

2016 YEAR-END/Q4 RESULTS

EEAC CONSULTANTS

(3/13/17)

▶ **March 15, 2017**

INTRODUCTION



- ▶ **Following the PA presentation on 2016 Year-End/Q4 results (please see PA slides for that summary)**
- ▶ **This presentation summarizes EEAC consultant team analysis of results, trends, drivers of results, other findings, and some initiative-level details**
- ▶ **Table of contents:**
 - Portfolio Results
 - Electric Results
 - Gas Results
 - Residential and Low Income Results (in appendix)
 - C&I Results (in appendix)



Portfolio Results



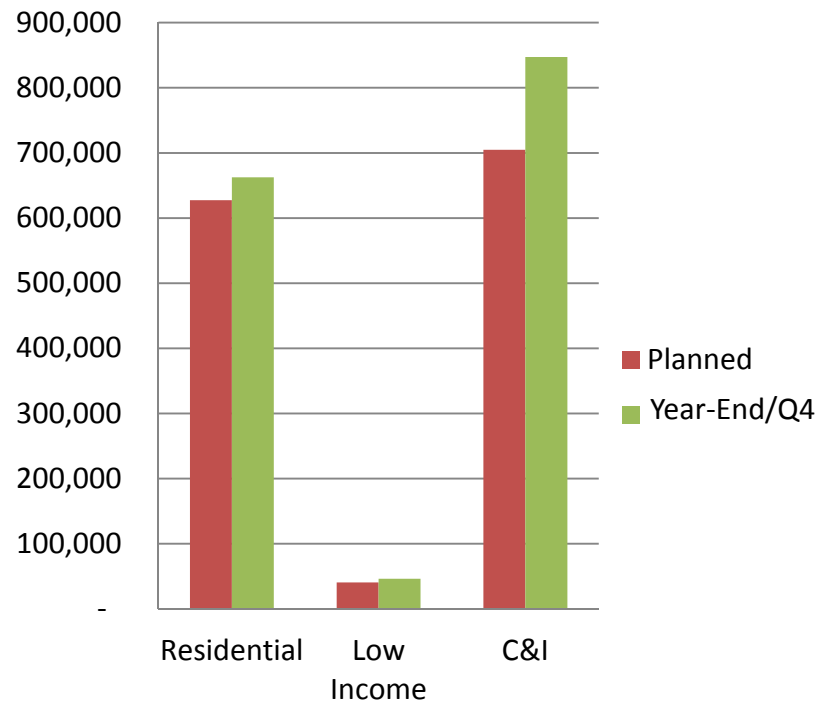
SUMMARY OF 2016 YEAR-END/Q4 SAVINGS, BENEFITS, AND COSTS

	Portfolio		
	Amount	Percent of Goal	
Electric	Annual Savings (MWh)	1,556,019	113%
	Lifetime Savings (MWh)	14,056,410	110%
	Summer (kW)	237,140	123%
	Benefits (\$)	\$2,254,965,522	110%
	Expenditures (\$)	\$534,644,852	89%

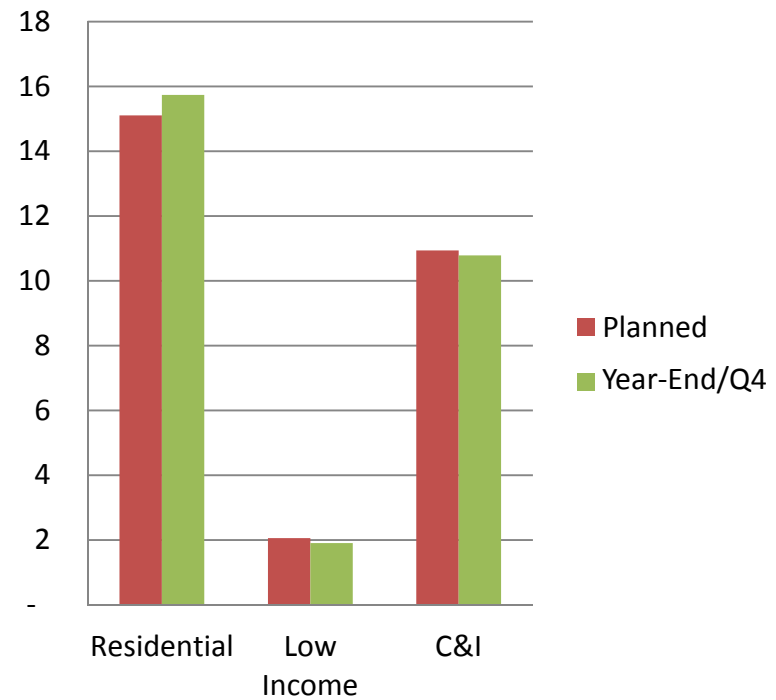
	Portfolio		
	Amount	Percent of Goal	
Gas	Annual Savings (Therms)	28,424,005	101%
	Lifetime Savings (Therms)	394,523,246	105%
	Benefits (\$)	\$584,929,896	107%
	Expenditures (\$)	\$201,826,008	93%

2016 ELECTRIC ANNUAL SAVINGS WERE HIGHER THAN PLANNED FOR ALL SECTORS; RESIDENTIAL GAS SAVINGS WERE HIGHER THAN PLANNED WHILE LOW INCOME AND C&I WERE SLIGHTLY LOWER THAN PLANNED

