

DOCKETED

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Light Pollution Restrictions

Additional submitted attachment is included below.

December 26, 2020

Dear California Energy Commission,

Thank you for this opportunity to comment on the 2022 Title 24 Part 6 updates. Soft Lights is an advocacy group dedicated to educating decision makers about the dangers of LED lights and light pollution.

SB350 legislation requires that energy efficiency requirements not adversely affect human health and safety. Current Title 24 Part 6 lighting efficiency regulations do not meet this requirement because the regulations allow far too much artificial light, especially high color temperature light, which disrupts circadian rhythms and leads to increases in diseases such as cancer and mental health disorders.

Figure 1 shows a hotel with several high color temperature (5000 Kelvin) LED floodlights on the roof. The high energy blue wavelength light damages the darkness resource, increases risk of eye damage, reduces the quality of sleep, and causes glare in the eyes of drivers, pedestrians and hotel guests.



Figure 1 - High color temperature LED floodlights

In addition, the floodlights are turned on all night, wasting energy and polluting the darkness resource. Research has shown that these lights do not reduce crime and do not increase safety and are therefore unfit for purpose.

This lighting problem was caused by the switch to LED lights because they are so inexpensive to purchase and operate. The justification for switching to LED for lighting was to reduce energy usage, but

the low operating cost and high intensity of the light has led to large increases in the types and locations of light pollution.

To comply with SB350, Title 24 Part 6 must be updated to restrict the type of artificial light that can be used and to limit the amount of waste light that negatively impacts the darkness resource. The following is a list of updates that should be made to Title 24 Part 6 so that the energy efficiency standards do not adversely affect human health.

- 1) Set a minimum Spectral G-Index to 1.56 or a maximum color temperature of 2700 Kelvin for all outdoor lighting.
- 2) Require adequate shielding, prohibit all uplight, and prohibit light trespass beyond property boundaries for any light source exceeding 5 lumens.
- 3) Require that all outdoor lighting in excess of 5 lumens be diffused.
- 4) Set a maximum color temperature of 2700 Kelvin and a maximum luminance of 50 candelas per square meter for electronic signs.
- 5) Prohibit blinking/strobing/flashing lights because they reduce vision and negatively impact emotional health.
- 6) Set a maximum illuminance value of 2 lux at property boundaries.
- 7) Require that all outdoor lighting comply with the Americans with Disabilities Act that prohibits discrimination against those with light sensitivities.
- 8) Set a minimum Spectral G-Index to 1.56 or a maximum color temperature of 2700 Kelvin for all indoor lighting to protect human health.
- 9) Require diffusion coverings for all indoor lighting exceeding 100 lumens.

Scientific research on the negative health effects of light pollution and high color temperature lighting is located on our website at: <http://www.softlights.org/resources/>

Sincerely,



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