

Appendix P
Commercial and Industrial Lighting Opportunity

Staff Testimony

5/25/2024

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**By Laura Martel
May 25, 2024**

Introduction

1. What is the purpose of this testimony?

This testimony describes the Efficiency Maine Trust’s (the Trust’s or EMT’s) update to the Commercial Lighting Analysis conducted for Triennial Plan V.¹

2. Who is introducing this testimony?

The testimony is provided by Laura Martel, Research and Evaluation Manager, Senior at the Trust.

3. Ms. Martel, please state your name, title, and business addresses.

My name is Laura Martel, and I am employed by EMT as the Senior Research and Evaluation Manager. My business address is 168 Capitol Street, Suite 1, Augusta, ME 04330.

4. Please summarize your educational and professional experience.

I have a Bachelor of Science degree in Ocean Engineering from Florida Atlantic University and a Master of Engineering degree in Acoustics from Pennsylvania State University. I have over 24 years of technical leadership, project management, and research and evaluation experience. I was hired by EMT in 2014 to design and implement impact and process evaluations for energy efficiency programs. Prior to joining EMT, I was with Lockheed Martin in Manassas, Virginia, where I served in various engineering, management, and technical leadership roles of increasing responsibility.

Background

5. Why was a C&I lighting study undertaken as part of the Trust’s research for Triennial Plan V (TPV)?

A baseline study of non-residential lighting, completed in 2018, estimated a cost-effective lighting savings opportunity of 380 million kWh/year in Maine (Cadmus, *2018 State of Commercial & Industrial Lighting in Maine*, September 14, 2018). Having completed four years of program activity since that time, the Trust set out to understand what opportunity remained and what it might have to do differently to acquire it. This study, *State of Commercial & Industrial Lighting in Maine – 2021 Update*, was conducted by Ridgeline Analytics.

6. How was the original research conducted?

The authors of the 2018 study estimated the cost-effective, non-residential, efficient lighting opportunity in Maine by developing a statistically significant sample of commercial and industrial (C&I) lighting in the State of Maine. They then conducted on-site surveys noting fixture type, wattage, and

¹ Efficiency Maine Trust, “Commercial Lighting Baseline,” Triennial Plan for Fiscal Years 2023–2025, October 12, 2021, Appendix E.

square footage to determine the current baseline characteristics of C&I lighting in the State. This opportunity assessment also took into account price trends, technology updates, and changes in the market. The results of the site-specific findings were extrapolated by facility type and square footage to a statewide opportunity.

The 2021 update by Ridgeline Energy Analytics extended the 2018 analysis, taking the intervening program activity and market changes into account. The 2021 study estimated the remaining potential for lighting upgrades by studying program activity over time, factoring in the perspective of lighting industry representatives and subtracting recent program activity. Interviews with contractors, building owners, distributors, and manufacturers provided additional context on the remaining opportunity and how it might be acquired.

6. How was the research conducted for the Triennial Plan VI period?

Trust staff set out to understand if a new study was needed to quantify lighting opportunity or if the existing 2021 study might be applied to the Triennial Plan VI period. To determine the need for updated information, Staff compared the 2021 study’s predictions against FY2023 program activity data. Staff found that the 2021 study prediction was very close to actual program activity such that the existing study could be applied to the Triennial Plan VI period.

Findings

7. What did the 2021 study find about the Trust’s lighting program activity since the 2018 study ?

The 2021 study backcasted opportunity to the beginning of the transition to LEDs and found that roughly 28% of commercial lighting remains to be upgraded. The 2021 study estimated that the Trust could acquire roughly the same percentage of remaining opportunity each year resulting in declining activity year-over-year.

8. How did program activity in FY2023 compare to that projected in the 2021 memo?

Program activity targeted at small businesses was less than predicted, while program activity in the broader C&I prescriptive lighting initiative was higher than predicted. The total between the two was very close to that predicted (within 1% of the 2021 prediction). Distributor lighting participation came in below the prediction by 17%. In total, FY2023 program activity for lighting within the C&I Prescriptive Initiatives was 3% lower than the 2021 prediction.

FY 2023 electric savings (kWh)			
FY2023 Forecast versus Actual Performance	Forecast	Actual	% of Forecast
C&I Prescriptive Lighting Initiative non-Small Business Targeted	12,304,663	16,081,824	131%
Small Business Targeted	5,942,407	2,299,415	39%

Subtotal: C&I Prescriptive Initiative non-Small Business Targeted + Small-Business Targeted	18,247,070	18,381,239	101%
Distributor Lighting (C&I portion)	5,033,741	4,200,415	83%
Total C&I Prescriptive Initiatives	23,280,811	22,581,654	97%

9. What is the remaining inefficient commercial lighting opportunity in Maine, and how much might the Trust expect to acquire during the TPVI period?

The 2021 study estimated that 156 million kWh/year of savings opportunity in cost-effective commercial lighting would remain at the end of FY2021. For commercial lighting, 31 million kWh/year of savings was captured in FY2022 and 24 million kWh/year was captured in FY2023 including the small participation of commercial customers in the retail lighting program. That results in 101 million kWh/year remaining at the end of FY2023. However, a portion of this remaining opportunity (~7%) is comprised of general service lamps. Those lamps are no longer part of the energy efficiency opportunity as efficient LED replacement lamps are now the baseline. That reduces the remaining opportunity to 94 million kWh/year. Projecting forward assuming 20% of the remaining opportunity is captured each year for FY2024² and FY2025, 60 million kWh/year is projected to remain at the end of FY2025. If the Trust’s programs continue to capture 20% of the remaining opportunity each year, 29 million kWh/year in savings will be acquired from the sum of three years of program activity during Triennial Plan VI.