2016 Electric Annual Savings by Sector (MWh)

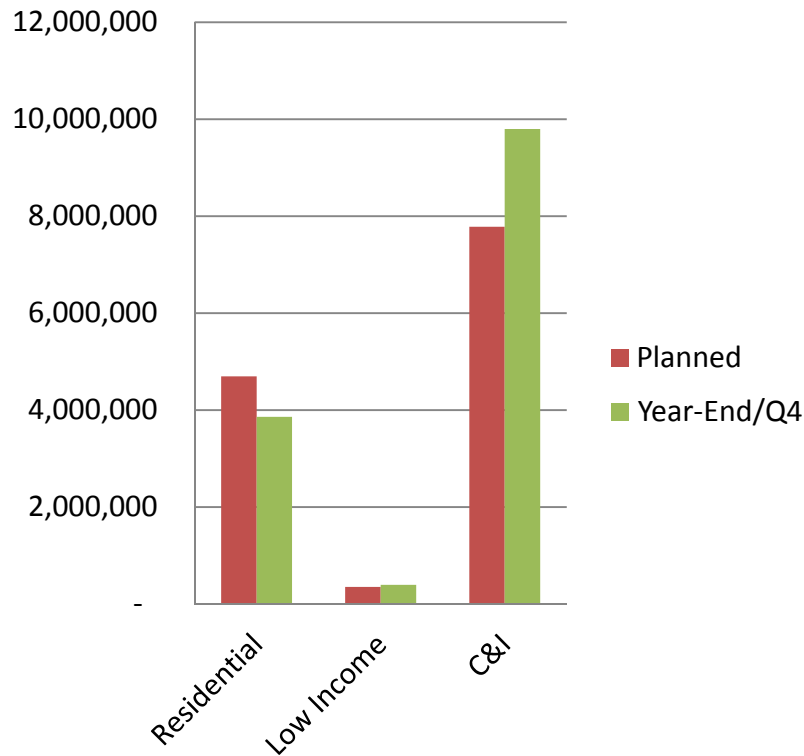


2016 Gas Annual Savings by Sector (Million Therms)

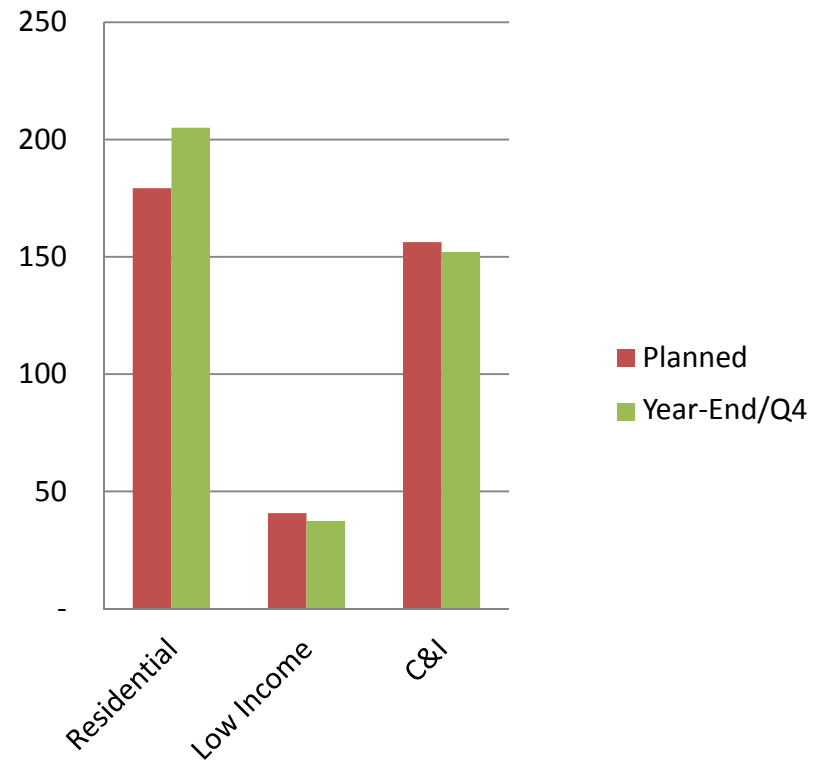


2016 ELECTRIC AND GAS LIFETIME SAVINGS ACHIEVEMENT VARIED BY SECTOR

2016 Electric Lifetime Savings by Sector (MWh)

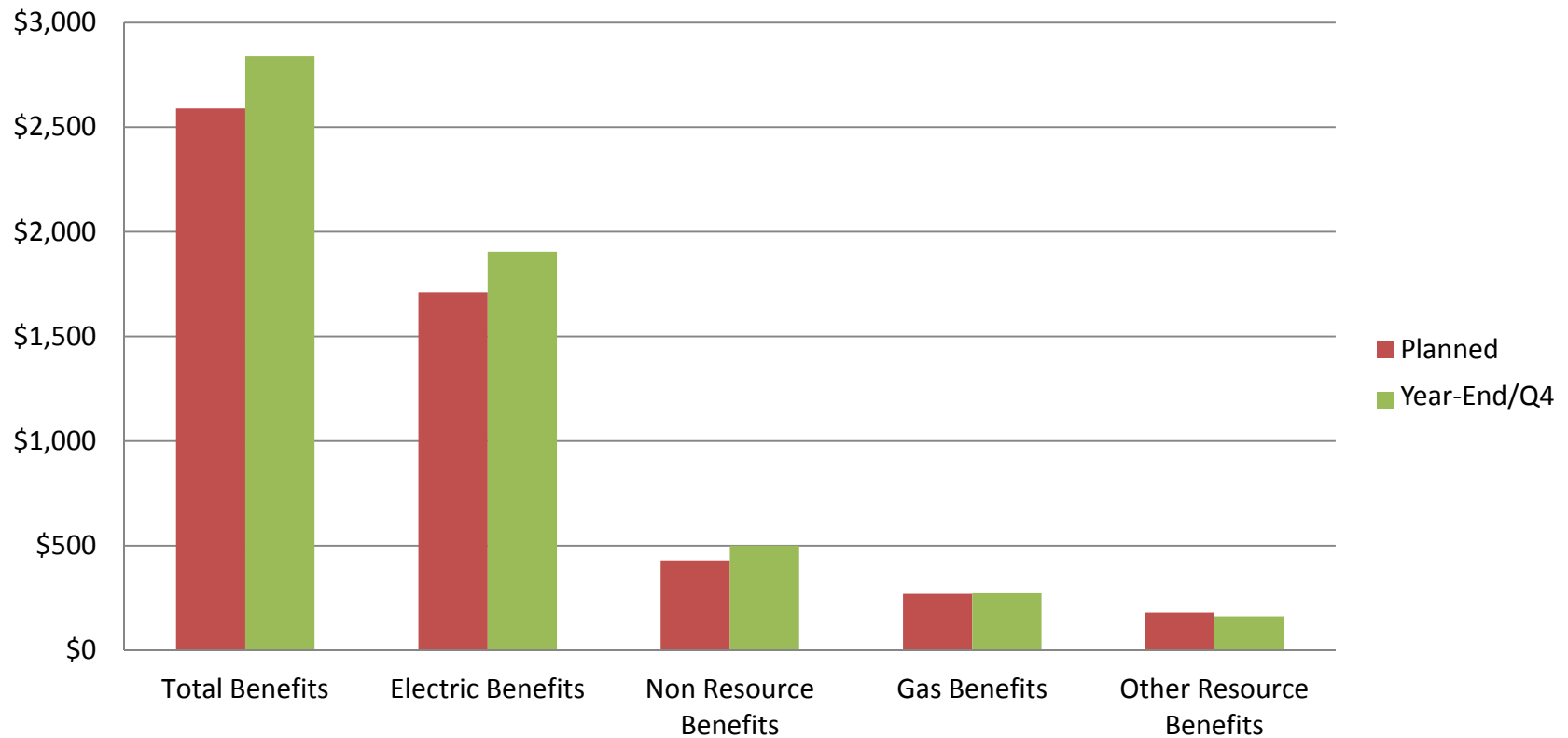


2016 Gas Lifetime Savings by Sector (Million Therms)



ALL MAJOR CATEGORIES OF BENEFITS EXCEPT OTHER RESOURCE BENEFITS WERE HIGHER THAN PLANNED IN 2016

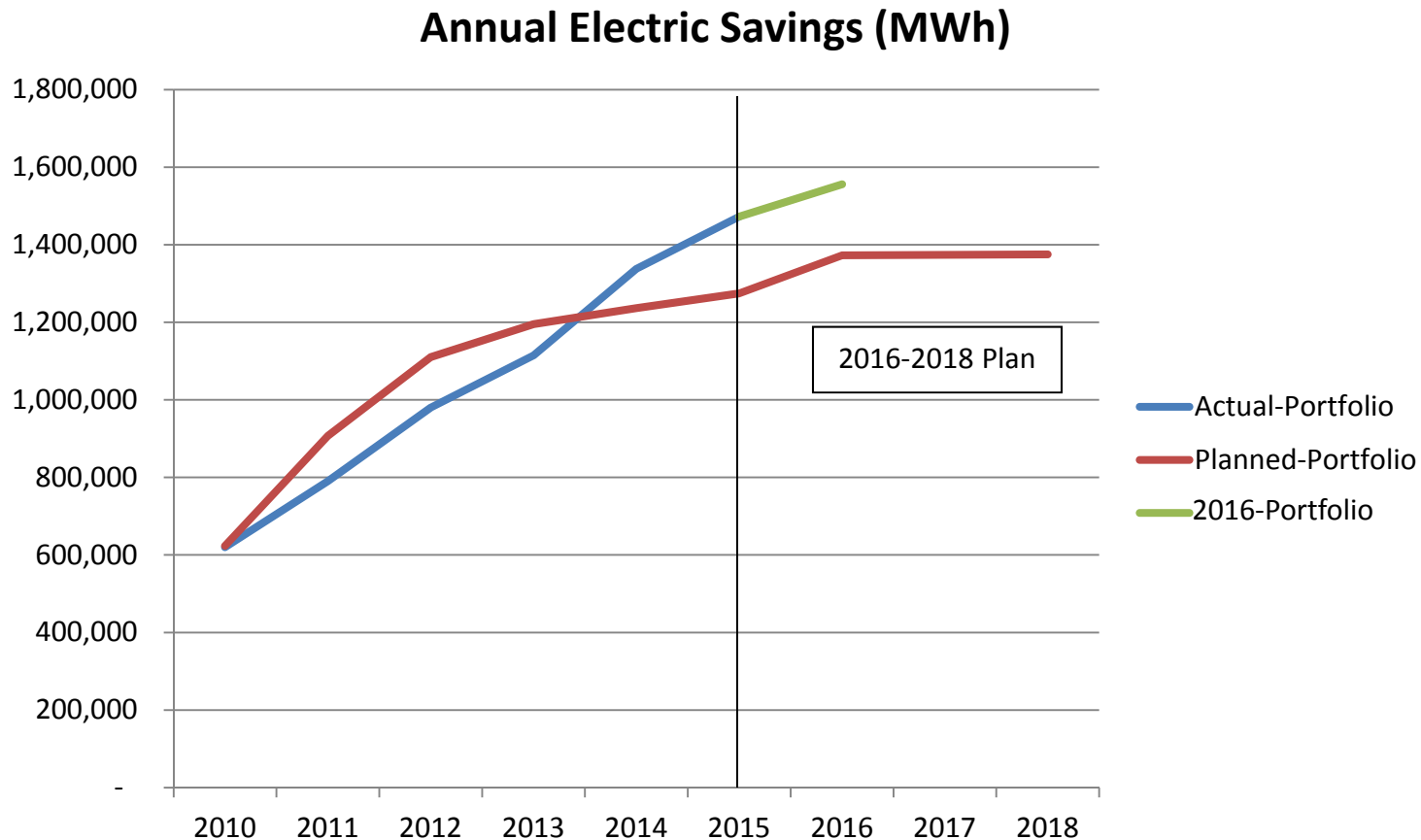
2016 Electric and Gas Benefits (\$ Millions)





