	
Insulation	20,348	9,001	44%
Air Sealing	18,555	9,342	50%
Duct Sealing	2,172	856	39%
Duct Insulation	339	128	38%
TOTAL	41,414	19,327	47%

Conversions shown through end of Q1 2020, which provides a full year of data

ENERGY OPTIMIZATION IS STILL A WORK IN PROGRESS

► Appears that Energy Specialist and HPC training in Energy Optimization framework in late 2019 hasn't yet increased heat pump recommendation numbers—Statewide results to date minus Eversource

	Quarterly KPI#3	Ductless Minisplit Heat Pump				Central HP				HEA Count			
		2019 Q1/2	2019 Q3	2019 Q4	2020 Q1	2019 Q1/2	2019 Q3	2019 Q4	2020 Q1	2019 Q1/2	2019 Q3	2019 Q4	2020 Q1
Existing heating system	Biomass	1	3	11	3	0	0	1	0	70	34	29	22
	Electric resistance	452	407	431	270	28	14	8	27	1830	1822	-94	697
	Gas boiler	560	326	202	182	41	22	29	33	15750	6833	6973	5695
	Gas furnace	105	63	43	40	38	40	37	47	10709	4818	4996	4036
	Heat pump	13	3	9	15	55	54	34	25	384	197	151	180
	Oil boiler	936	671	711	450	135	111	103	119	9384	4844	3910	3414
	Oil furnace	144	69	95	71	86	77	153	95	2658	1244	1178	977
	Other	0	10	5	14	0	3	3	2	169	134	111	123
	Propane boiler	47	25	36	24	3	19	9	5	496	259	201	170
	Propane furnace	45	-18	72	25	20	2	55	19	898	411	447	383
	Grand Total	2303	1559	1615	1094	406	342	432	372	42348	-1603	38154	15697

RENTER REPORTING SHOWS PLANNED STRATEGIES TO SERVE RENTERS ARE NOT FULLY REALIZED

Reporting Category	National Grid		Eversource		Unitil		CLC	Berkshire	CMA	Liberty
	Electric	Gas	Electric	Gas	Electric	Gas	Electric	Gas	Gas	Gas
Residential Coordinated Delivery	6,655	3,500	1,222	616	46	42	254	175	795	100
Energy Savings Packages	5	3								
Income Eligible Coordinated Delivery	4,601	2,419	9,151	2,675	287	214	1,202	13	2,967	203
C&I - Res End Use - Rental Units	4,607	3,563	Not Available	652	6	288	58	126	1,224	410
C&I - Res End Use - C&I Accounts	140	46	104	16	1	1	3	2	69	9

- ▶ This is the first year the PAs have reported renter participation in this form, pursuant to DPU order.
- ▶ Data points to assist with placing these numbers in context:
 - The PAs provided over 80,000 Home Energy Assessments in 2019
 - In 2019 the U.S. Census Bureau estimated 1.1 million housing units in Massachusetts were occupied by renters—38% of total units

LANGUAGE REPORTING PROVIDES A LIMITED LINE OF SIGHT

Language	Mass Save Phone Hotline Language Selection		MassSave.com Page views	
	#	%	#	%
English	137,156	97%	5,154,923	99%
Mandarin	158	0.1%		
Portuguese	313	0.2%	9,603	0.18%
Russian	212	0.15%		
Spanish	2,900	2%	44,195	0.85%
Total	140,739		5,208,721	

LANGUAGE	ESTIMATE	% IN MA	% SPEAK ENGLISH "VERY WELL"	% SPEAK ENGLISH "< VERY WELL"
Spanish	564,401	9%	59%	41%
Portuguese	184,962	3%	57%	43%
Chinese (incl. Mandarin, Cantonese)	129,412	2%	50%	50%
Haitian	77,930	1%	56%	44%
French (incl. Cajun)	54,399	1%	81%	19%
Vietnamese	40,633	1%	38%	62%
Russian	39,182	1%	61%	39%
Arabic	33,313	1%	61%	39%
Italian	32,968	1%	73%	27%
Khmer	22,950	0%	50%	50%

