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Additional submitted attachment is included below.

January 12, 2016

Andrew McAllister
Commissioner
California Energy Commission
Sacramento, CA 95814

Subject: Docket Number 15-AAER-06

Dear Commissioner McAllister:

On behalf of Sierra Club and its more than 380,000 members and supporters in California, I submit the following comments on the revised 15-day proposal for small diameter directional LED lamps and General Purpose LED Lamps published on January 7, 2016.

Sierra Club California thanks you for the opportunity to comment on the proposal which includes screw-in light-emitting diodes (LED) light bulbs used for any household purpose and track lighting commonly used for commercial applications.

We understand that the California Energy Commission (CEC) is required by the California Lighting Efficiency and Toxic Reductions Act of 2007 to achieve a 50 percent reduction in residential, 25 percent reduction in commercial and 25 percent in outdoor lighting below 2007 levels in businesses by 2018. We appreciate the CEC's efforts to meet those deadlines.

The proposed standards provide an opportunity for Californians to save $4 billion over the next 13 years. By 2029, the standards will be saving about 3,000 Gwh per year, which is equivalent to about 400,000 average homes indefinitely or avoiding the construction of one 500 MW power plant. That means 10.3 million metric tons of CO2 avoided between 2017 and 2029, which is equivalent to the emissions of about 168,000 cars.

The ultimate goal of the standards is to encourage faster adoption and save significant energy in California by ensuring a minimum level of quality and performance to avoid consumer dissatisfaction that may hinder widespread acceptance of the improved technology. Sierra Club would like to help the CEC in its efforts to do so by submitting the following comments on the proposal:

General Service LED Lamps

The purpose of a general service lamp is to provide generic white light to a space. This illumination should generally allow the people in the home to accurately perceive the colors of objects like a painting, wood flooring or meat for safe meal preparation.

The color rendering index (CRI) is the international standard rating for color content and quality and has been since the 1970's. Based on how much the lamp's light distorts 8 color samples, which span the visible spectrum, the light source receives a score with a cap at 100, which indicates no distortion. Simply put, the CRI score, which is the average of the scores of each of the 8 individual color distortions, indicates how well the lamp is doing the job of providing white light.

The CEC has proposed that general service LED lamps manufactured on or after January 1, 2018 shall have a CRI of 82 or greater and individual color scores (R) of 72 or greater. These new regulations provide an optimal combination of

key performance attributes, luminous efficacy (lumens per watt, brightness), color rendering and longevity. Sierra Club California believes this is essential to accelerate the phase out of the energy intensive incandescent light bulb without losing the color quality Californians have enjoyed for a long time.

Opponents of the regulations are arguing that the new regulations should not focus so strongly on color quality, stating that there are market mechanisms in place to ensure that all Californians have access to these products. This is difficult to support as some, perhaps the most important, factors like color rendering are not apparent at the time of purchase. The customer, understandably, may not be able to associate a color experience with a CRI value. Standardizing the score at a level in their best interest is critical for adoption. If the opposition wants to make this claim, they might consider heavily investing in educating customers on the value of both high-efficiency lighting and the value of products that produce full-spectrum lighting.

The opponents claim that having a higher quality of light as a result of a higher CRI score will cut away at the efficiency of the lamp. This is a misunderstanding of what is being required of the lamps. The function of the general service lamp is to both illuminate a room and provide the ability to discern colors. Efficiency would be defined as its ability to perform those tasks with less energy.

Though the lamps can be designed to be slightly brighter by sacrificing color quality, it is very likely that the change in brightness will go unnoticed, resulting in a lamp that uses less energy, but does not perform a part of the desired function- to provide quality color. Our ability to see an increase in brightness is far less sensitive when compared to our ability to make fine color discriminations between subtly different hues. This means that one could produce both a low and high color quality lamp with the same amount of energy, without even perceiving a reduction in brightness. Therefore, the combination of quality metrics must be cautiously approached in order to optimize the lamp design.

The opponents of the proposed regulations claim that they will harm low-income customers. This is not true as one of the major requirements of efficiency standards is that they use less energy, which decreases the operating costs to consumers. Failing to meet this requirement alone would have halted the proposal in its infancy. The opponents are proposing that the CRI requirement be reduced to 80, with the reasoning that it would be cheaper to produce and they would be able to pass those savings on the consumer. A score that low likely means that the lamp was designed to starve out most of the red end of the spectrum, a key component to the “warm” quality of light, which consumers are paying for.

Ironically, the opposition’s proposal would create a two-tiered market, one for the poor and one for those that could afford desirable light. By creating a two-tiered market, the producers are nearly guaranteeing that their best lighting will never be available for low-income customers. If the CEC requires a single standard for color quality it will make for a more competitive market, which ultimately will decrease the cost of the product with the desired performance.

Sierra Club California supports the CEC’s proposal for general service LED lamps, which will protect low-income customers by requiring that the lamps with higher color quality are accessible and affordable.

The standards will advance the state’s efforts to save energy and dramatically reduce climate pollution for everyone everywhere. Sierra Club California thanks the Energy Commission and its staff for the opportunity to comment.

Respectfully Submitted,

Edward Moreno
Policy Advocate