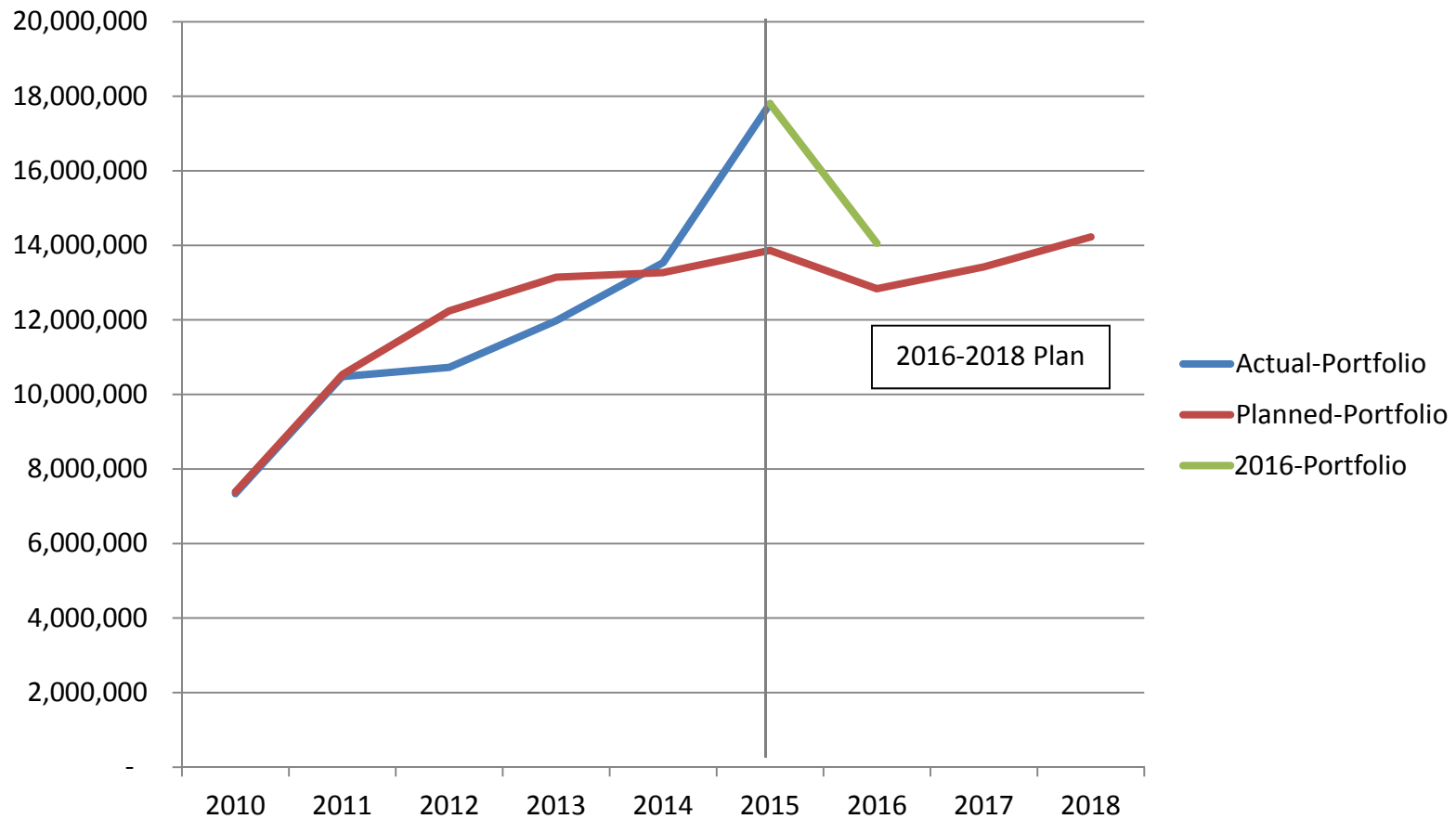
Electric Results

2016 ANNUAL ELECTRIC ENERGY SAVINGS HAVE CONTINUED TO GROW; 2016 YEAR-END/Q4 SAVINGS WERE HIGHER THAN PLAN



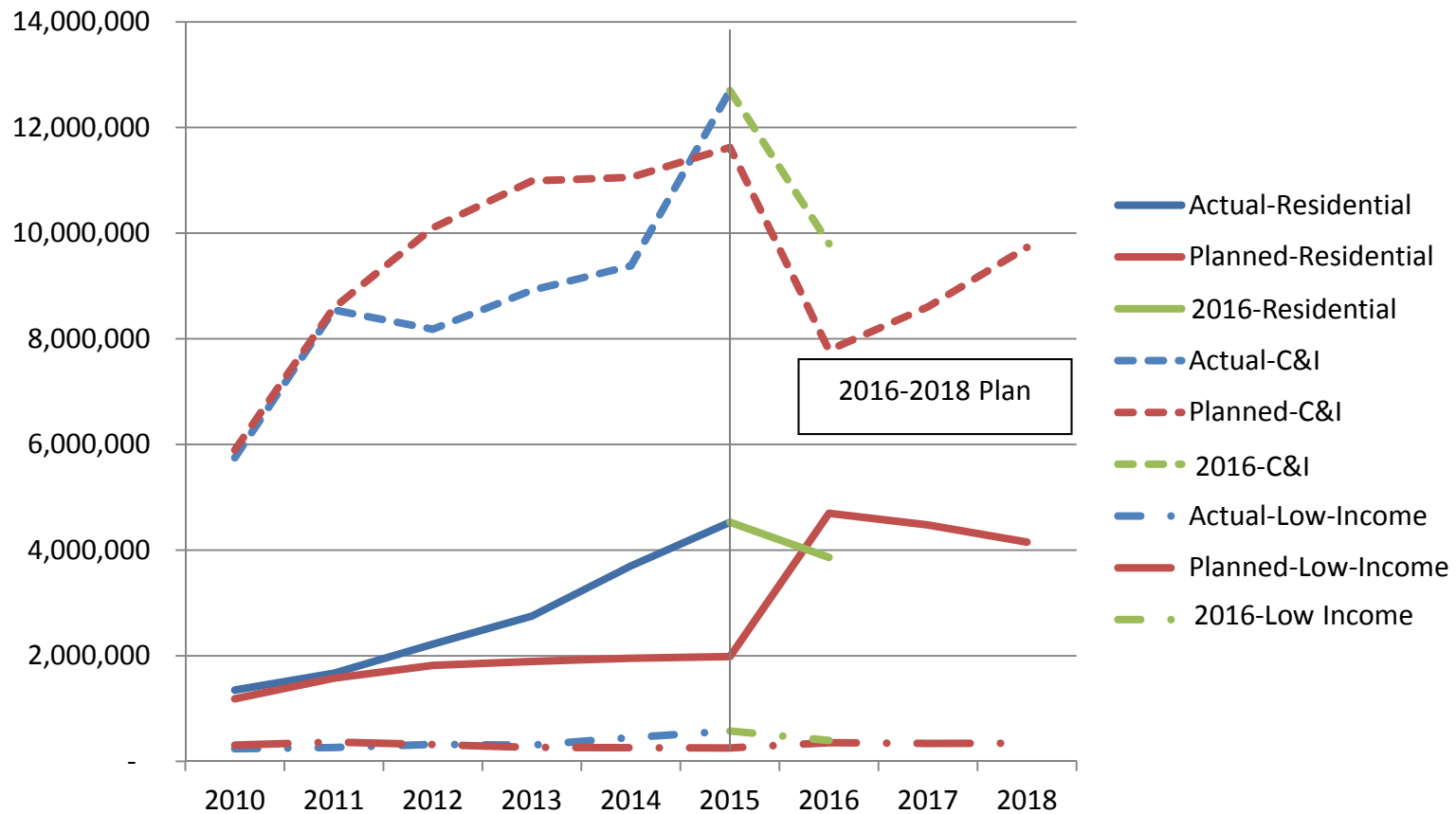
2016 LIFETIME ELECTRIC SAVINGS DROPPED FROM 2015 LEVELS AS PREDICTED, BUT WERE HIGHER THAN PLAN

Lifetime Electric Savings (MWh)



2016 RESIDENTIAL ELECTRIC LIFETIME SAVINGS WERE LOWER THAN PLANNED WHILE C&I AND LOW INCOME SAVINGS WERE HIGHER THAN PLANNED

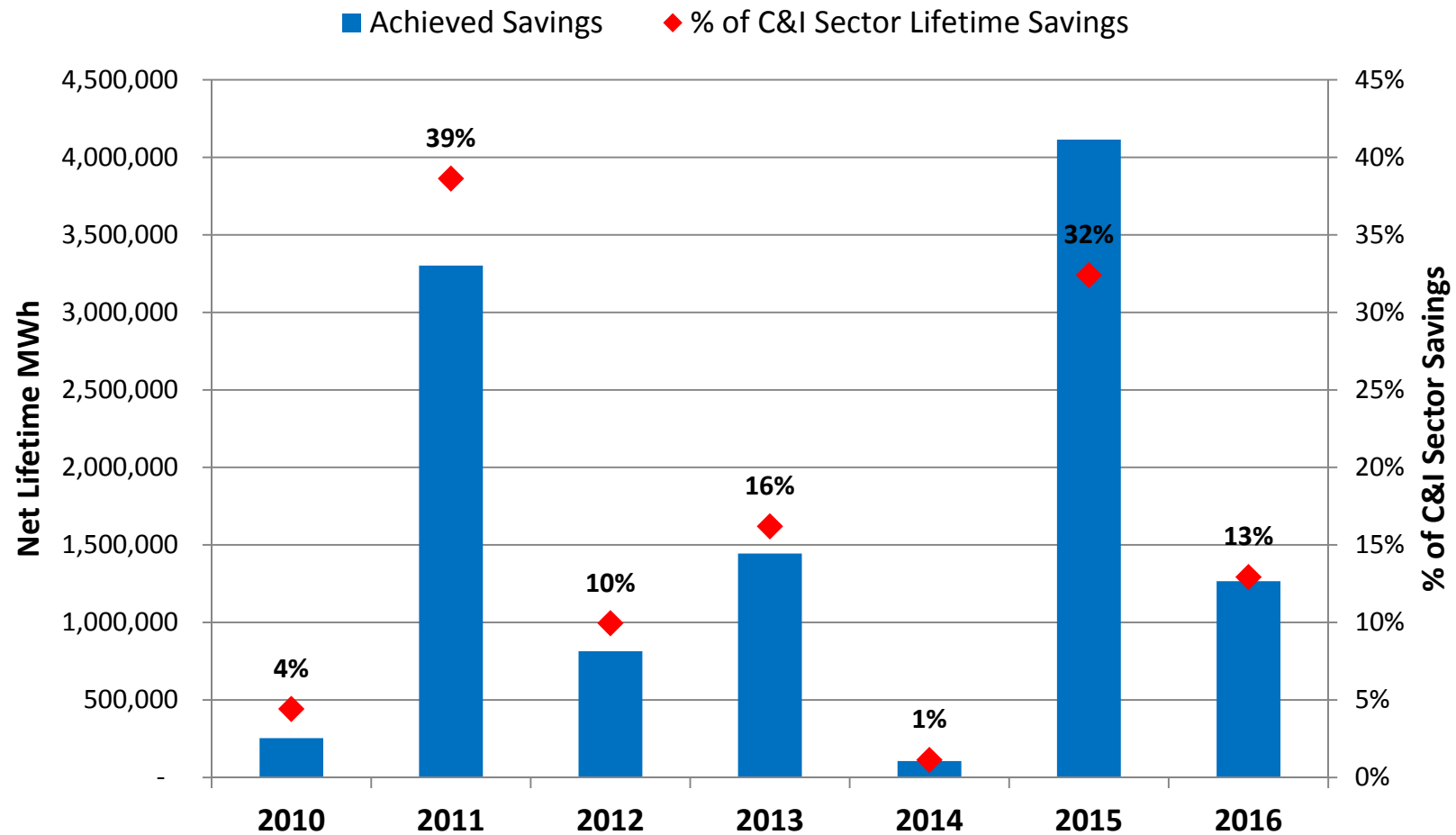
Lifetime Electric Savings by Sector (MWh)