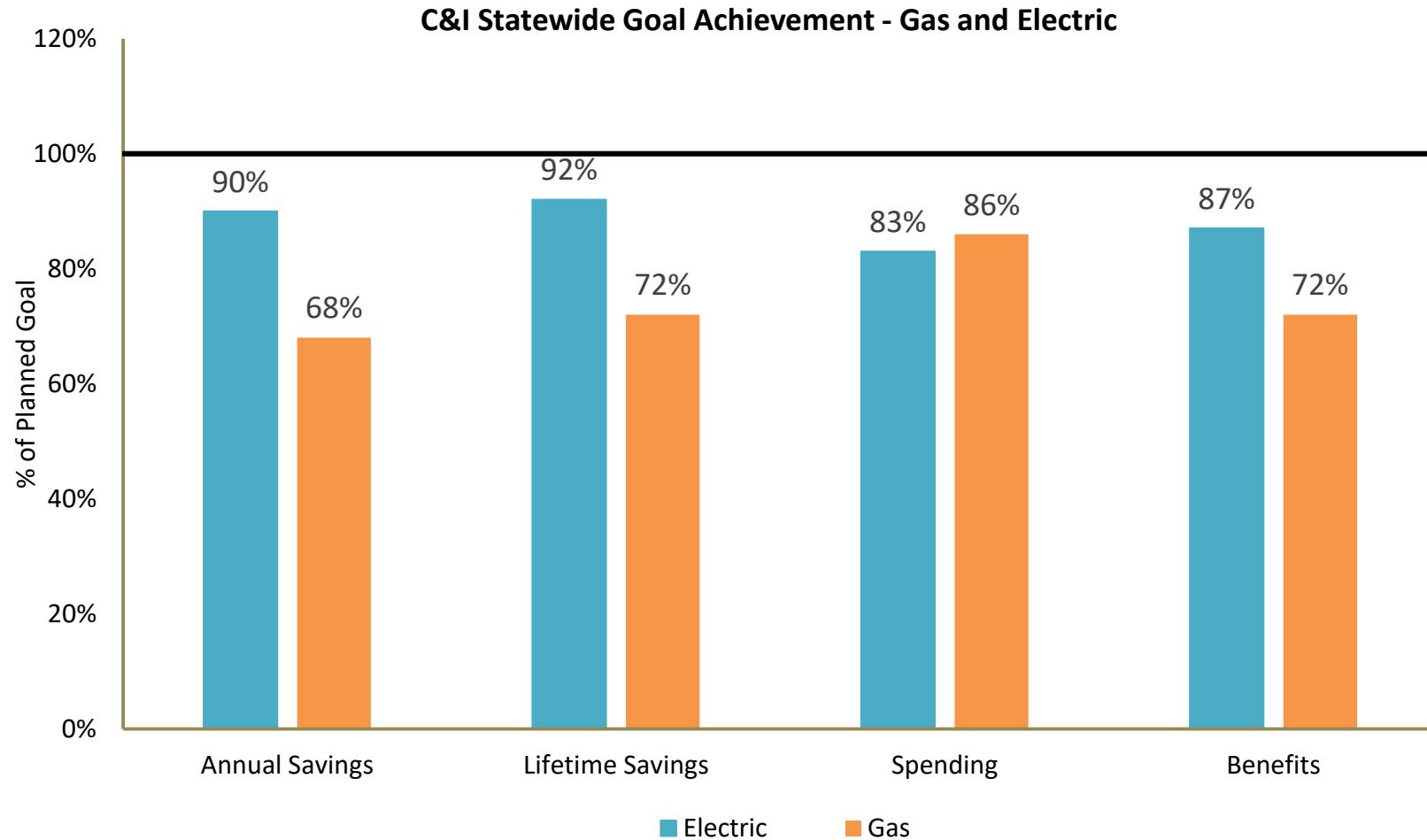
RES AND INCOME ELIGIBLE 2019 TAKEAWAYS

- ▶ **All 2019 gas savings and benefits goals were achieved in both sectors**
- ▶ **In the electric residential sector, lighting continues to contribute roughly $\frac{3}{4}$ of kWh lifetime savings, but claimable lighting savings continue to decrease due to reductions in measure lives and other key parameters**
- ▶ **Higher than planned participation in Residential Coordinated Delivery Initiative was a big factor in 2019 results**
 - **The impacts of COVID-19 on future results will likely be mostly strongly felt here**
 - **Oil savings played a major role—results reflected in Benefits and MMBtu savings**
- ▶ **Income Eligible lifetime electric savings shortfall reflects challenges for NGrid, especially heat pump opportunities**



