

C&I Lighting Savings Potential

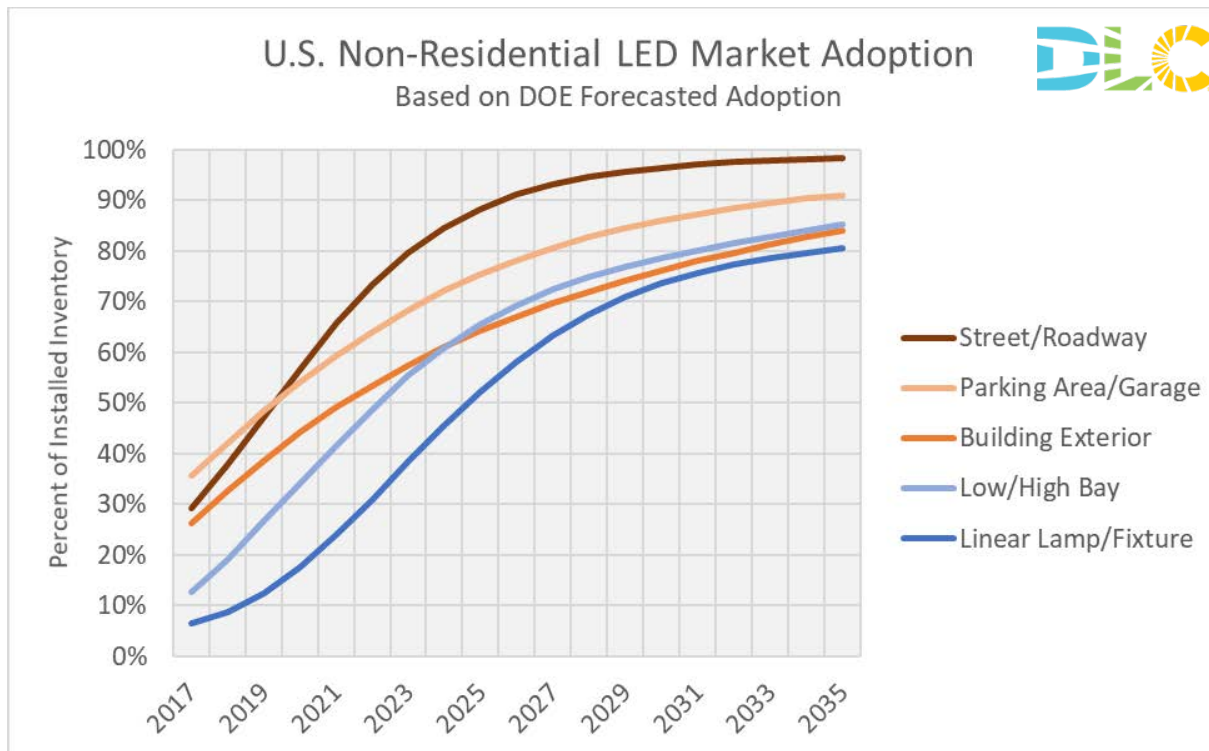
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July 17, 2018