FACTORS IMPACTING 2016 ELECTRIC RESULTS

- ▶ **Less CHP in 2016 (closer to “average” CHP) compared to 2015 (very high CHP)**
- ▶ **CHP is a long life measure, which can impact statewide and individual PA lifetime savings**
- ▶ **C&I lighting measure lives and lifetime savings should increase in 2017-18 as the market continues transition from screw-in to linear LEDs**
- ▶ **Residential lifetime savings were lower than planned due to revised forecasts of future adoption of LEDs**
- ▶ **Residential spending was lower than planned**
 - Spending at Plan level would have achieved more lifetime savings, though it isn't clear whether the lifetime savings goal would have been achieved if PAs had spent full amount (Res. lifetime savings and spending both at 82% of Plan)

CHP SAVINGS AND SHARE OF C&I SECTOR VARIES GREATLY; CHP LOWER IN 2016 VS 2015



LOWER RESIDENTIAL LIFETIME SAVINGS DRIVEN BY REDUCED LIGHTING LIFETIMES

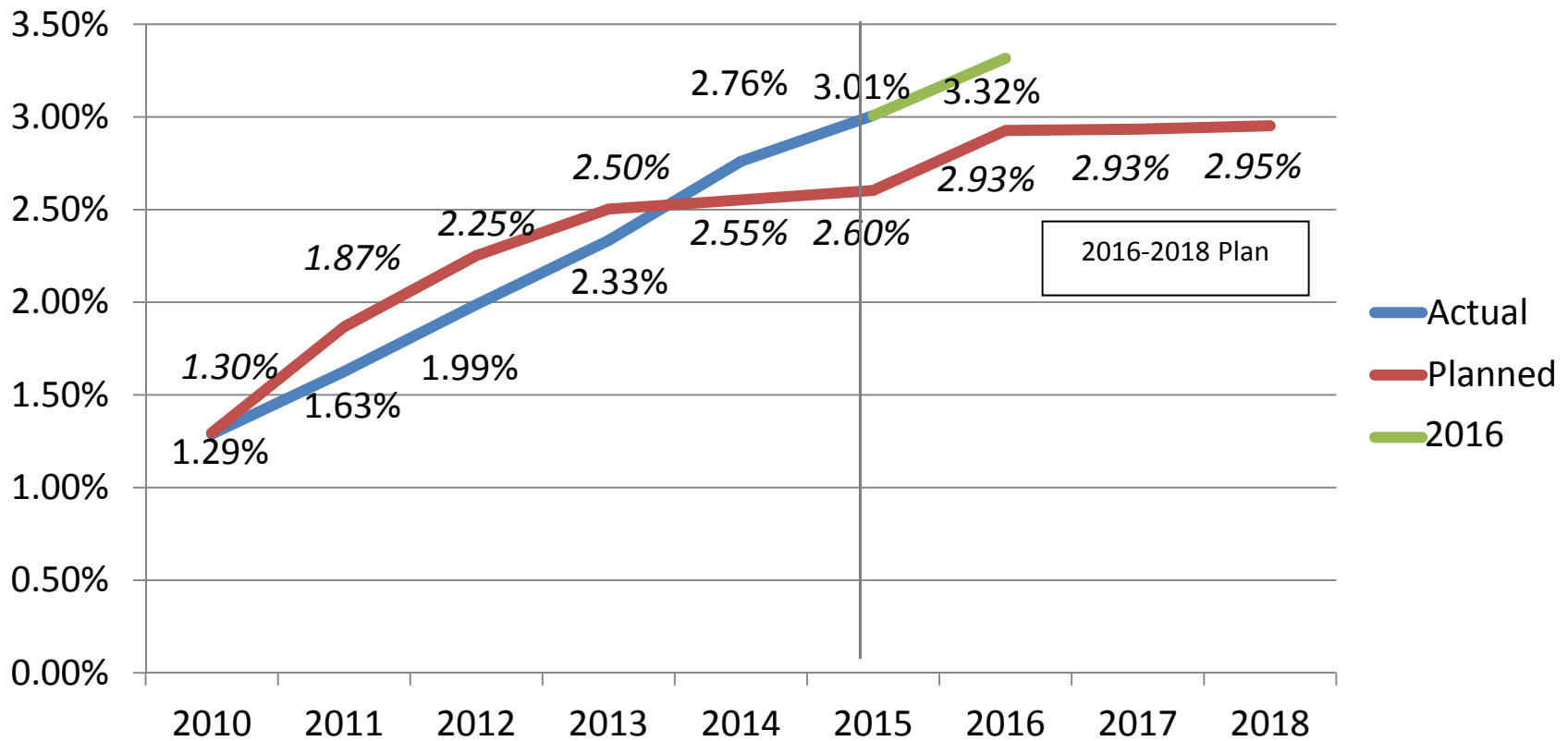
► 2016 residential annual savings goal met, lifetime not met

2016 Residential Savings Period	% of Annual Savings Goal	% of Lifetime Savings Goal
Q2	39%	41%
Q3	69%	52%
Q4	106%	82%

- **PAs anticipated reductions in lighting measure life in Q3**
 - Standard LEDs: 8 years → 6 years
 - Reflector LEDs: 17 years → 6 years
- **March 2017 analysis of lighting market trends generally supports PAs' 2016 year-end/Q4 estimates**
 - Final 2016 residential lifetime savings likely to be at or below year-end/Q4 results

ELECTRIC SAVINGS AS A % OF SALES CONTINUED TO RISE IN 2016 AND REMAINED OVER 3%

Annual Electric Savings as a % of Sales



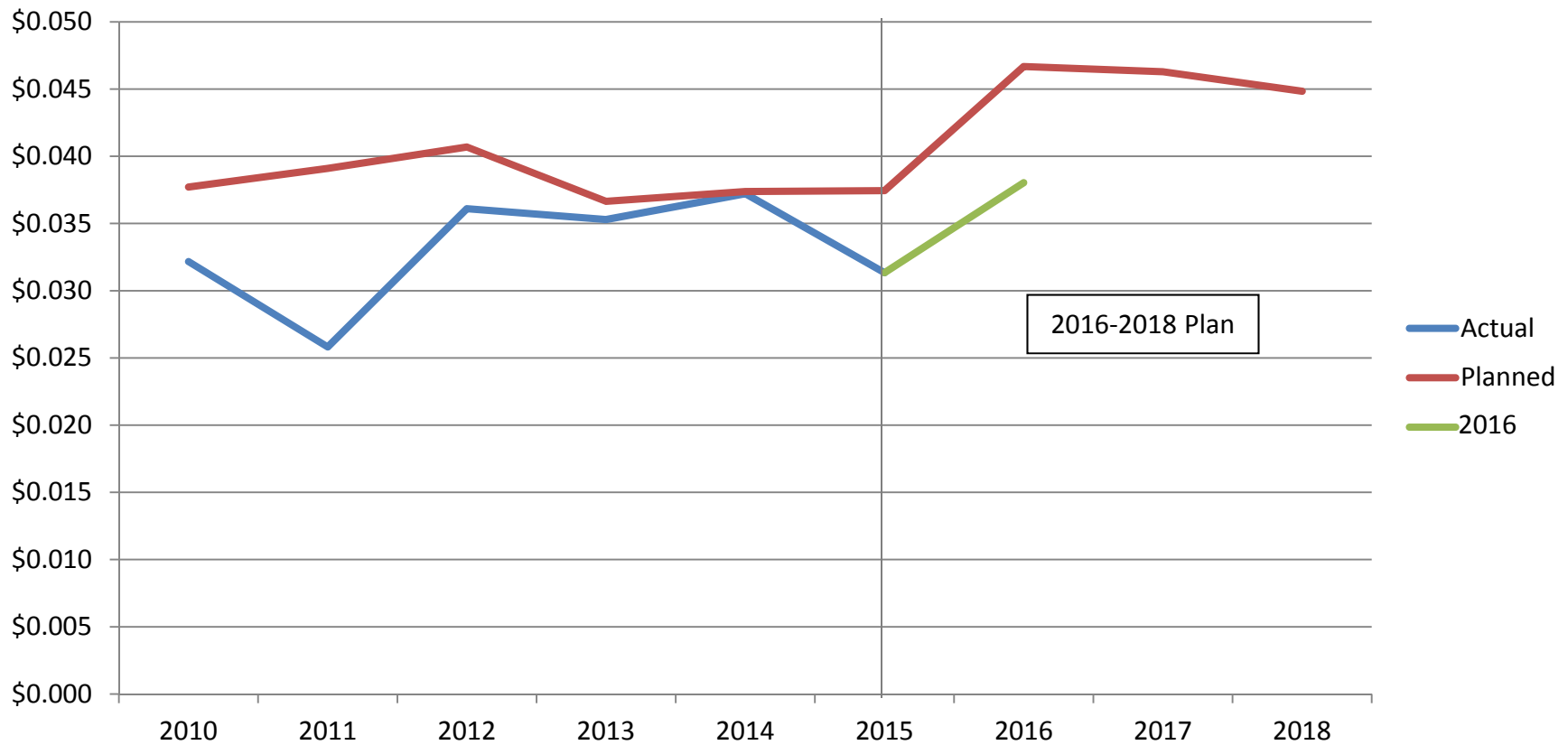
ANNUAL ELECTRIC SAVINGS AS A % OF SALES – VARIES BY PA

	Cape Light Compact	Eversource (NSTAR)	Eversource (WMECo)	National Grid	Unitil	Statewide
Goal	2.95%	2.86%	3.39%	2.93%	1.88%	2.93%
Residential	1.98%	3.78%	5.28%	4.32%	1.41%	4.04%
Low Income	2.57%	3.00%	1.79%	1.64%	0.37%	1.93%
Commercial	4.15%	2.50%	2.43%	2.18%	2.45%	2.41%
2016	3.13%	3.31%	3.21%	3.39%	1.92%	3.32%
Residential	3.48%	3.86%	4.90%	4.56%	2.49%	4.26%
Low Income	2.92%	3.91%	2.64%	1.57%	0.50%	2.19%
Commercial	2.72%	3.08%	2.25%	2.83%	1.99%	2.90%
% of Goal	106%	116%	95%	116%	102%	113%
Residential	175%	102%	93%	105%	177%	106%
Low Income	114%	130%	147%	96%	135%	114%
Commercial	65%	123%	92%	130%	81%	120%