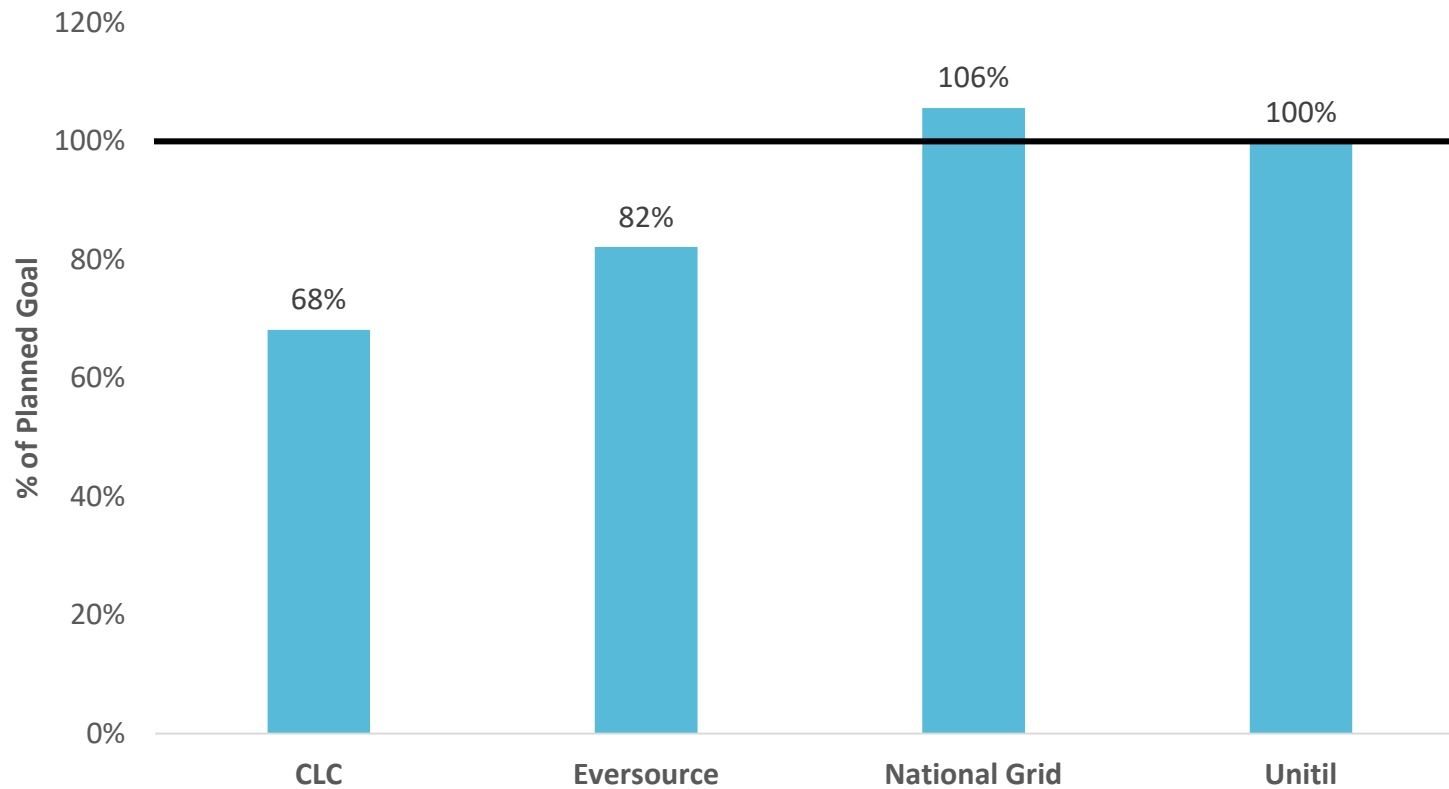
COMMERCIAL & INDUSTRIAL

C&I STATEWIDE GOAL ACHIEVEMENT 2019



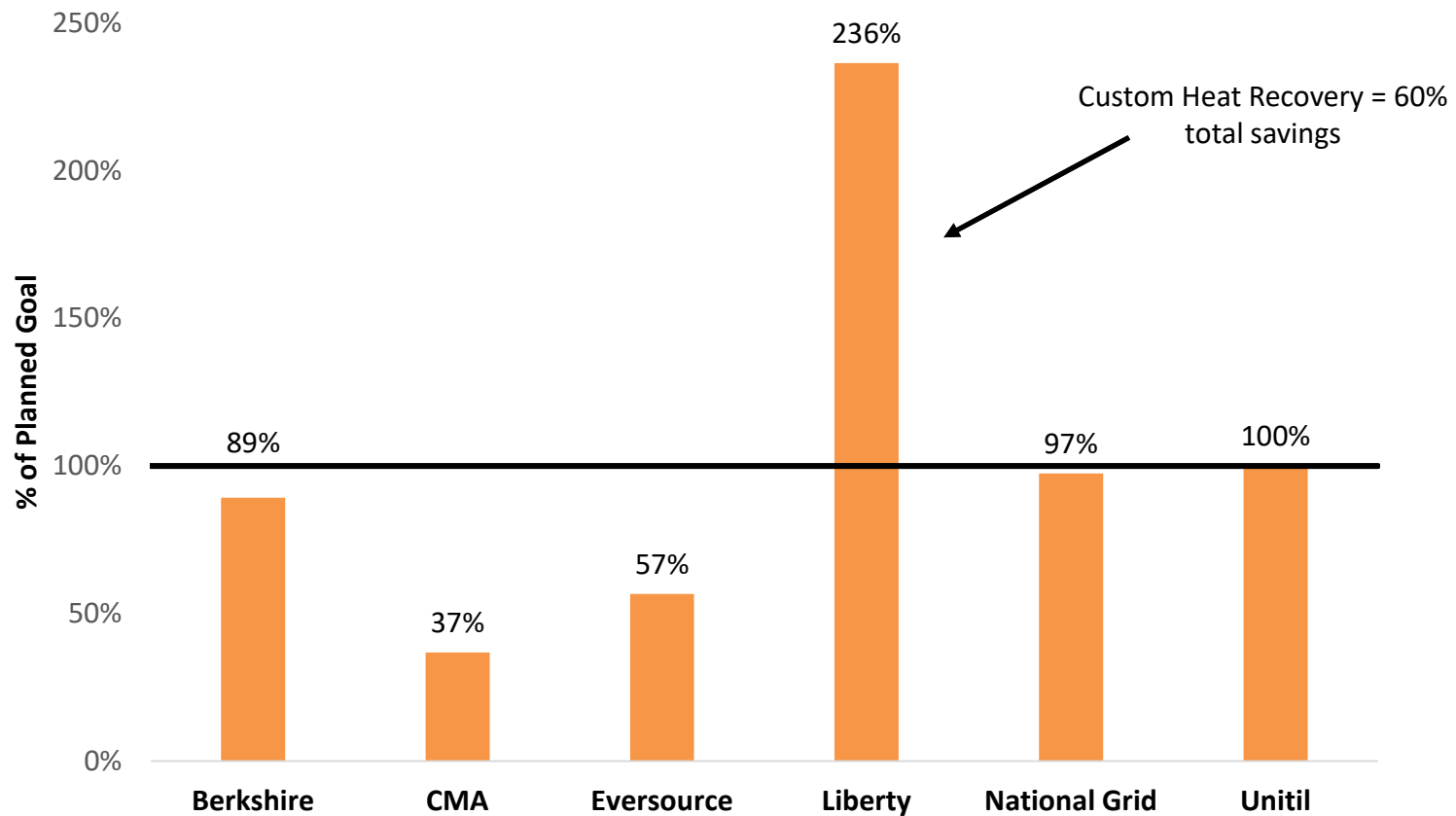
C&I ACHIEVEMENT BY PA - ELECTRIC

