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*Comment Received From: Alex Boesenberg*  
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**NEMA Comments on Staff Report on Linear Fluorescent Lamps Exempt from Federal Regulation**

*Additional submitted attachment is included below.*



National Electrical Manufacturers Association

PHILIPA. SQUAIR

Vice President, Government Relations

August 26, 2019

Via web: <https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=18-AAER-08>

Ms. Soheila Pasha, Ph.D.  
California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814-5512

**NEMA Comments on Staff Report on Linear Fluorescent Lamps Exempt from Federal Regulation**

Docket No. 18-AAER-08

Dear Dr. Pasha:

As the leading trade association representing the manufacturers of electrical and medical imaging equipment, the National Electrical Manufacturers Association (NEMA) provides the attached comments to the Commission Staff Report on Linear Fluorescent Lamps Exempt from Federal Regulation. These comments are submitted on behalf of NEMA Lighting Systems Division Member companies.

The National Electrical Manufacturers Association (NEMA) represents nearly 350 electrical equipment and medical imaging manufacturers that make safe, reliable, and efficient products and systems. Our combined industries account for 360,000 American jobs in more than 7,000 facilities covering every state. Our industry produces \$106 billion shipments of electrical equipment and medical imaging technologies per year with \$36 billion exports.

If you have any questions on these comments, please contact Alex Boesenberg of NEMA at 703-841-3268 or [alex.boesenberg@nema.org](mailto:alex.boesenberg@nema.org).

Sincerely,

A handwritten signature in cursive script that reads 'Philip A. Squair'.

Philip Squair  
Vice President, Government Relations  
National Electrical Manufacturers Association

## **NEMA Comments on Staff Report on Linear Fluorescent Lamps Exempt from Federal Regulation**

1. NEMA believes this is an unnecessary regulation which will create inconvenient and expensive lighting problems for Californians without saving significant amounts of energy.
2. Since the data was gathered in 2013-2014 for the 2015 DOE Lighting Market Characterization, commercial and industrial entities have been shifting away from fluorescent technology in general and in particular are moving away from less efficient T12 products. In the experience of NEMA members, T12 applications, where they still exist, are largely confined to residential settings. The CEC should amend its energy-savings analysis to reflect this by deleting energy any cost savings from the commercial and industrial sectors and focusing only on the cost-benefit opportunities in the residential sector. As the NEMA data previously shared showed, T12 sales have steadily declined and continue to decline. Residential sales are the only shipments for this technology now. Commercial and industrial customers recognize the benefits of switching to more efficient technologies and have already done so. The CEC staff presentation which implies the percentage of T12 lamps being sold has not changed much since 2015 is very misleading. The index charts used by Commission staff do not show the rapid decline of all linear fluorescent technology during the past 5 years, which includes T12 lamps. The shipments and use of High Color Rendering Index (CRI) 4' T12 lamps, impact resistant lamps, and 2' & 3' fluorescent lamps has decreased by at least 50% since 2015. Energy savings estimates using 2015 data will be twice as high as actual savings. In addition, energy savings estimates based solely on Commercial use with long operating hours vs. residential use with short operating hours greatly overstates potential energy savings for this regulation. NEMA strongly recommends that CEC complete a new energy savings analysis using up-to-date, accurate sales and use data. NEMA data indicate that the great majority of the products being targeted in this proposal are primarily used in residential applications.
3. Another misrepresentation of cost and benefits in the Staff Report is the incorrect assumption of the costs associated with replacing ballasts in retrofitted fluorescent fixtures. The ballast replacement costs used are too low. These lower cost figures are obviously associated with commercial applications where an electrician is on staff or where economies of scale apply to reduce overall costs. Given that T12 technology is now most commonly found in residential settings, the cost of hiring an electrician to come replace a ballast and retrofit a fixture to TLED must be more accurately included in the cost-benefit review. The cost of hiring an electrician for a residential visit would be on the order of one to two hundred dollars per visit, not including the cost of the new TLED components. Combined with the lost energy savings of no-longer-occurring commercial and industrial T12 installations, this much higher replacement cost seriously challenges the Commission's proposal's cost-benefit justification. By using data to reflect residential replacement costs by a certified electrician, NEMA believes that this regulation cannot be cost-justified. Homeowners will never see an economic payback from being forced to hire an electrician to replace an entire fixture or retrofit a fixture. NEMA again urges CEC to complete a new cost benefit analysis using accurate representative cost data.

