

April 27, 2022

BY EMAIL

David Hochschild, Chair
California Utilities Commission
david.hochschild@energy.ca.gov

Re: Energy Efficiency for Lighting

Dear David Hochschild,

On April 26, 2022, the United States Department of Energy approved a rule setting a minimum luminous efficacy of 45 lumens per watt for all General Service Lamps.¹ Since the luminous efficacy of an incandescent light bulb is 10 lumens per watt, this new rule will prevent the sale of incandescent light bulbs.

But what the DOE failed to do is set quality metrics for any replacement light bulb. The definition of energy efficiency is providing the same quality of service using less energy. The DOE has ignored the quality component of the energy efficiency definition and chosen to use instead only the luminous efficacy. The result is that the lighting manufacturers will be producing low-quality lighting products, such as those that use Light Emitting Diodes, and the DOE will turn a blind eye and pretend that those lights are energy efficient.

The result is that the millions of people who cannot neurologically tolerate surface source LED light will be condemned to suffer epileptic seizures, migraines, anxiety, loss of sleep, lupus flares, distorted vision, and a host of other negative neurological reactions when exposed to the toxicity of spatially non-uniform LED lighting.

The Soft Lights Foundation has been in contact with the California Energy Commission for several years about this same issue. The CEC also ignores the quality portion of the definition of energy efficiency in favor of using only luminous efficacy. This decision by the CEC is what has created the disastrous nighttime environment in California of high blue content, spatially non-uniform light. An example is shown in Figure 1.

¹ <https://www.energy.gov/articles/biden-administration-implements-new-cost-saving-energy-efficiency-standards-light-bulbs>



Figure 1 - LED Light

To attempt to address this issue of the failure of the CEC to include light quality metrics such as spatial uniformity and spectral power distribution, we submitted comments to the Title 24 docket. Our first request was rejected because we were told that our submission was too late for the 3-year rule-making cycle. Our second attempt, which was submitted at the very beginning of the 2022 3-year cycle, was rejected without reason.

The Title 24 Energy Code updates are managed by a private company called Energy Solutions. The senior project manager is Christopher Uraine (info@title24stakeholders.com). This private company seems to have no oversight. I have had numerous contacts with Mr. Uraine, but he refuses to address the issue of quality of the light and dismisses our concerns without justification.

Another member of the Energy Code team is a representative from PG&E named Kelly Cunningham (kelly.cunningham@pge.com). When I asked Ms. Cunningham about the quality of LED light, she informed me that she had no response and that such a question was outside of the scope of her work.

I have also been in contact with Peter Strait, Standards Development Supervisor for Buildings for the CEC (Peter.Strait@energy.ca.gov). When I asked Mr. Strait about light quality metrics, he referred me to the California Lighting Technology Center at UC Davis.

I have made numerous attempts to contact Michael Siminovitch, Director of the CLTC, about the quality metrics for lighting, but have not received a single response from Mr. Siminovitch or any of his staff. I did contact the UC Davis General Counsel and was told that UC Davis would not investigate this issue.

The California Energy Commission has no metrics to measure light quality, and yet the Title 24 Energy Codes team has been developing luminous efficacy requirements for General Service Lamps, pretending that energy efficiency and luminous efficacy are equivalent. As I noted earlier, this decision to ignore light quality has led to manufacturers and utility companies switching to toxic, low-quality LED light sources, thus endangering the lives of Californians and the entire ecosystem.


LEDs are not energy efficient, only low-quality.

Incandescent and HPS are called point sources, the brightness is measured with luminous intensity in candela, and the spatial energy of the light is uniform. Point source light is generally considered safe. LEDs are called surface sources, the brightness is measured with luminance in nits (candela per square meter), and the spatial energy of the light is a non-uniform Lambertian. Surface source light is highly toxic for cellular organisms such as humans. An energy efficiency comparison between these two different types of light cannot be made because these sources provide different services, and a different quality of service. Yet the Title 24 Energy Codes team is doing just that, ignoring physics, math, legal definitions, and the health effects of surface source light.

This is the question I pose to the Commissioners: There are millions of people who cannot neurologically process surface source light. This includes people with autism, epilepsy, migraines, PTSD, lupus, and hundreds of other diagnosed conditions. How are these people supposed to live in a world where the light forced on them by the CEC is toxic for them? Are they required to switch to candles? Are they expected to remain home so as to avoid LED streetlights? Is the CEC expecting them to move to another planet? Or are they just expected to die out?

I request a response from the CEC Commissioners.

Sincerely,



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