C&I Lifetime Electric Savings Goal Achievement



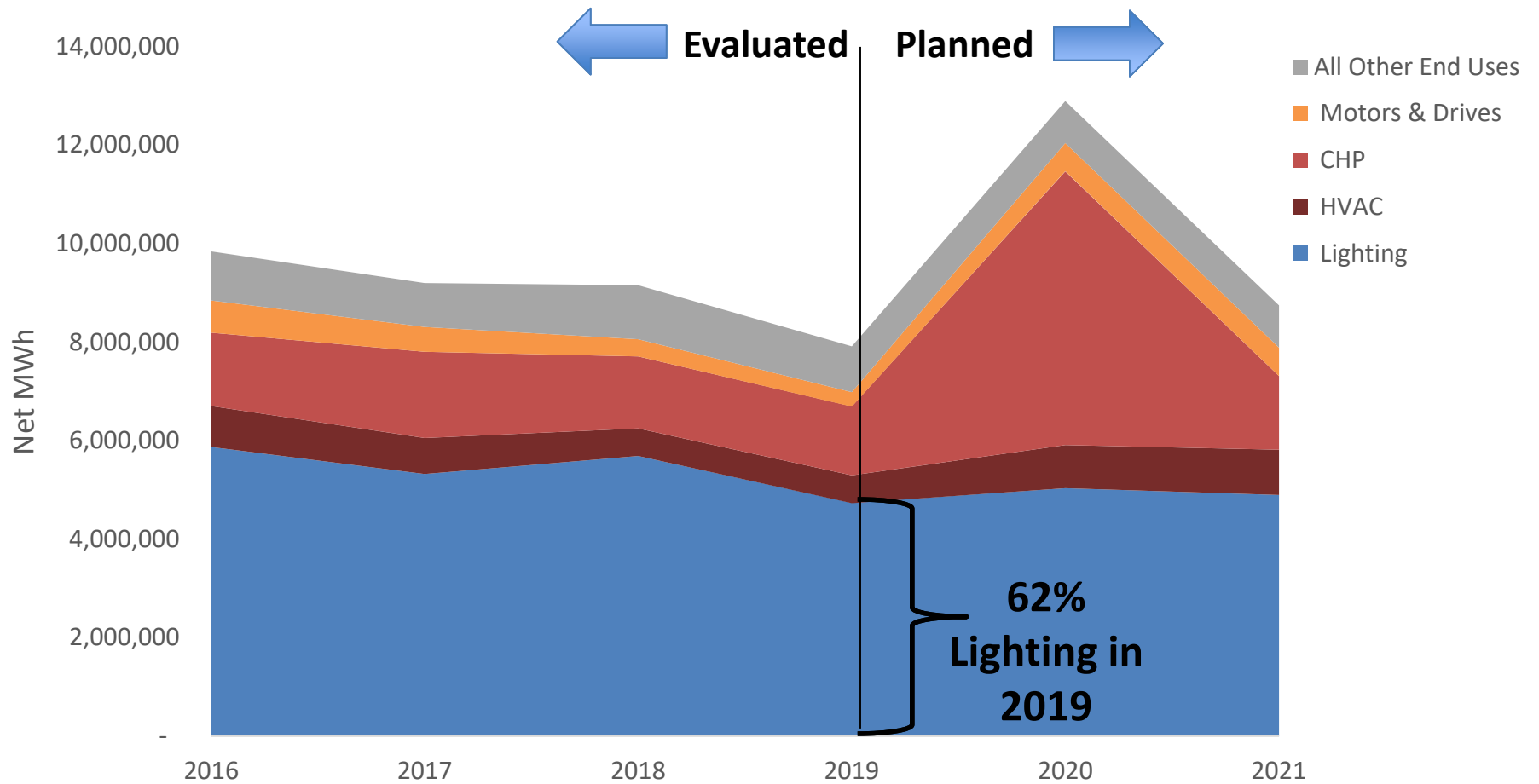
C&I ACHIEVEMENT BY PA - GAS

C&I Lifetime Gas Savings Goal Achievement