4. An aspect not examined by the Commission in the Staff Report is that less than 4' TLED products are not as efficient as their 4' TLED siblings. The proposed Lumens Per Watt (LPW) requirements for less than 4' Type A TLED designs are too high. NEMA proposes the CEC allow the use of Type A TLED replacements in the less than 4' category and set a 100 LPW requirement for TLED products, rather than effectively prohibiting their use through too-high standards. This is a new and developing area. More time is needed before extremely high LPW standards are set for all versions of TLEDs.
5. Another benefit of setting appropriate efficiency levels for Type A TLED technology is that this technology foregoes the cost and burdens of hiring an electrician by simply replacing a tube without having to change the ballast or perform any wiring changes. Type A products are well-accepted for this reason. Therefore, the use of Type A TLED products can reduce ballast replacement and retrofit costs.
6. NEMA opposes eliminating all 2' and 3' fluorescent technology from the marketplace. It is important for a few linear fluorescent options to continue to be available for the non-4' categories. Based on a review of NEMA Member products we propose an 85 LPW standard for 3' linear fluorescent lamps, and 75 LPW standard for 2' linear fluorescent products. This will eliminate most 2' and 3' fluorescent products but maintain a few of the most efficient products. Some homeowners may be averse to electronics and TLED options. Some TLED technology will not work on existing ballasts, especially low-cost consumer ballasts. There may be other non-lighting related reasons, such as health issues, interference concerns, or other unknown reasons, why LED technology cannot be used in certain applications. For these reasons, it is important to maintain some small availability of linear fluorescent options while the TLED market becomes more mature and resolves more compatibility, interference or health issues. The CEC report provided no research guarantying that TLEDs will offer a viable replacement for all possible applications.
7. The TLED standard should NOT be applicable to fluorescent lamp technology. 2' and 3' fluorescent lamps should have their own standard levels, different than TLED efficiency standards. If the goal is to eventually eliminate fluorescent technology, more time is needed for TLED technology to develop. Although there are more TLED products being developed each year, more time is needed to shift the entire market to LED technology. In particular, the shorter TLED lamps have just become available in recent years. Before that time, most product development was for 4' lamp replacements. At the very least, if CEC insists on applying standard levels that eliminate fluorescent technology, it should not apply to fluorescent lamps for at least 3 years after the standard is set for TLED lamps. More time is needed for additional technology development.
8. While the DOE in its narrative for the rulemaking that created 10 CFR 430 Appendix BB test procedure notes that the test must be modified slightly for TLED products, this is not clearly stated in the regulation itself. To prevent future confusion, the CEC should clearly state in its regulation that TLED products may be tested in horizontal configuration (versus base-up or base-down). DOE does this in Section 3.3 of Appendix DD to 10 CFR 430.
9. We continue to disagree with this regulation's intent of banning high color-rendering index (CRI) T12 linear fluorescent lamps. High CRI T12 Fluorescent lamps have typically been used in residential applications, usually in "shoplite" fixtures operated with

low power ballasts. California residents will have no suitable replacements for these fixtures; neither T8 fluorescent lamps nor linear (tubular) LEDs (TLEDs) will work in the High CRI T12 fixtures due to the specific ballast that accommodates the High CRI T12s. Residents who have these fixtures will be forced to replace their current fixtures if they need a replacement lamp, incurring additional costs – first for the new fixture and, in many cases, for the cost of an electrician to install it. This is a burdensome requirement for a Californian who simply needs to replace a light bulb. Replacing an entire fixture cannot be cost justified.

In addition, Full Spectrum Lamps, those which deliver a smooth continuous spectrum like sunlight, have been used for many decades to mimic outdoor applications. Due to the physical challenges of having large amounts of energy in both the red and the blue parts of the spectrum, measured lumen levels in Full Spectrum lamps are lower than standard lamps. The lamps themselves use the same amount of energy as standard spectrum lamps. However, due to their lower lumen output, they have a lower lumen-per-watt rating making it impossible for these lamp types to meet efficiency requirements. DOE addressed the unique nature of these lamps by exempting them from the energy efficiency regulations if they had a CRI of 87 or higher. These full spectrum lamp types generally have a CRI of 90 or greater. It is impossible for these lamps to meet the current efficiency regulations meaning that they will be eliminated from the market with no options for a smooth spectrum fluorescent light source. This is true of both the T12 and T8 versions of these lamp types. If CEC is concerned about tri-phosphor lamps using the HIGH CRI exemption as a “loophole”, NEMA is willing to work with CEC on a definition of a High CRI Fluorescent lamp which preserves high-CRI smooth continuous spectrum lamp options.

10. We note the CEC bypassed proper protocol with respect to analyzing cost and product availability concerns for shatter- and impact-resistant product options. The CEC analysis dismissively assumes that TLED are inherently more shatter resistant than linear fluorescent products, which is not based on factual testing. While shatter-resistant TLED options exist they cost more than standard TLED, a factor which is not considered in the Staff Report. Furthermore, we believe the CEC is overstepping its authority with respect to the California Health Code as pertains to shatter- and impact-resistance for light sources. The unavailability of shatter resistant fluorescent lamps due to this regulation could cause significant issues with health code compliance in food service applications in the State of California. To continue this regulation in a timely manner, the CEC should remove shatter resistant products from scope of this regulation while performing shatter-resistance testing and evaluations. This is a very small niche product segment and this proposed regulation will produce very little cost savings while having a negative impact on food-preparation applications. The health-risks associated with this proposal have not been fully analyzed. Much more analysis and study are needed before a proposal for shatter- and impact-resistant products moves forward.