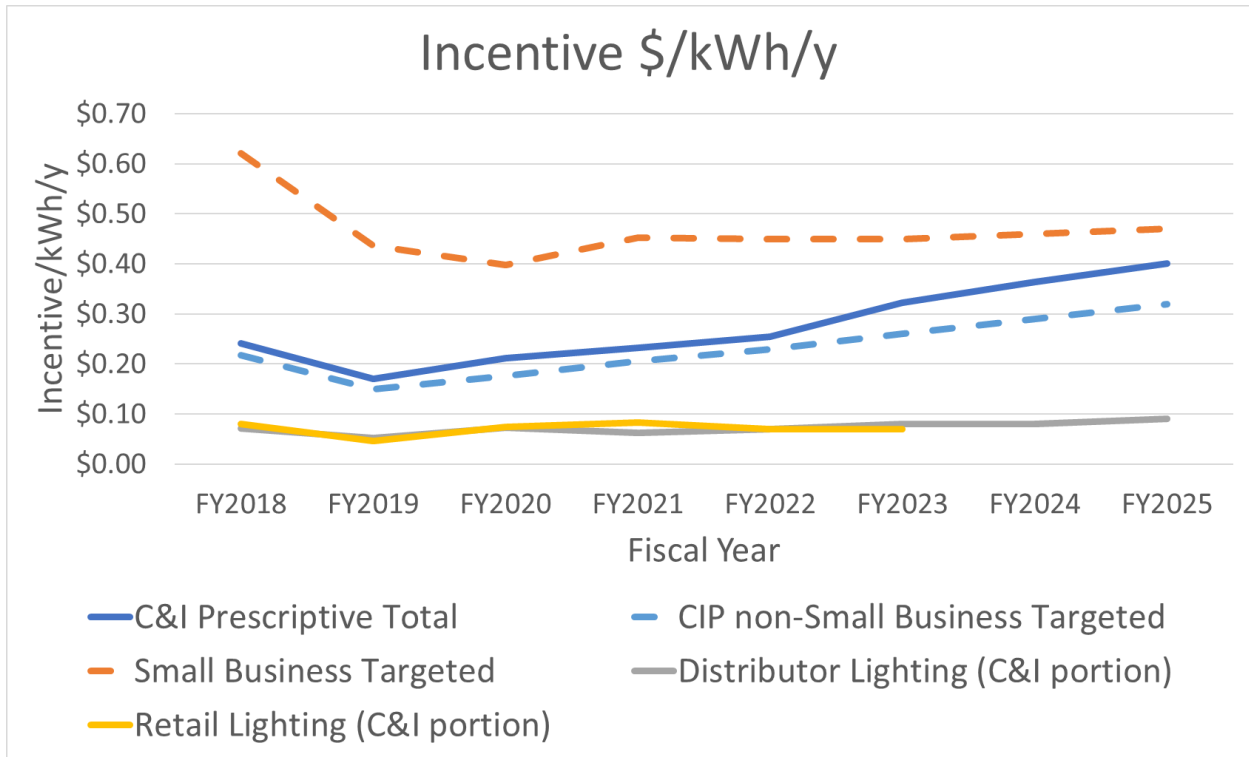
10. Will the Trust modify programs or incentives in order to acquire this remaining inefficient lighting?

The Trust anticipates that the trend of increasing incentive amounts per kWh/year of savings seen over the last few years will continue in order to acquire 20% of the remaining potential as it declines each year. The Trust plans to pursue targeted, market-based initiatives focused on specific sectors or hard-to-reach markets. These include initiatives where the Trust may offer enhanced incentives or technical support for a specific technology or customer sector. The Trust anticipates that these program changes will help acquire the remaining, hard-to-reach opportunity. The higher activity in non-small business targeted lighting projects has resulted in lower incentive levels than those predicted in the 2021 study shown in Figure 1. FY2023 had an average incentive of \$0.27/kWh/y³ compared to the \$0.32/kWh/y predicted. The Trust has assumed a 20% increase in incentives per kWh/y each year. The resulting incentive budget is \$16.4 million for FY2026-FY2028.

² At the time of writing this testimony (May 2024), FY2024 program activity has achieved 17 million kWh/y of the projected 19 million kWh/y and is expected to end the year close to the projection.

³ Note that this calculation is the total incentive divided by one year and not to be confused with the lifetime savings. The Trust finds this be a useful budget planning metric but can create confusion on the total cost to the kWh saved over the lifetime of the measure.

Figure 1: Incentive per kWh/year Savings History and Forecast from 2021 Study



11. What is the projected program activity?

The proposed incentive budgets and total program budgets (factoring in program delivery costs) for C&I Prescriptive lighting during the period covered by Triennial Plan VI are presented in Table 1.

Table 1: C&I Prescriptive Lighting Budgets

Budget Line Item	Incentive Budget (\$M)			Total Budget with Program Delivery (\$M)		
	FY2026	FY2027	FY2028	FY2026	FY2027	FY2028
C&I Lighting Total	\$5.68	\$5.45	\$5.23	\$6.68	\$6.41	\$6.16

12. Does this conclude your testimony?

Yes.