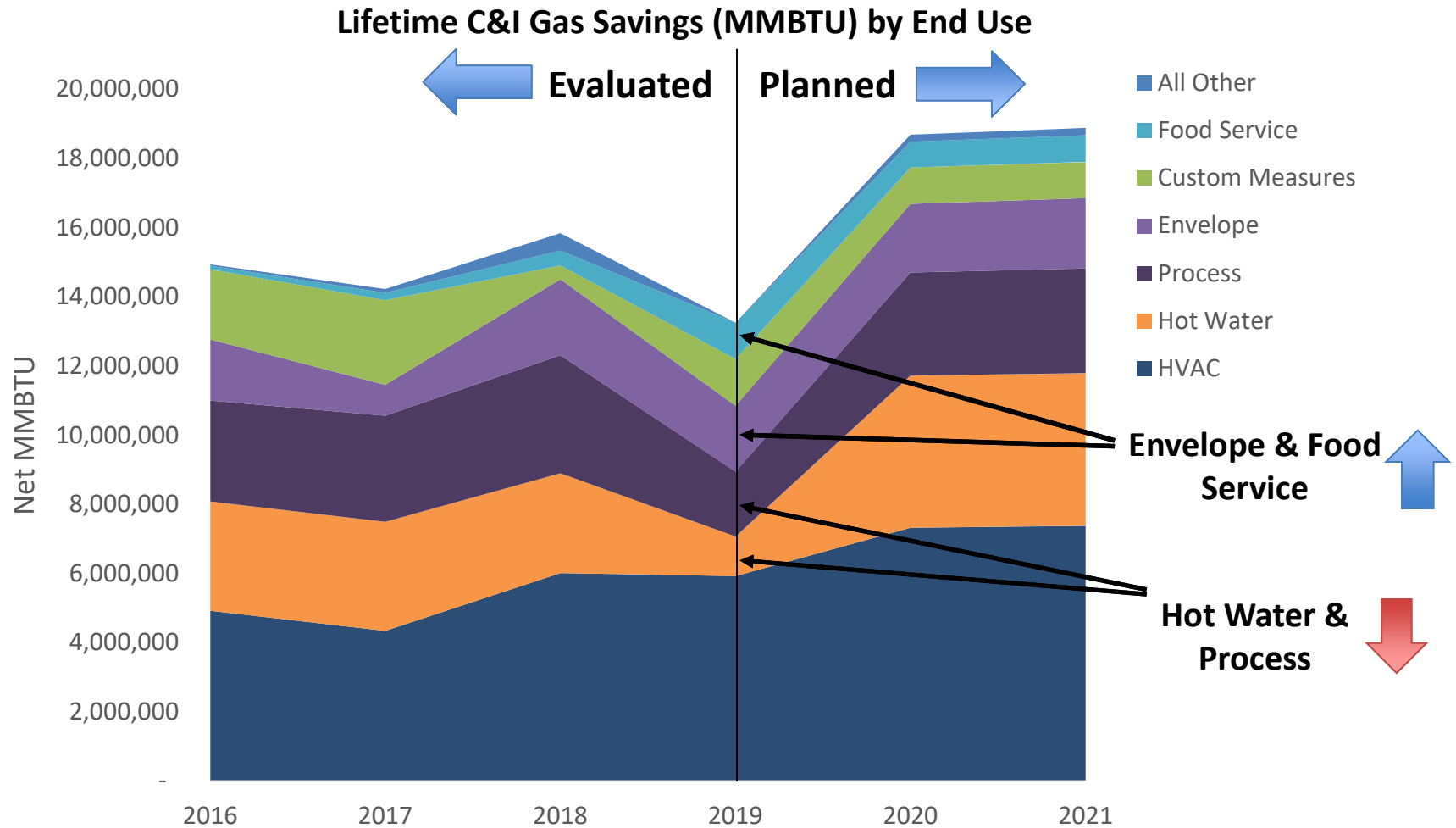


C&I ELECTRIC – STILL MOSTLY LIGHTING

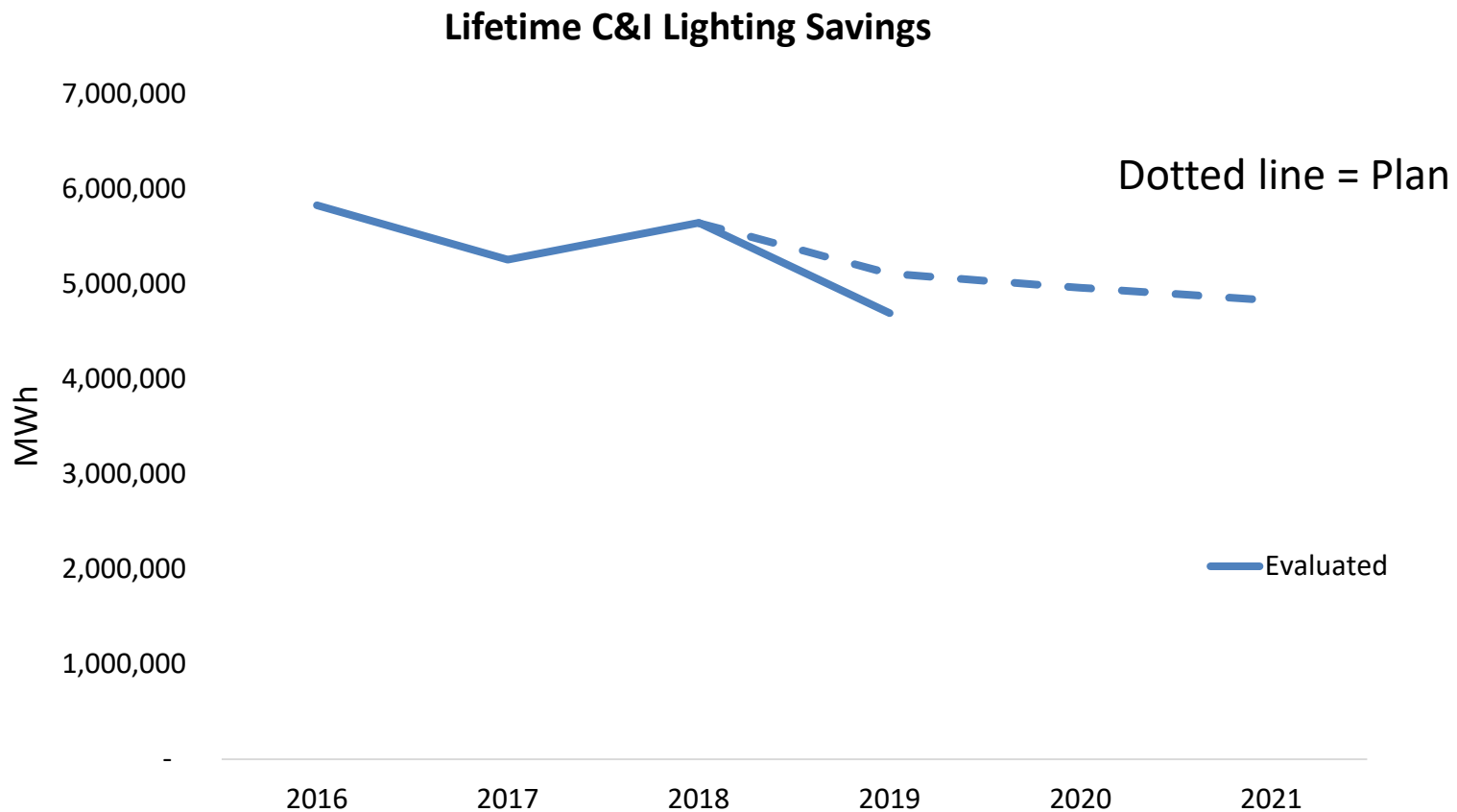
C&I Net Lifetime Electric Savings (MWh) by End Use