C&I LED Adoption Forecast

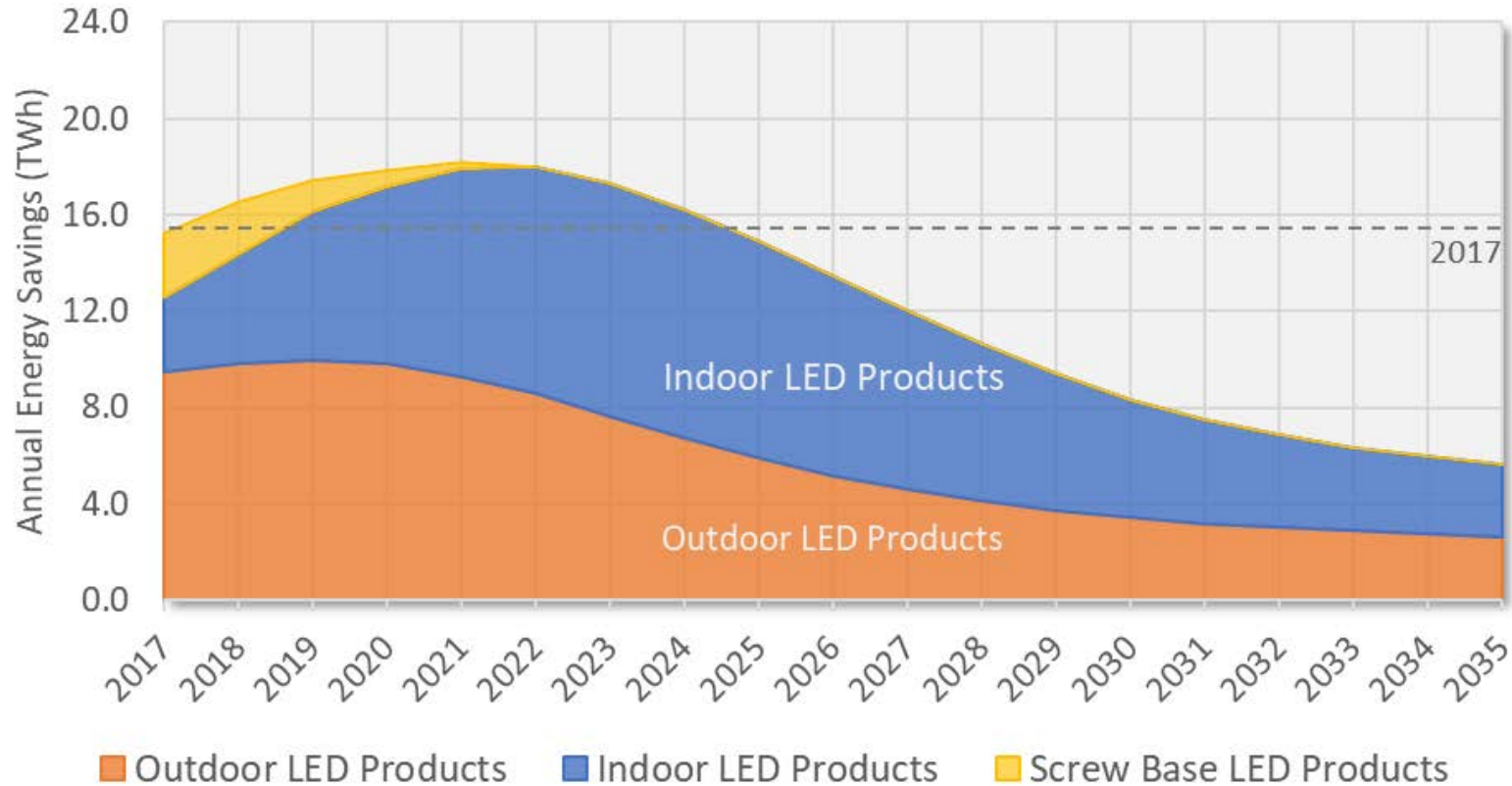


- All product categories are accelerating; none have surpassed 50%
- Outdoor products have achieved higher levels due to earlier market introductions and greater savings potential
- Linear products have achieved only 6.5% LED adoption as of 2017

