

DOCKETED

Docket Number:	18-AAER-08
Project Title:	Federally Exempted Linear Fluorescent Lamps
TN #:	229546
Document Title:	California Investor Owned Utilities Comments on Draft Staff Report
Description:	N/A
Filer:	System
Organization:	California Investor Owned Utilities
Submitter Role:	Public
Submission Date:	8/26/2019 2:46:53 PM
Docketed Date:	8/26/2019

*Comment Received From: California Investor Owned Utilities
Submitted On: 8/26/2019
Docket Number: 18-AAER-08*

California IOUs Comment on Draft Staff Report

Additional submitted attachment is included below.

Federally Exempted Linear Fluorescent Lamps

Codes and Standards Enhancement (CASE) Initiative
For Program Year 2019: Title 20 Standards Development

Response to the California Energy
Commission's Draft Staff Report for
**Federally Exempted Linear
Fluorescent Lamps**
18-AAER-08

August 26, 2019

Prepared for:



PACIFIC GAS &
ELECTRIC COMPANY



SOUTHERN
CALIFORNIA EDISON



SAN DIEGO GAS AND
ELECTRIC

Prepared by:

Jasmine Shepard, ENERGY SOLUTIONS

This report was prepared by the California Statewide Investor-Owned Utilities Codes and Standards Program and funded by the California utility customers under the auspices of the California Public Utilities Commission.
Copyright 2019 Pacific Gas and Electric Company, Southern California Edison, and San Diego Gas & Electric.

All rights reserved, except that this document may be used, copied, and distributed without modification.

Neither PG&E, SCE, and SDG&E nor any of its employees makes any warranty, express or implied; or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any data, information, method, product, policy or process disclosed in this document; or represents that its use will not infringe any privately-owned rights including, but not limited to, patents, trademarks or copyrights.

TABLE OF CONTENTS

1. PURPOSE	2
2. STATEWIDE CASE TEAM COMMENTS	2
2.1 GENERAL COMMENTS AND SUPPORT OF PROPOSED STANDARD	2
2.2 PROPOSED DEFINITIONS	2
2.3 COST-EFFECTIVENESS OF THE PROPOSED STANDARDS	3
2.4 INCREMENTAL SAVINGS OF MORE STRINGENT EFFICACY LEVELS	3
2.5 SCOPE OF THE STAFF PROPOSAL	4
3. CONCLUSION	5
4. REFERENCES	5

TABLE OF FIGURES

Figure 1: Average efficacy of linear lamps by length and technology.	4
---	---

1. Purpose

The Codes and Standards Enhancement (CASE) initiative presents recommendations to support the California Energy Commission’s (Energy Commission) efforts to update California’s Appliance Efficiency Regulations (Title 20) to include new requirements or to upgrade existing requirements for various technologies. The three California Investor Owned Utilities (IOUs) – Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric (SDG&E), and Southern California Edison (SCE) – sponsored this effort (herein referred to as the Statewide CASE Team). The Statewide IOU Codes and Standards Program goal is to prepare and submit proposals that will result in cost-effective enhancements to improve the energy and water efficiency of various products sold in California. The content presented herein reflects the Statewide CASE Team’s comments on the Energy Commission’s Draft Staff Report for linear fluorescent lamps exempt from federal regulation, released on June 27, 2019.

2. Statewide CASE Team Comments

2.1 General Comments and Support of Proposed Standard

The Statewide CASE Team supports the Energy Commission’s proposed efficiency standards for four types of linear fluorescent lamps currently exempt from federal efficiency standards:

- Lamps with a color rendering index (CRI) of 87 or greater (high-CRI lamps);
- Impact-resistant lamps;
- 2-foot lamps; and
- 3-foot lamps.

The standards would provide considerable statewide energy savings, greenhouse gas reductions, and utility bill cost savings to California consumers. Standards would also effectively close the high-CRI exemption loophole that has allowed inexpensive, inefficient linear fluorescent lamps to persist in the California market. The Statewide CASE Team encourages the Energy Commission to follow states like Colorado, Hawaii, Vermont, and Washington in adopting minimum efficiency requirements for high-CRI fluorescent lamps. Furthermore, the Statewide CASE Team commends the Energy Commission for leading the nation in proposing efficiency standards for impact-resistant lamps, as well as 2-foot and 3-foot (herein referred to as “less than 4-foot”) lamps that are currently without state standards. The Statewide CASE Team appreciates the Energy Commission’s time to consider the comments and recommendations detailed below.

2.2 Proposed Definitions

The Statewide CASE Team supports the Energy Commission’s proposal to define a new term, “state-regulated general service fluorescent lamps,” which includes impact-resistant linear fluorescent lamps and linear fluorescent lamps with a CRI of 87 or greater. Adopting this inclusive term enables the Energy Commission to move forward with efficacy standards for impact-resistant lamps and high-CRI lamps which are currently exempt from federal efficacy standards.