C&I GAS – BIG DIP IN SAVINGS FROM 2018 TO 2019

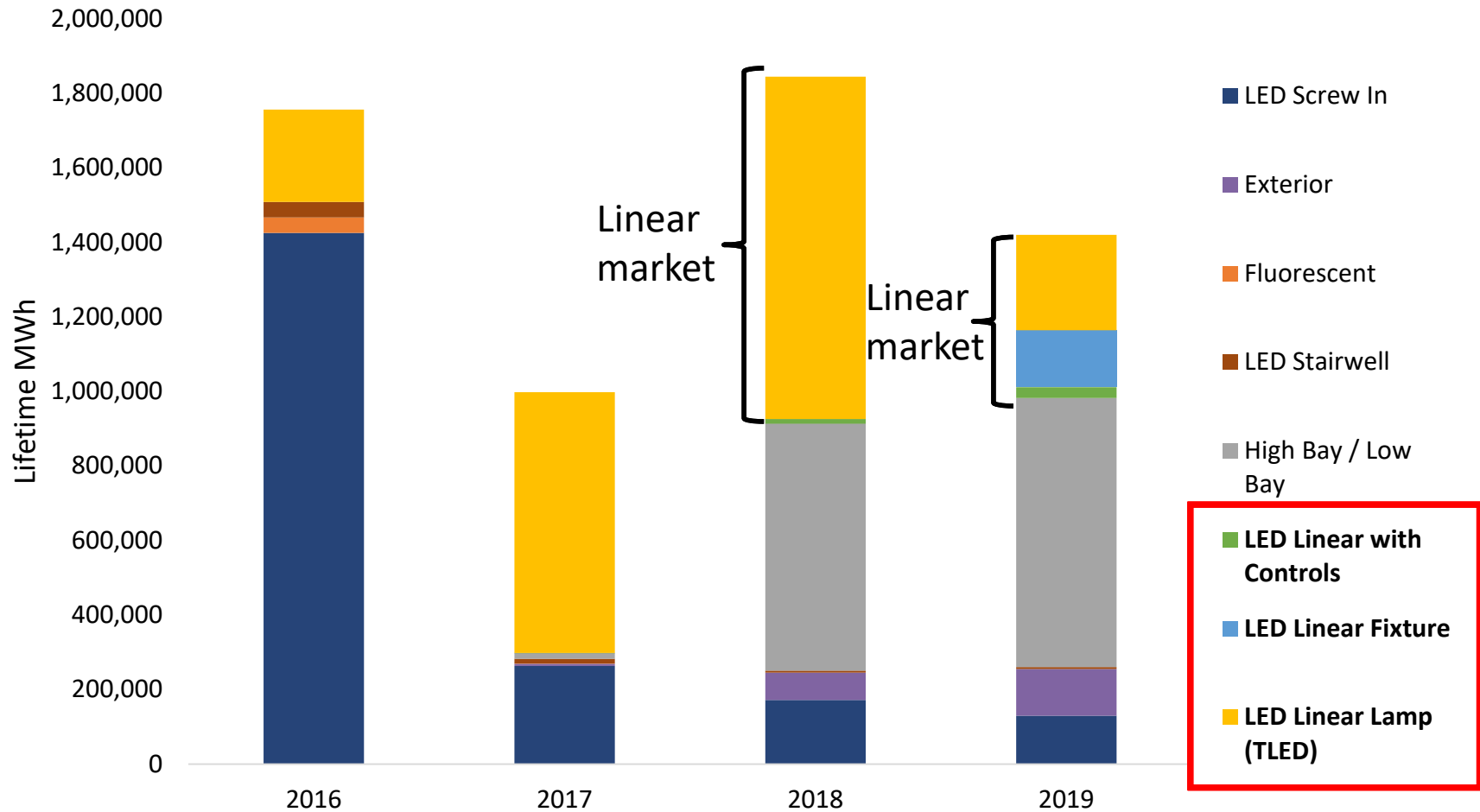


SLIGHT DECLINE IN LIGHTING SAVINGS



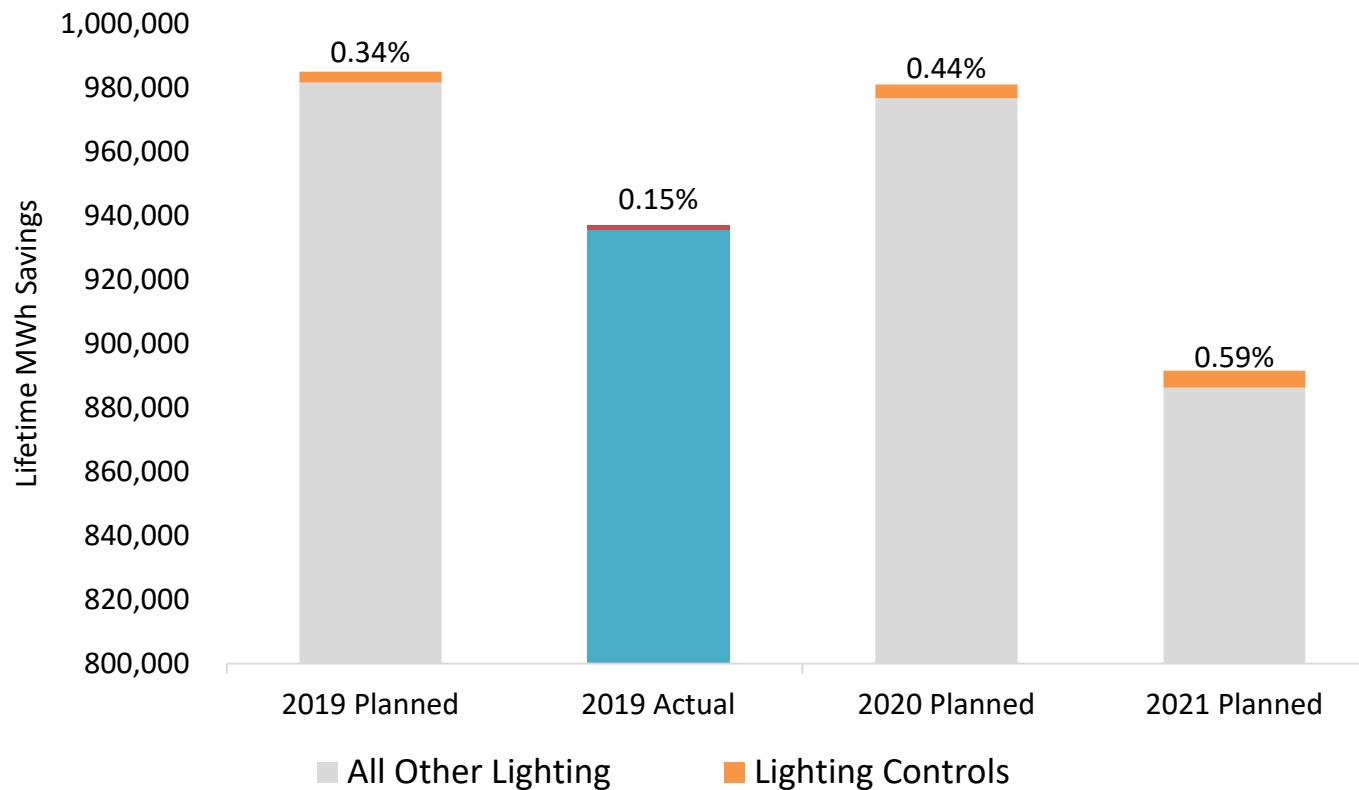
UPSTREAM LIGHTING – LINEAR MARKET SAVINGS DECLINING BUT GREATER EMPHASIS ON FIXTURES 😊