- Annual savings as % of electric sales is one metric, but not the only metric
- Other metrics include lifetime savings (but what is basis for comparison), MMBtu, MMBtu per \$1 spent, benefits per \$1 spent, and others

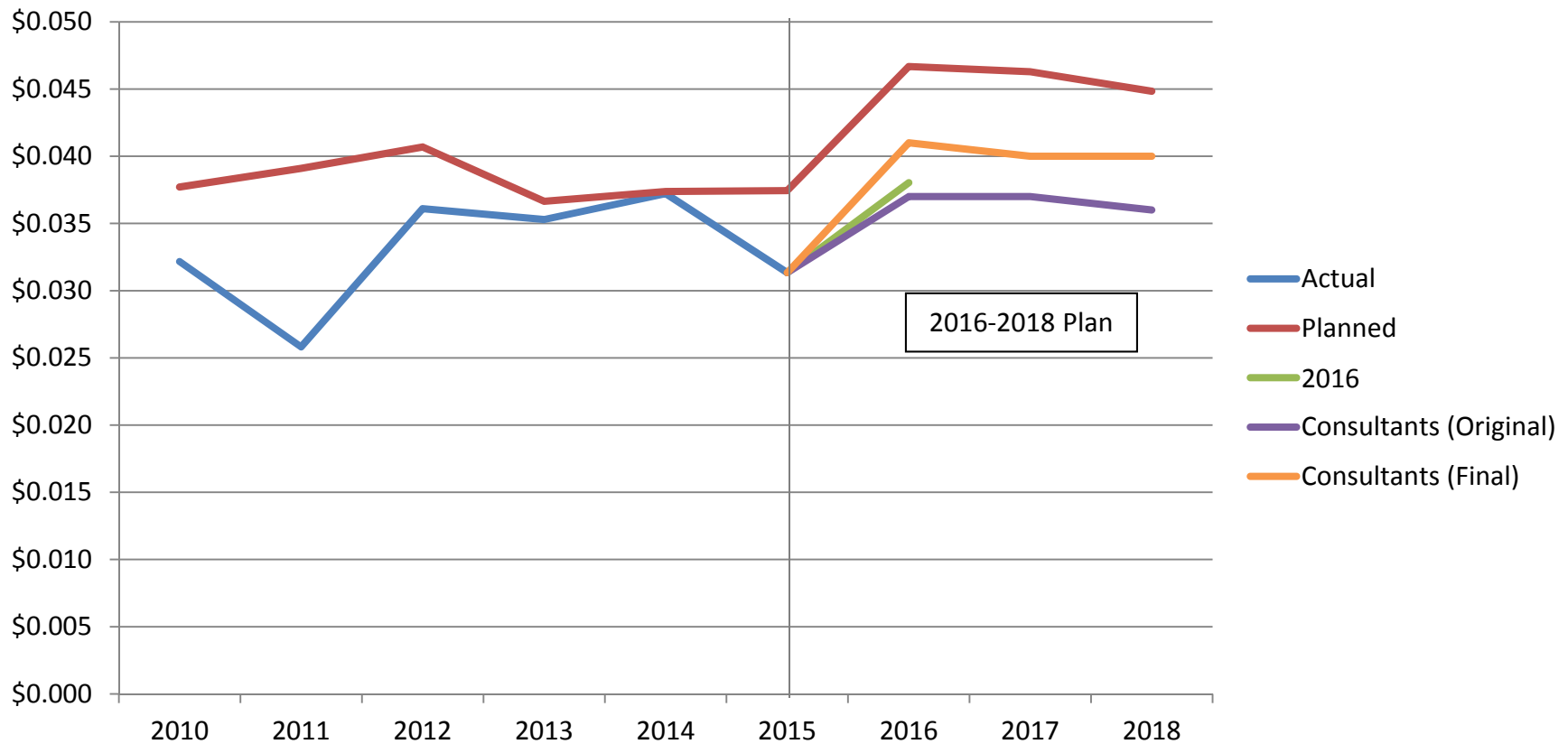
2016 ELECTRIC COST TO ACHIEVE INCREASED FROM 2015 LEVELS, BUT WAS SIGNIFICANTLY LOWER THAN PLANNED

Electric Costs to Achieve (\$/Lifetime kWh)



ACTUAL 2016 Q4 ELECTRIC COST TO ACHIEVE WAS CLOSE TO CONSULTANT TEAM'S ORIGINAL ESTIMATE AND LESS THAN FINAL CONSULTANT RECOMMENDATION

Electric Costs to Achieve (\$/Lifetime kWh)



ELECTRIC LIFETIME COSTS TO ACHIEVE – VARIES BY PA

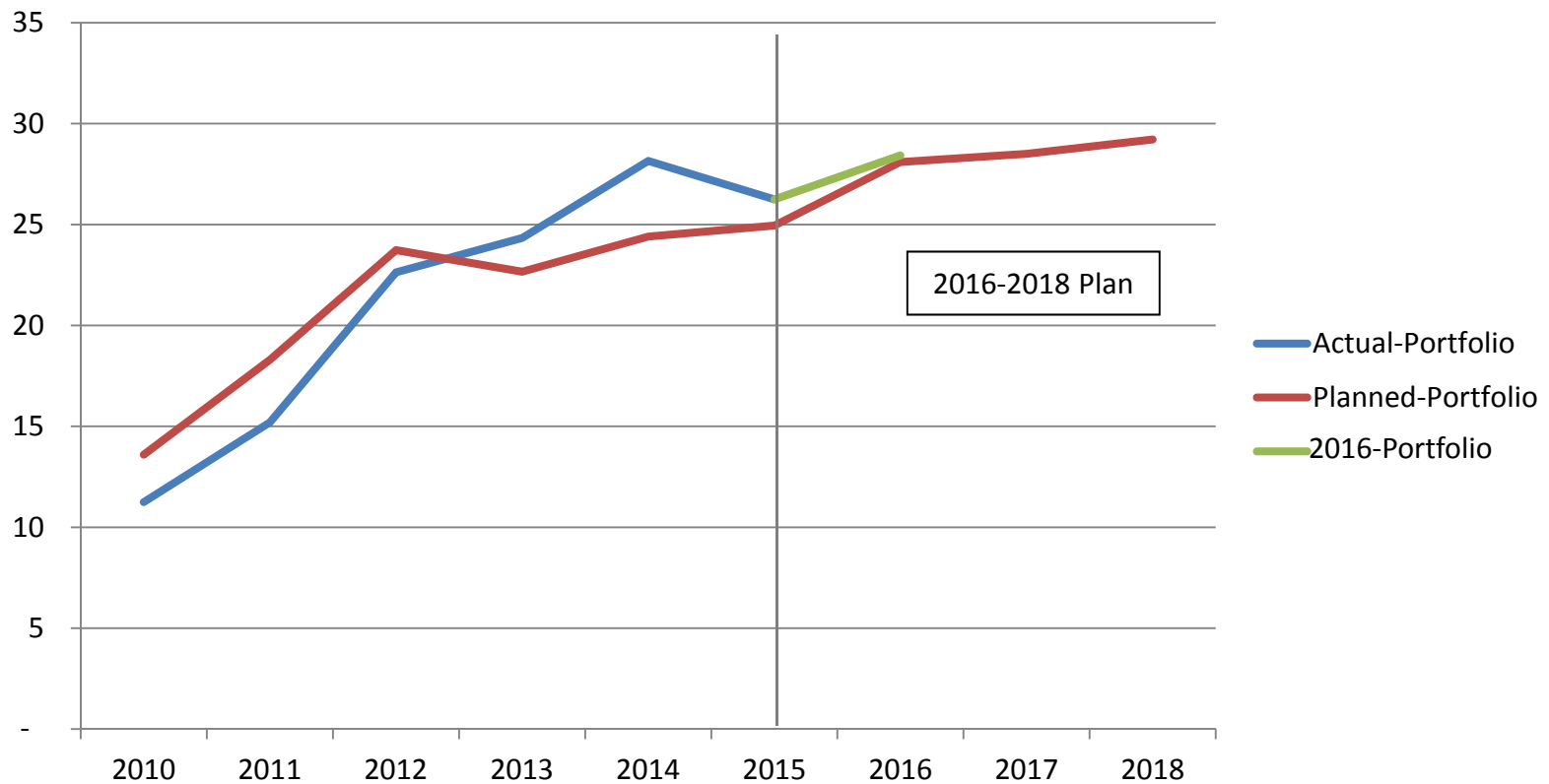
	Cape Light Compact	Eversource	National Grid	Unitil	Statewide
Goal	\$0.070	\$0.043	\$0.049	\$0.050	\$0.047
Residential	\$0.101	\$0.056	\$0.051	\$0.103	\$0.056
Low Income	\$0.242	\$0.207	\$0.173	\$0.245	\$0.191
Commercial	\$0.041	\$0.031	\$0.039	\$0.034	\$0.035
2016	\$0.046	\$0.034	\$0.042	\$0.057	\$0.038
Residential	\$0.051	\$0.055	\$0.056	\$0.085	\$0.055
Low Income	\$0.140	\$0.138	\$0.157	\$0.262	\$0.148
Commercial	\$0.031	\$0.024	\$0.031	\$0.040	\$0.027
% of Goal	66%	79%	86%	113%	81%
Residential	51%	98%	109%	83%	99%
Low Income	58%	67%	91%	107%	77%
Commercial	76%	76%	79%	116%	77%