Similarly, the Statewide CASE Team supports the definition of “less than 4-foot linear lamps” under “state-regulated general service lamps,” because these lamps are also currently exempt from federal standards under “general service fluorescent lamps.” The United States (U.S.) Department of

Energy (DOE) 2015 U.S. Lighting Market Characterization (Buccitelli, Elliot, Schober, & Yamada, 2017) study shows that less than 4-foot lamp types represent 12.6 million lamps, or seven percent of the U.S. market. Given California population, less than 4-foot lamps are a good opportunity for realizing energy savings from setting efficiency standards.

2.3 Cost-Effectiveness of the Proposed Standards

After review of the Energy Commission’s Draft Staff Report, the Statewide CASE Team affirms that the proposed standards are cost-effective. The Draft Staff Proposal represents a total savings of 341.4 gigawatt hours (GWh) in first-year savings. These savings are based on replacement of 4-foot and 8-foot T12¹ linear fluorescents with a combination of T8¹ linear fluorescent lamps and light emitting diode (LED) lamps (specifically, Underwriters Laboratory (UL) Type B tubular LEDs (TLEDs)). The proposed standards save an estimated 2,895 GWh of electricity per year after the stock is turned over (California Energy Commission, 2019a). That translates to more than \$428 million in electricity cost savings per year, through reduced utility bills, after the entire stock is turned over. The proposed standards have a benefit-to-cost ratio ranging from 1.5 to 8.4, resulting in a relatively short time period for the savings to compensate for the initial incremental cost.

Considering the cost-effectiveness of the current proposal, the Statewide CASE Team urges the Energy Commission to consider pursuing more stringent standards and greater statewide energy savings as explained in Section 2.4 and proposed in the May 2018 CASE Report on Non-Federally Regulated Linear Fluorescent Lamps.

2.4 Incremental Savings of More Stringent Efficacy Levels

The Energy Commission is proposing that state-regulated general service fluorescent lamps align with current federally-regulated general service fluorescent lamps manufactured on or after January 26, 2018. While this provides a simple update to the standards and closes existing loopholes, this decision also leaves behind a significant amount of unclaimed savings that are technically feasible and cost-effective. The Statewide CASE Team requests that the Energy Commission consider setting requirements for all applicable lamp types at levels that would likely result in performance similar to LEDs (Statewide CASE Team, 2018). TLEDs provide cost-effective energy savings with a product lifetime of at least double their T12 counterparts.

Following the release of the aforementioned CASE Report on May 24, 2018, the Statewide CASE Team gathered additional online retail data for fluorescent lamps to support the recommendation for LED-level performance. Research across 31 brands and approximately 2,600 model numbers revealed that the average efficacy of a 4-foot, high-CRI T12 lamp, is 48 lumens per watt (LPW), at a cost as low as \$1.28 per lamp (in a 30-lamp case). Herein lies a loophole: consumers buy inefficient T12 fluorescent lamps not for the necessity of high CRI or impact resistance but for the low initial cost. The purchase of the inefficient product occurs instead of the higher cost, higher efficiency T8 or TLED lamps. Similarly, 8-foot, high-CRI T12 lamps have an average efficacy of 58 LPW at a cost as low as \$2.92 per lamp. Efficacy comparisons are shown in Figure 1.

¹ The “T” designation in lamp nomenclature stands for tubular – the shape of the lamp. The number after the “T” represents the diameter of the lamp, in eighths of an inch. A T12 lamp is twelve-eighths, or one-and-one-half inches, in diameter. A T8 lamp is eight-eighths of an inch, or one inch, in diameter.

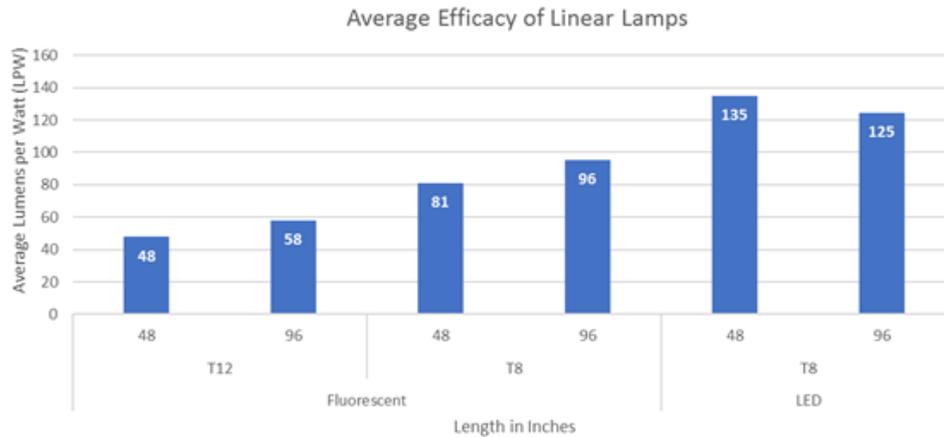


Figure 1: Average efficacy of linear lamps by length and technology.