C&I LED Savings Potential

U.S. Non-Residential Annual Energy Savings Potential

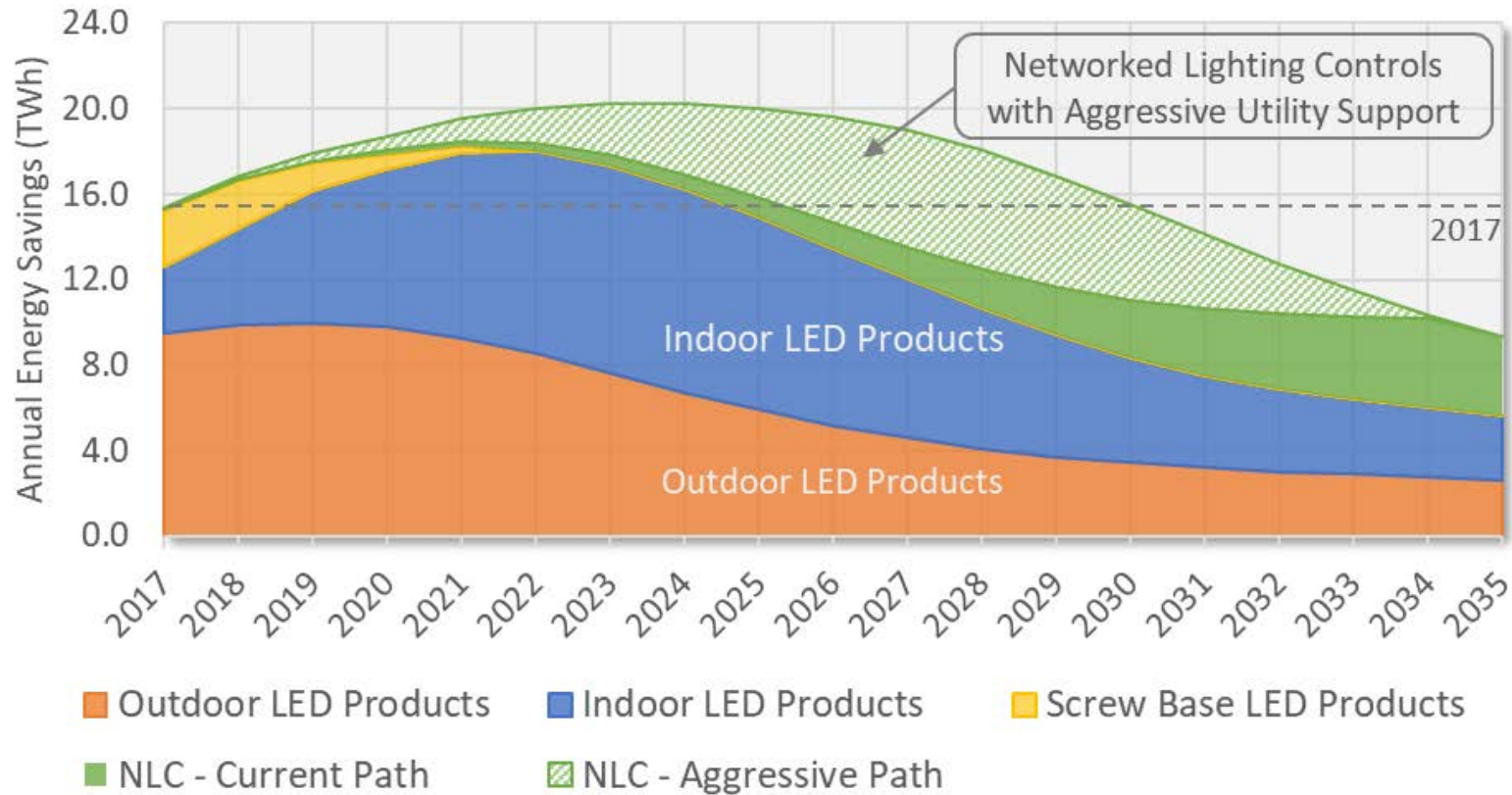
Based on DOE Stock Estimates and Forecasted Adoption & Efficacy