Gas Results

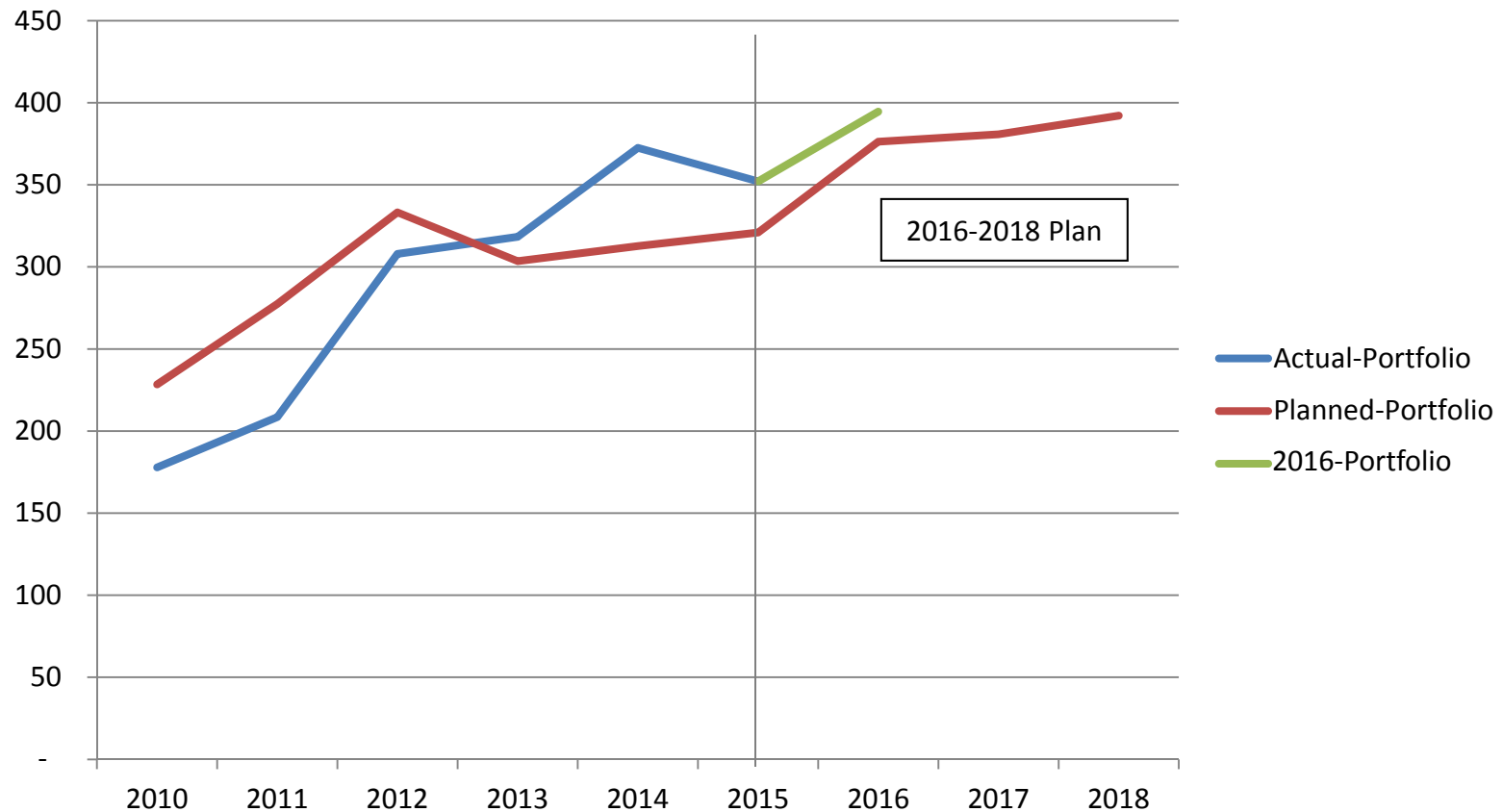
2016 ANNUAL GAS SAVINGS INCREASED OVER 2015 LEVELS AND WERE SLIGHTLY HIGHER THAN PLANNED

Gas Annual Savings
(Million Therms)



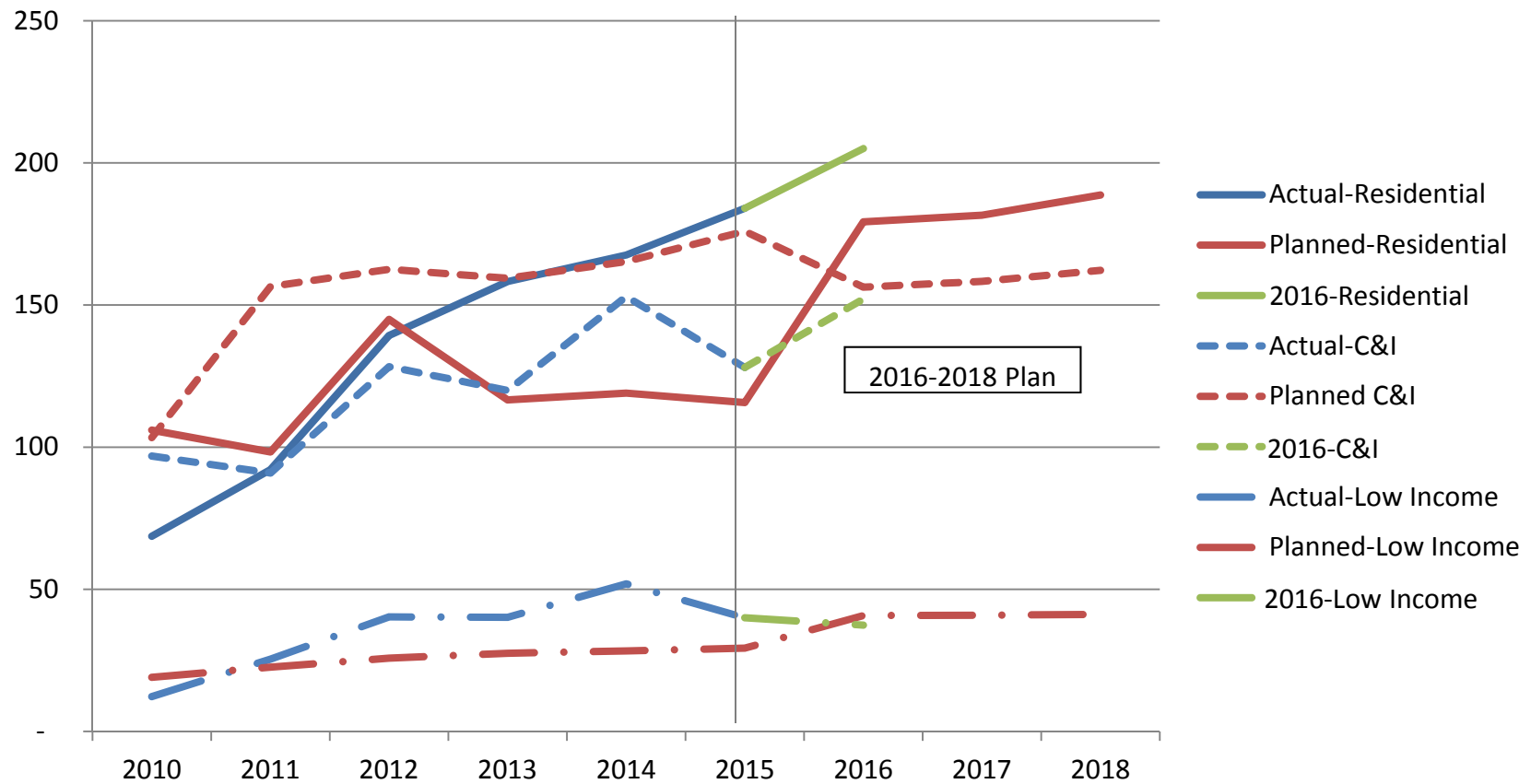
2016 LIFETIME GAS SAVINGS INCREASED OVER 2015 LEVELS AND WERE HIGHER THAN PLANNED

Gas Lifetime Savings (Million Therms)



GAS SAVINGS PATTERNS BY SECTOR HAVE VARIED BY YEAR; 2016 RESIDENTIAL AND C&I BOTH HIGHER

Gas Lifetime Savings (Million Therms)