C&I Upstream Lighting Savings

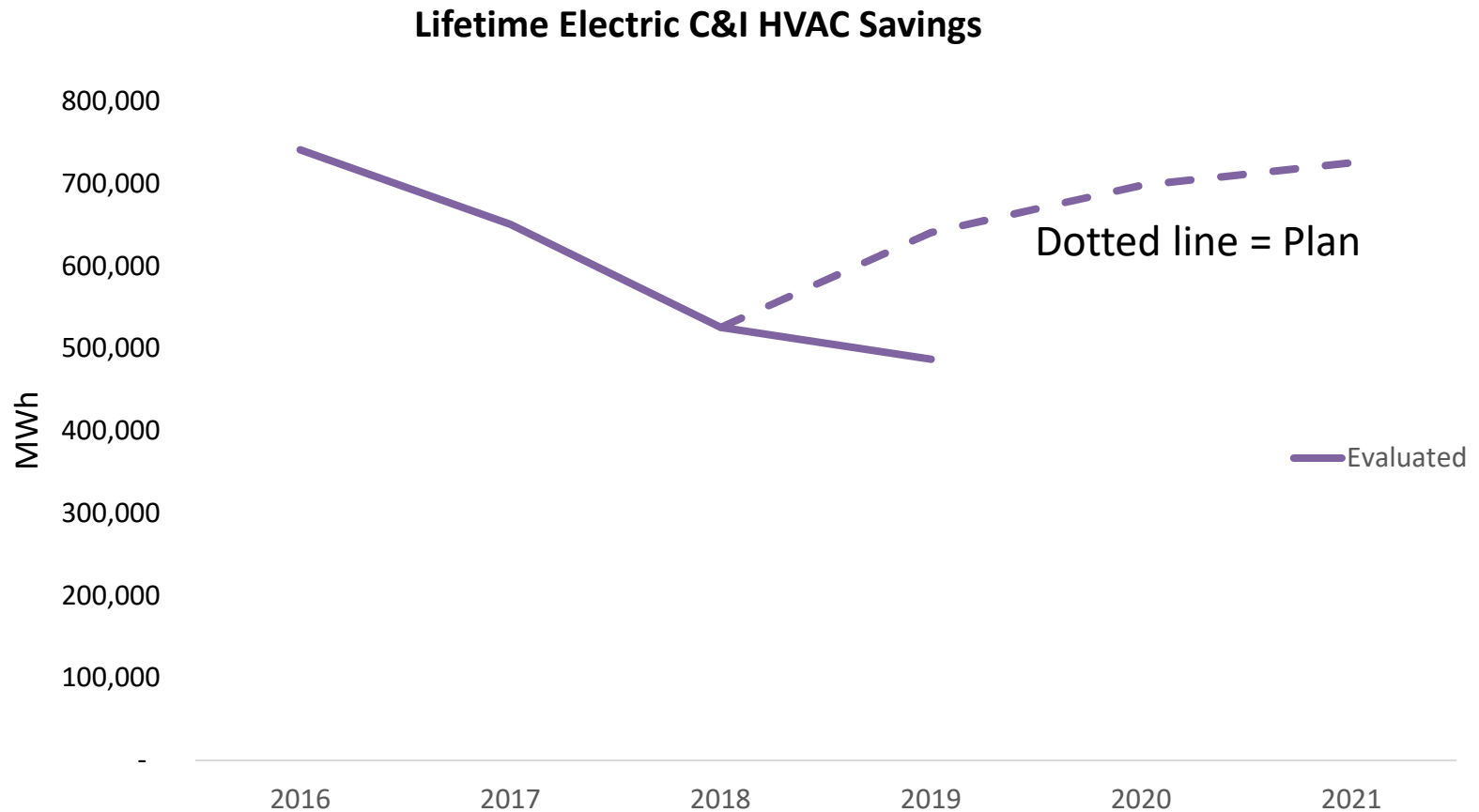


SMALL BUSINESS VERY LOW % LIGHTING CONTROLS

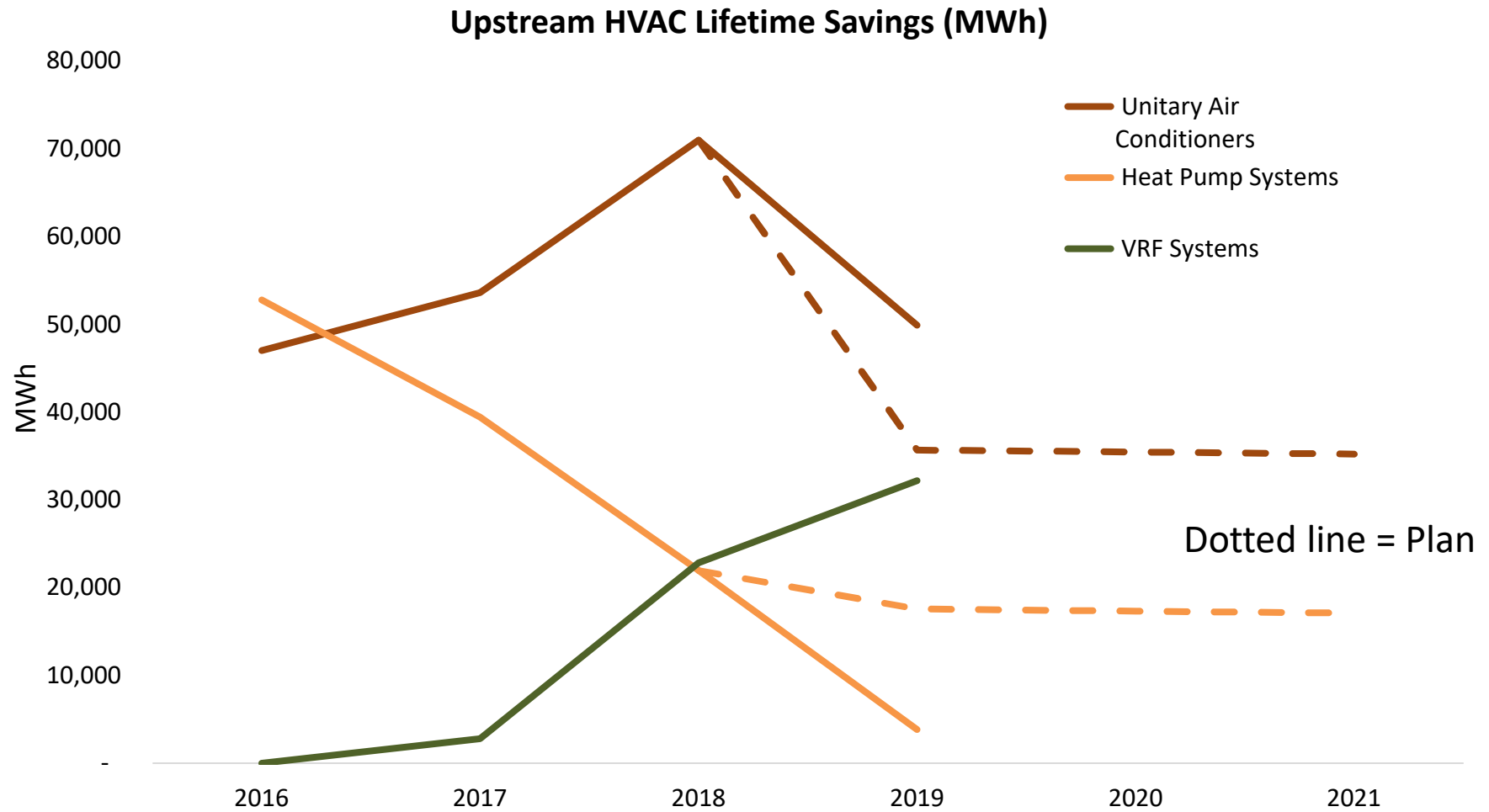
2019-2021 Planned Turnkey Lighting Savings



PLANNED REBOUND IN HVAC SAVINGS HAS NOT HAPPENED YET



DECLINE IN AIR SOURCE HEAT PUMPS BUT VRF INCREASE



C&I ENERGY OPTIMIZATION – BI-ANNUAL REPORTING (Q4 2019)

Measure Name	Quantity Definition	Total
Mini Split HP - Upstream	Compressor	92
Central HP - Upstream	Compressor	1,179
Fuel Switching - Retrofit	Projects	4
Reported Statewide Total		1,275

- ▶ **Target = 17,980 C&I units in 2019-2021 plan period**
 - Only **7%** progress toward 3-year C&I target
 - Under reporting or under achieving or both?

- ▶ **Only 4 C&I fuel switching projects statewide**
 - Under reporting or under achieving or both?

C&I 2019 TAKEAWAYS



► Electric

- 92% of savings goal; 83% of budget spent
- Net lighting savings decline; low controls penetration
- Other important end-uses like HVAC not picking up yet
- ASHP declining, but VRF systems increasing

► Gas

- 72% of savings goal; 86% of budget spent
- HVAC savings steady
- Process and hot water declining
- Building envelope and food service show potential

THANK YOU

Questions?

▶ June 17, 2020

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