C&I LED Savings Potential

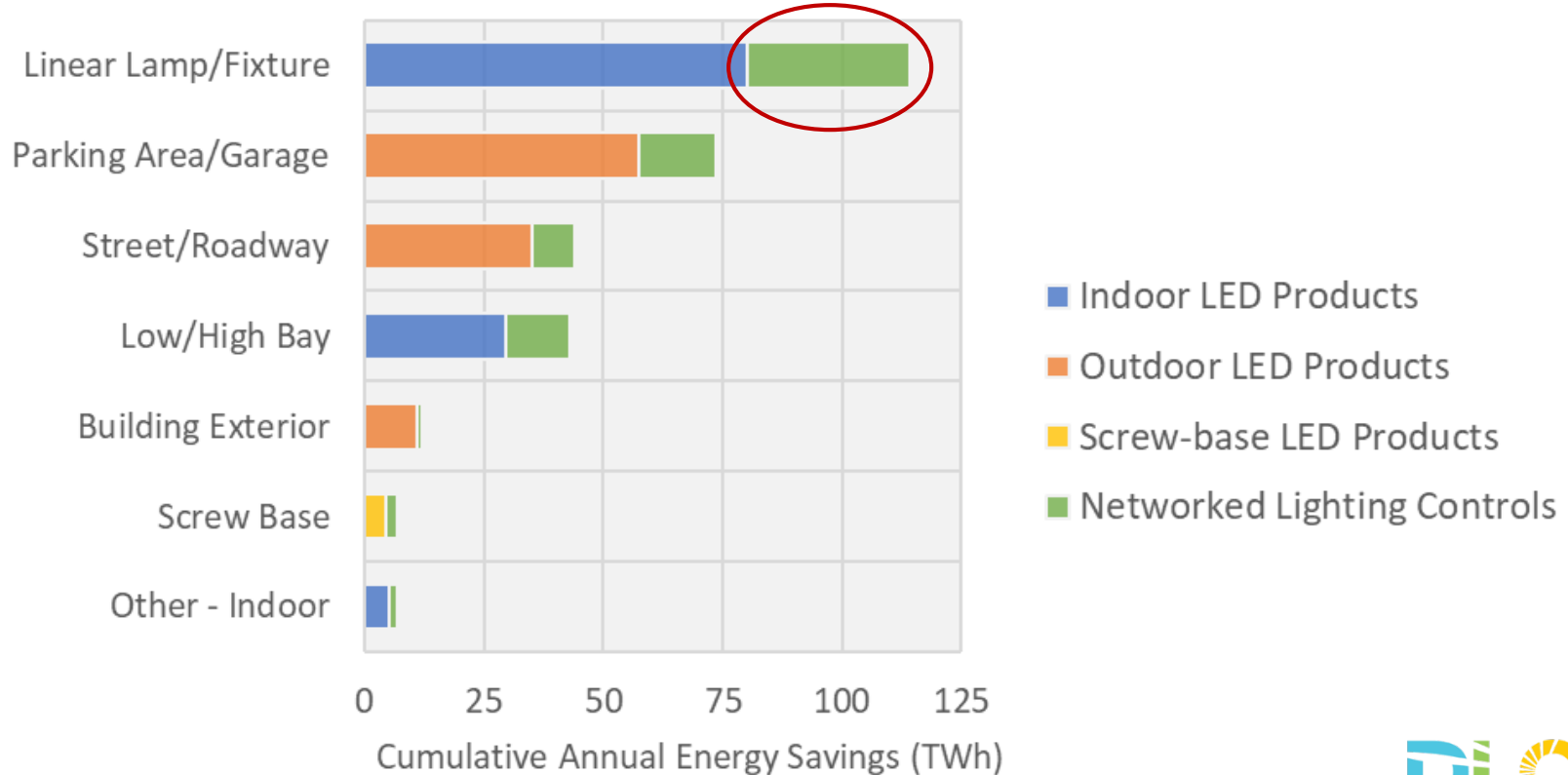
U.S. Non-Residential Annual Energy Savings Potential

Based on DOE Stock Estimates and Forecasted Adoption & Efficacy



C&I LED Savings by Category

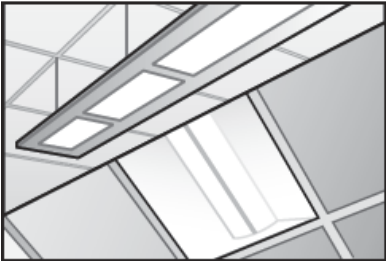
U.S. Non-Residential LED Remaining Savings (2018-2035)
Based on DOE Stock Estimates and Forecasted Adoption & Efficacy



LED Linear Upgrade Options

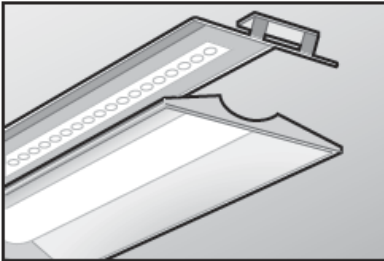
Fluorescent light replacement options:

LED fixture



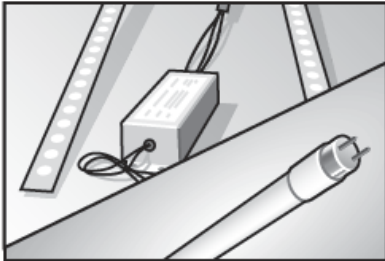
Entire fixture is replaced

LED integrated retrofit kit



Electrical and some/all optical components replaced

LED tube and linear retrofit kits



Light is replaced. Fixtured appearance is not changed

Highest energy savings
Best light quality
Controls compatible

Content from
Efficiency Vermont

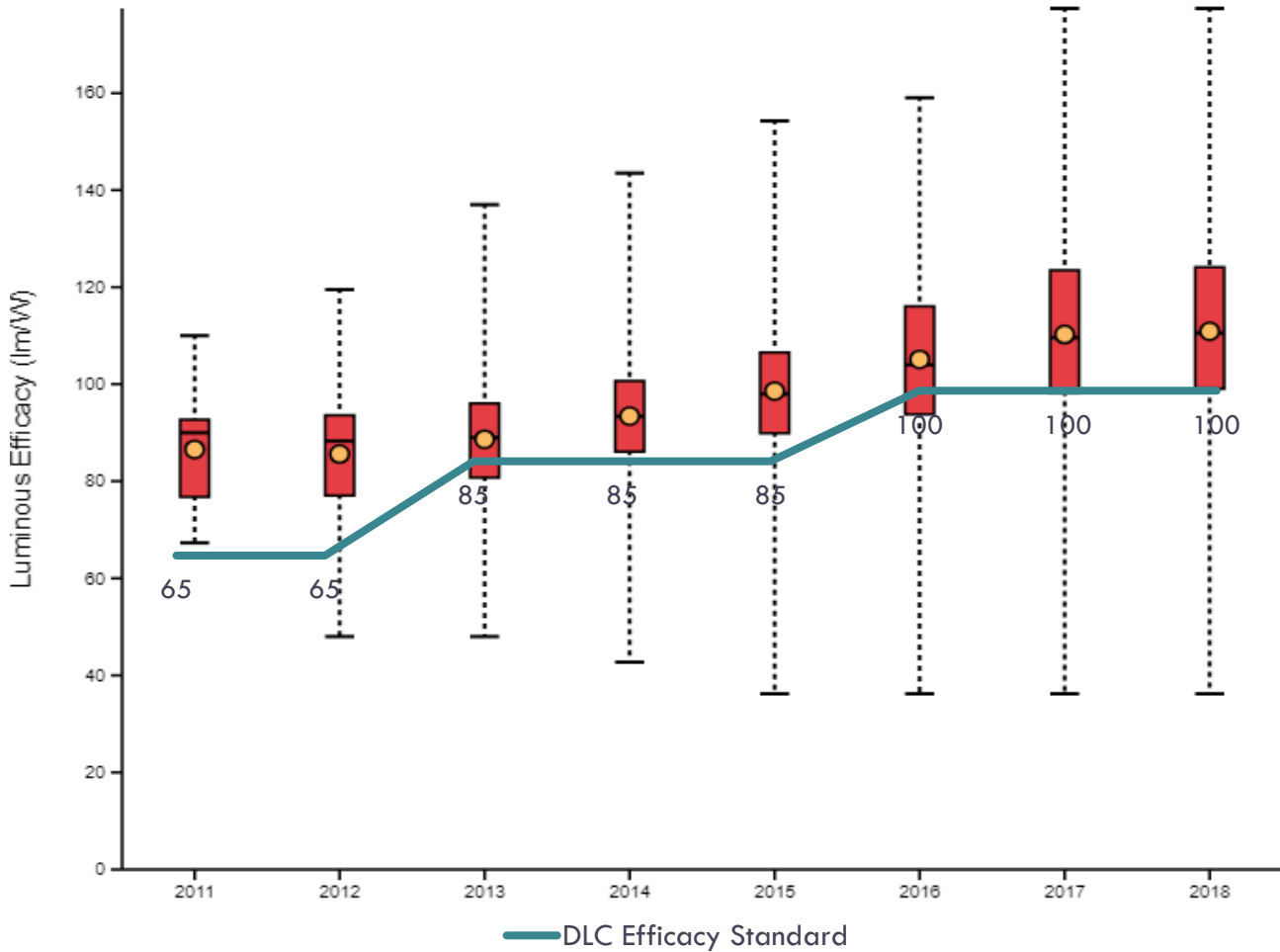
MEMD LED Linear Measures



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2018 MEMD Measure	Watts Saved	Incremental Costs	Last Updated
1L 4' LED Tube replacing T8 1L 4' lamp	13	\$10	July 2017
1x4 LED Troffer or Retrofit	7	\$120	July 2015
2x2 LED Troffer or Retrofit	6	\$90	July 2015
2x4 LED Troffer or Retrofit	20	\$110	July 2015