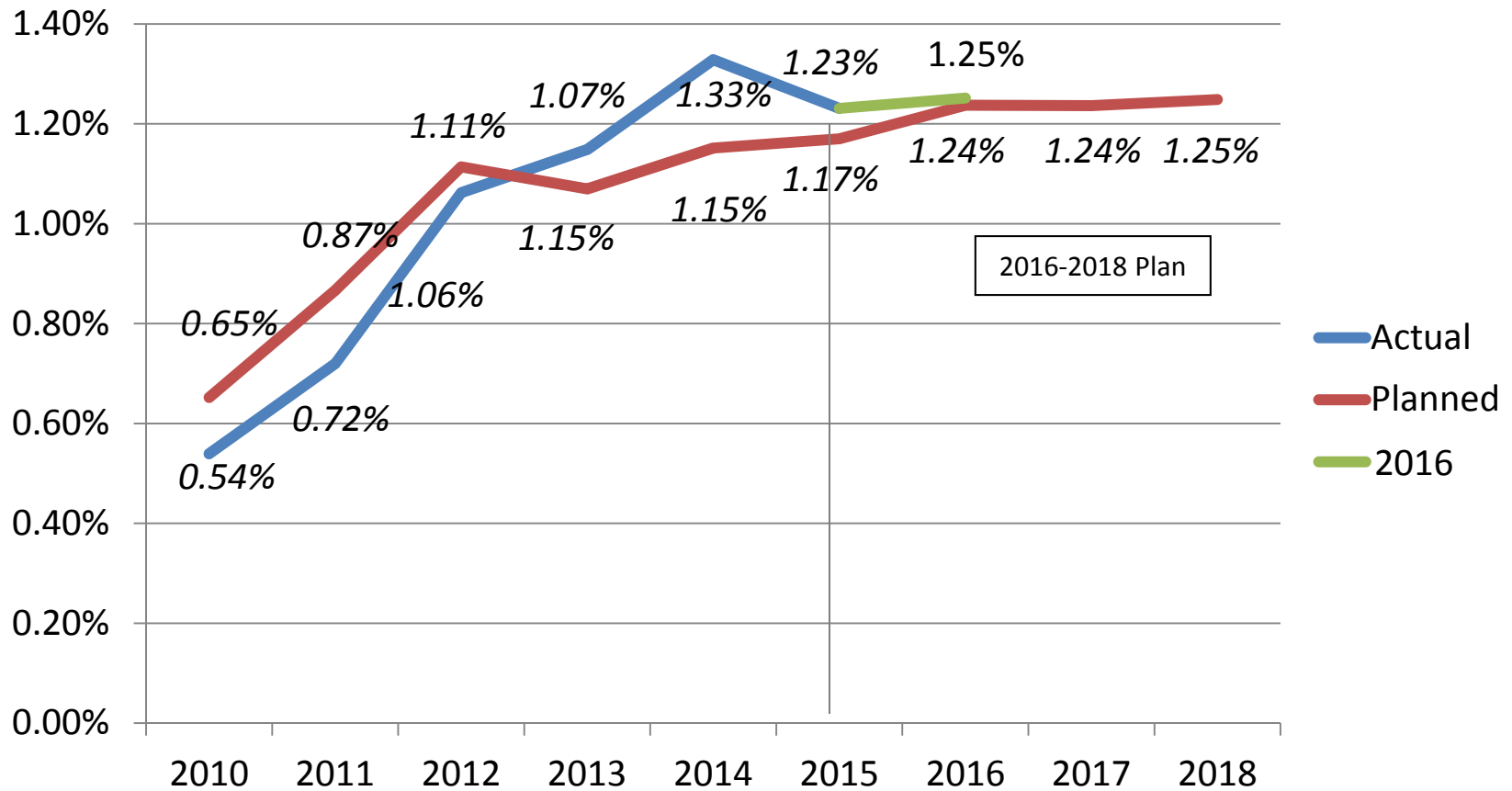


FACTORS IMPACTING 2016 GAS SAVINGS

- ▶ **C&I gas savings were about as anticipated, and C&I gas lifetime savings were close to planned for the first time since 2010**
- ▶ **PAs exceeded Residential savings goals while underspending budget**
- ▶ **Low Income savings were slightly lower than planned**

2016 ANNUAL GAS SAVINGS AS A % OF SALES WERE SLIGHTLY HIGHER THAN 2015, AND SLIGHTLY ABOVE PLANNED

Annual Gas Savings as a % of Sales



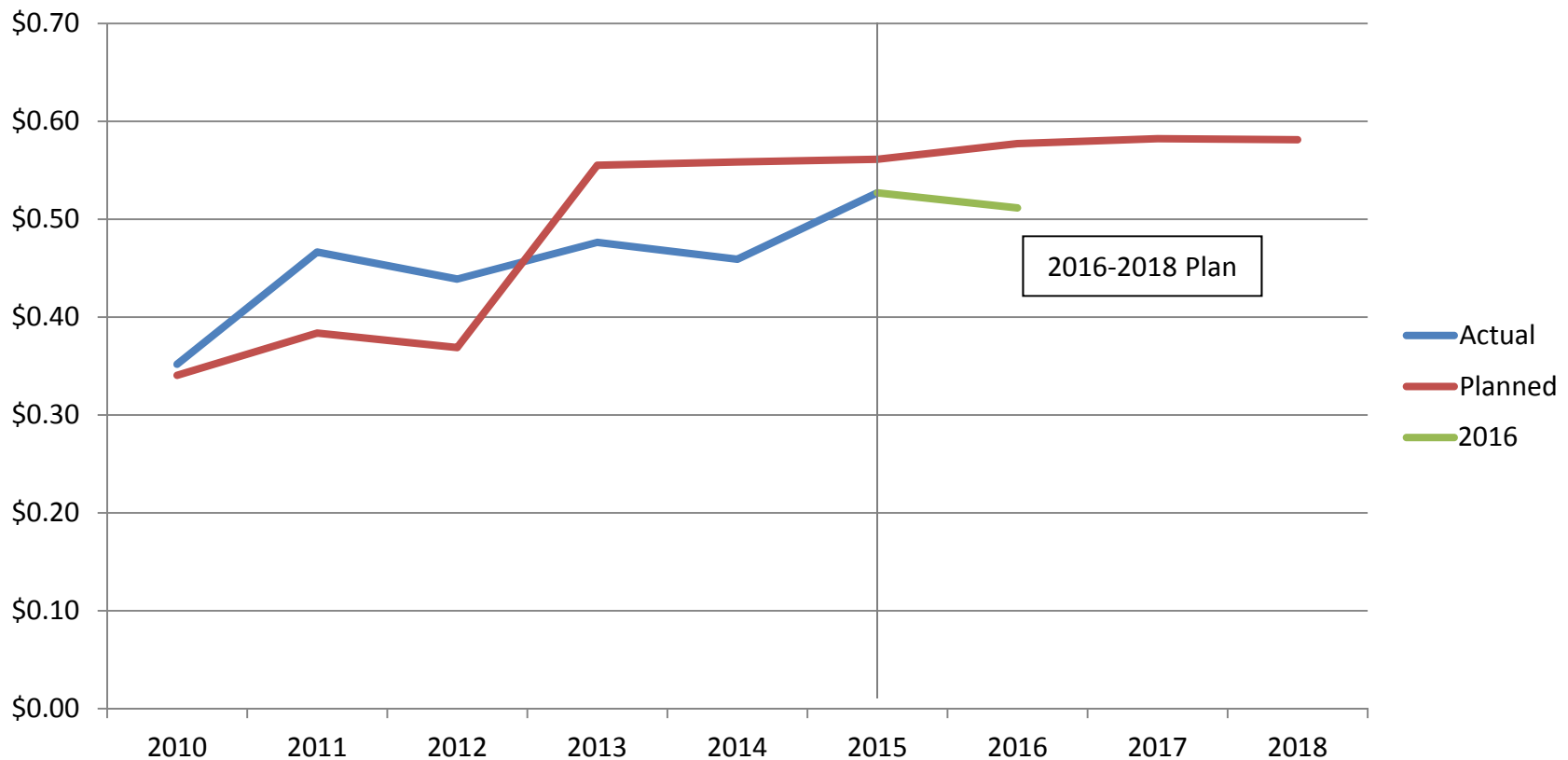
ANNUAL GAS SAVINGS AS A % OF SALES – VARIES BY PA

	Berkshire	CMA	Eversource	Liberty Utilities	National Grid	Unitil	Statewide
Goal	0.77%	1.29%	1.28%	0.53%	1.28%	0.90%	1.24%
Residential	1.04%	0.95%	1.38%	0.54%	1.52%	0.86%	1.35%
Low Income	0.77%	1.12%	1.57%	0.42%	3.04%	0.82%	1.86%
C&I	0.61%	2.08%	1.20%	0.54%	0.88%	0.95%	1.05%
2016	0.58%	1.26%	1.30%	0.67%	1.31%	0.62%	1.25%
Residential	0.76%	1.21%	1.41%	0.82%	1.52%	0.76%	1.40%
Low Income	0.52%	1.06%	1.99%	0.46%	2.52%	0.97%	1.72%
Commercial	0.48%	1.44%	1.18%	0.56%	0.98%	0.46%	1.04%
% of Goal	75%	98%	102%	127%	103%	68%	101%
Residential	73%	127%	102%	151%	100%	88%	104%
Low Income	68%	95%	127%	108%	83%	118%	93%
C&I	79%	69%	98%	105%	111%	49%	99%