Source: Statewide CASE Team Data Collection.

UL Type A and Type B TLEDs, which make up nearly 85 percent of LED non-integrated replacements, are cost-effective and widely available; 4-foot UL Type B TLED lamps are available as low as \$4.74 per lamp (in a 12-lamp case) and have a median efficacy of 125 LPW. The calculated benefit-to-cost ratio for 4-foot TLED lamps is 4.8, for 8-foot TLEDs it is 5.3 (Statewide CASE Team, 2018). Many TLEDs are available with plastic enclosures, making them impact resistant.

For 4-foot standard and high output lamps, as well as 8-foot standard output sized lamps, the Statewide CASE Team recommends that the Energy Commission require an efficacy of 110 LPW in high-CRI and impact-resistant applications of these lamp sizes. Aligning with the Statewide CASE Team proposal would increase the energy savings by 100.2 GWh to a total of 2,995.2 GWh savings, after stock turnover (California Energy Commission, 2019a). The Statewide CASE Team requests that the Energy Commission consider updating the stringency for these lamp types: 4-foot standard output (miniature and medium bipin), 4-foot miniature bipin high output, and 8-foot slimline.

The Statewide CASE Team strongly supports the Energy Commission’s proposal for 115 LPW standard for less than 4-foot lamps. This exceeds the 110 LPW standards proposed in the CASE Report and will offer greater savings. The Statewide CASE Team also agrees with maintaining current standards for 2-foot U-shaped lamps and 8-foot high output lamps.

2.5 Scope of the Staff Proposal

The Energy Commission’s Draft Staff Report proposes to maintain exemptions for certain lamp types. The definition of “state-regulated general service fluorescent lamps” does not include:

- Fluorescent lamps designed to promote plant growth;
- Fluorescent lamps specifically designed for cold temperature applications;
- Colored fluorescent lamps;
- Reflectorized or aperture lamps;
- Fluorescent lamps designed for use in reprographic equipment; and

- Lamps primarily designed to produce radiation in the ultra-violet region of the spectrum.

On July 10, 2019, a workshop attendee asked why “fluorescent lamps specifically designed for cold temperature applications” (cold temperature lamps) were excluded from this rulemaking (California Energy Commission, 2019b). The Statewide CASE Team analyzed data from 11 online retailers and did not find significant stock-keeping units (aka SKUs) in the cold temperature category and no cold temperature linear fluorescent lamps in the 2-foot, 3-foot, 4-foot, or 8-foot linear fluorescent categories. Research found only five online retailers that sold linear fixtures specified for cold temperatures. Based on this analysis, cold temperature fluorescent linear lamps do not appear to have large quantities in the market and are not recommended for inclusion in these standards at this time.

3. Conclusion

The Statewide CASE Team is supportive of the proposed requirements laid out in the Energy Commission’s Draft Staff Report. In particular, the Statewide CASE Team commends the Energy Commission for proposing standards for less than 4-foot linear lamps and recommends the Energy Commission adopt these standards without hesitation.

With respect to aligning efficacy requirements with federal standards for impact-resistant and high-CRI lamps, the Statewide CASE Team urges the Energy Commission to pursue more stringent efficacy standards for 4-foot and 8-foot linear fluorescent lamps. By raising the efficacy level towards LED performance, California can achieve greater energy conservation and energy costs savings impacts.

4. References

- Buccitelli, N., Elliot, C., Schober, S., & Yamada, M. (2017, November). *2015 U.S. Lighting Market Characterization*. Retrieved from energy.gov:
https://www.energy.gov/sites/prod/files/2017/12/f46/lmc2015_nov17.pdf
- California Energy Commission. (2019a, June 27). *Draft Staff Report Analysis of Proposed Efficiency Standards for Linear Fluorescent Lamps Exempt from Federal Regulation*. Retrieved from energy.ca.gov:
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=228860&DocumentContentId=60204>
- _____. (2019b, August 07). *Transcript of 07-10-2019 Staff Workshop Re Appliance Efficiency Regulations for Linear Fluorescent Lamps Exempt from Federal Regulation*. Retrieved from energy.ca.gov:
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=229243&DocumentContentId=60656>
- Statewide CASE Team. (2018, May 24). *Analysis of Standards Proposal for Federally Exempted Linear Fluorescent Lamps*. Retrieved from energy.ca.gov:
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=223787&DocumentContentId=53983>