LED Efficacy Improvements



Updated MEMD Measure



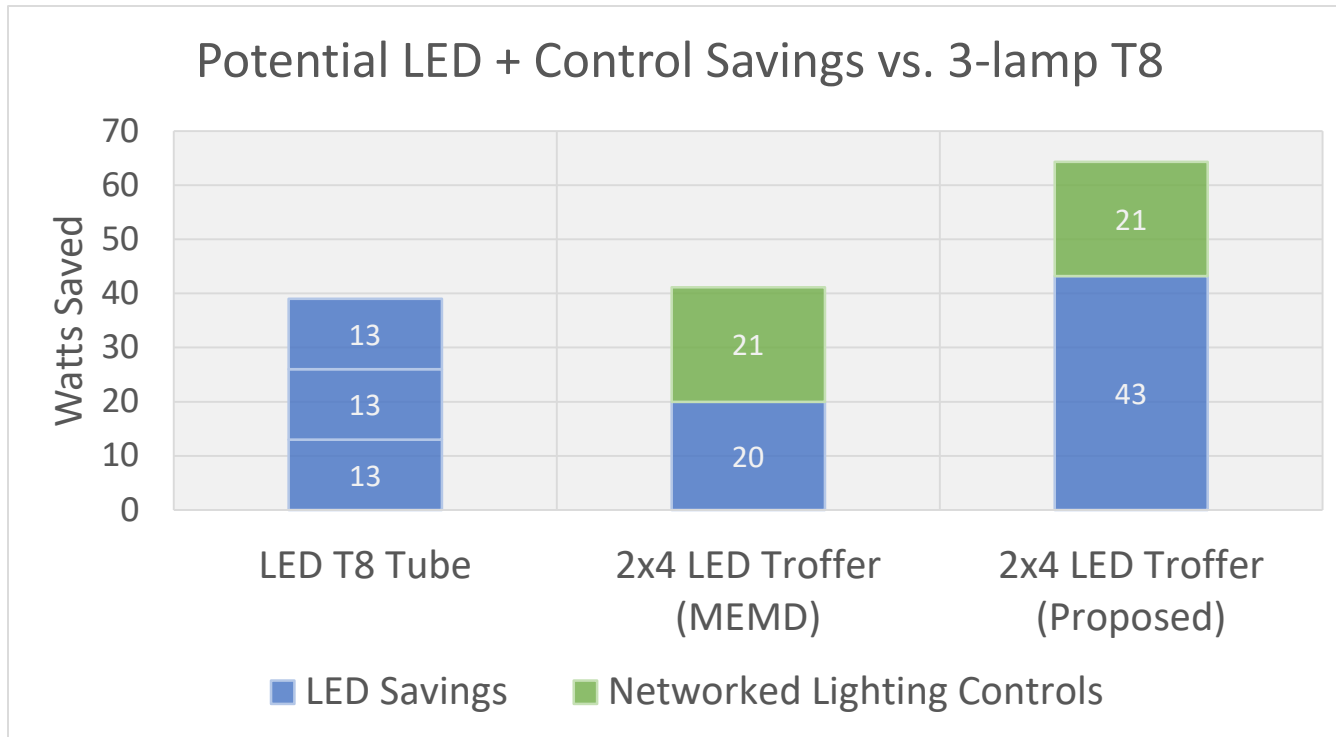
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Technical Reference	Measure	Watts Saved	Incremental Cost
2018 MEMD	LED 2x4 Troffer, T8 Baseline	20.0	\$110
2017 Vermont TRM	LED 2x4 Troffer, 2-Lamp T8 Baseline	25.7	\$50
	LED 2x4 Troffer, 3-Lamp T8 Baseline	43.2	\$70
	LED 2x4 Troffer, 4-Lamp T8 Baseline	56.8	\$97

- Vermont TRM establishes LED watts using current efficacy levels (DLC average) and baseline lumen equivalency
- Illinois TRM uses similar values

Potential Impact

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- ❑ Networked lighting control savings become stranded when LED T8 tubes are installed
- ❑ Michigan has an estimated 36 million linear fluorescent fixtures in the C&I sector, and LED penetration is only at 6-8%.

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Q&A

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