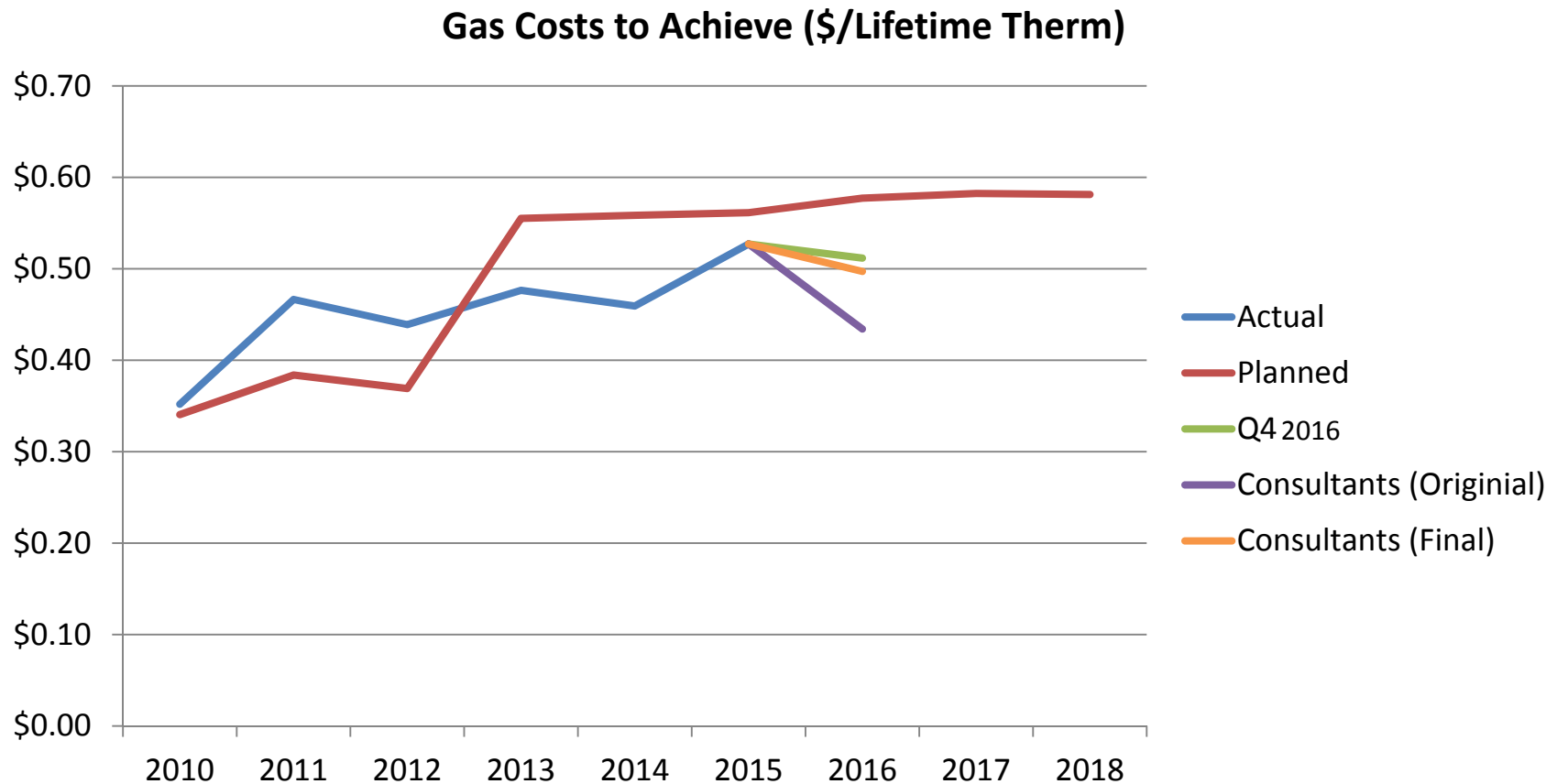
- Annual savings as % of gas sales is one metric, but not the only metric

2016 GAS COSTS TO ACHIEVE DECLINED OVER 2015 LEVELS AND WERE LOWER THAN PLANNED

Statewide Gas Costs to Achieve (\$/Lifetime Therm)



2016 YEAR-END/Q4 GAS COST TO ACHIEVE WAS SLIGHTLY HIGHER THAN CONSULTANT TEAM'S FINAL RECOMMENDATION



GAS LIFETIME COSTS TO ACHIEVE – VARIES BY PA

	Berkshire	CMA	Eversource	Liberty Utilities	National Grid	Unitil	Statewide
Goal	\$0.52	\$0.49	\$0.53	\$0.61	\$0.63	\$0.51	\$0.58
Residential	\$0.75	\$0.54	\$0.81	\$0.61	\$0.75	\$0.82	\$0.72
Low Income	\$1.21	\$0.97	\$1.34	\$1.26	\$1.05	\$1.13	\$1.09
Commercial	\$0.22	\$0.28	\$0.23	\$0.40	\$0.32	\$0.24	\$0.28
2016	\$0.55	\$0.55	\$0.45	\$0.55	\$0.52	\$0.72	\$0.51
Residential	\$0.71	\$0.56	\$0.54	\$0.44	\$0.60	\$0.81	\$0.58
Low Income	\$1.23	\$1.04	\$0.99	\$1.15	\$1.07	\$1.01	\$1.05
Commercial	\$0.30	\$0.32	\$0.26	\$0.65	\$0.29	\$0.44	\$0.44
% of Goal	107%	113%	85%	90%	82%	140%	89%
Residential	95%	104%	67%	73%	80%	98%	81%
Low Income	102%	107%	74%	91%	102%	89%	96%
Commercial	132%	114%	110%	162%	91%	184%	156%

THANK YOU

Questions?

▶ **March 15, 2017**

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Residential and Low Income Results

2016 RESIDENTIAL ELECTRIC AND GAS SUMMARY

Electric	Residential		
		Amount	Percent of Goal
	Annual Savings (MWh)	662,469	106%
	Lifetime Savings (MWh)	3,861,352	82%
	Summer (kW)	99,534	119%
	Benefits (\$)	\$ 749,554,930	91%
	Expenditures (\$)	\$ 213,583,270	82%

Gas	Residential		
		Amount	Percent of Goal
	Annual Savings (Therms)	15,736,222	104%
	Lifetime Savings (Therms)	205,051,238	114%
	Benefits (\$)	\$ 344,046,574	113%
	Expenditures (\$)	\$ 118,796,291	92%

2016 RESIDENTIAL SAVINGS BY INITIATIVE

Electric	Sector/Initiative	Annual		Lifetime	
		Savings (MWh)	Percent of Goal	Savings (MWh)	Percent of Goal
	Residential Sector	662,469	106%	3,861,352	82%
	Behavior/Feedback	138,284	107%	138,674	107%
	Consumer Products	12,424	99%	103,889	101%
	Heating & Cooling Equipment	8,854	79%	126,666	82%
	Lighting	357,549	98%	2,205,628	68%
	Multi-Family Retrofit	11,224	120%	103,660	112%
	New Construction	17,339	222%	237,110	206%
	Home Energy Services	116,794	126%	945,725	108%

Gas	Sector/Initiative	Annual		Lifetime	
		Savings (Therms)	Percent of Goal	Savings (Therms)	Percent of Goal
	Residential Sector	15,736,222	104%	205,051,238	114%
	Behavior/Feedback	5,540,470	92%	5,540,470	92%
	Heating & Cooling Equipment	2,556,646	98%	43,713,139	96%
	Multi-Family Retrofit	591,111	162%	9,130,470	153%
	New Construction	2,211,422	187%	51,832,269	185%
	Home Energy Services	4,836,574	98%	94,834,891	101%

2016 LOW INCOME ELECTRIC AND GAS SUMMARY

Electric	Low Income		
		Amount	Percent of Goal
	Annual Savings (MWh)	46,209	114%
	Lifetime Savings (MWh)	396,234	112%
	Summer (kW)	5,662	117%
	Benefits (\$)	\$ 126,206,965	109%
	Expenditures (\$)	\$ 58,472,311	86%

Gas	Low Income		
		Amount	Percent of Goal
	Annual Savings (Therms)	1,901,536	93%
	Lifetime Savings (Therms)	37,398,146	92%
	Benefits (\$)	\$ 74,883,310	96%
	Expenditures (\$)	\$ 39,267,844	88%

2016 LOW INCOME SAVINGS BY INITIATIVE

Electric	Sector/Initiative	Annual		Lifetime	
		Savings (MWh)	Percent of Goal	Savings (MWh)	Percent of Goal
	Low Income Sector	46,209	114%	396,234	112%
	Multi-Family Retrofit	30,143	124%	245,688	124%
	Single Family Retrofit	16,067	99%	150,545	96%

Gas	Sector/Initiative	Annual		Lifetime	
		Savings (Therms)	Percent of Goal	Savings (Therms)	Percent of Goal
	Low Income Sector	1,901,536	93%	37,398,146	92%
	Multi-Family Retrofit	1,188,641	92%	23,150,813	90%
	Single Family Retrofit	712,895	94%	14,247,333	95%



C&I Results

2016 C&I ELECTRIC AND GAS SUMMARY

Electric	C&I		
		Amount	Percent of Goal
Annual Savings (MWh)	847,341	120%	
Lifetime Savings (MWh)	9,798,824	126%	
Summer (kW)	131,943	128%	
Benefits (\$)	\$ 1,379,203,628	125%	
Expenditures (\$)	\$ 262,589,271	97%	

Gas	C&I		
		Amount	Percent of Goal
Annual Savings (Therms)	10,786,246	99%	
Lifetime Savings (Therms)	152,073,861	97%	
Benefits (\$)	\$ 166,000,011	101%	
Expenditures (\$)	\$ 43,761,874	99%	

2016 C&I SAVINGS BY INITIATIVE

Electric	Sector/Initiative	Annual		Lifetime	
		Savings (MWh)	Percent of Goal	Savings (MWh)	Percent of Goal
	C&I Sector	847,341	120%	9,798,824	126%
	New Buildings & Major Renovations	50,619	82%	817,395	82%
	Initial Purchase & End of Useful Life	78,720	166%	1,281,711	165%
	Existing Building Retrofit	338,317	118%	4,528,210	122%
	Multifamily Retrofit	7,389	81%	44,337	52%
	Small Business	110,645	110%	1,345,528	129%
	Upstream Lighting	261,650	131%	1,781,643	152%

Gas	Sector/Initiative	Annual		Lifetime	
		Savings (Therms)	Percent of Goal	Savings (Therms)	Percent of Goal
	C&I Sector	10,786,246	99%	152,073,861	97%
	New Buildings & Major Renovations	2,576,281	95%	47,978,778	98%
	Initial Purchase & End of Useful Life	2,207,564	196%	35,885,723	162%
	Existing Building Retrofit	5,370,611	84%	59,799,611	80%
	Multifamily Retrofit	330,797	91%	4,885,875	86%
	Small Business	300,993	78%	3,523,873	77%