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Additional submitted attachment is included below.

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May 4, 2018

Mr. Andrew McAllister
Commissioner
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Comments on Residential Lighting Code

Dear Commissioner McAllister,

There is a significant issue with lighting design in the current residential code. As it stands now, there is only one path to compliance, a very restrictive, prescriptive path that requires one to only use fixtures from a sparsely populated pre-approved database. The problem with this is:

- Limited selection of fixtures
- Fixtures tend to be not as efficient as others on the market
- List restricts innovation
- Significant energy savings cannot be realized

Lighting designers, particularly those for custom residential projects in California need an alternative design path. By its nature, the fixtures that appear on the database may be efficient, but they are not the most efficient, and are frequently inappropriate for the task required. As fixtures have become more versatile we can now be more precise in how we light a space, which results in better light at significantly less energy use. In addition, the Energy Code regulates energy use, but should not regulate the design approach. We are not advocating for the elimination of the database. The database is an effective tool for contractors, speculatively built homes, and multifamily homes that make up most of the market, but not appropriate for anyone trying to be innovative. For that we need a path that ensures efficiency while allowing flexibility, a performance path. For a model of this one does not need to look too far afield. The Energy Code for commercial construction works very well - it sets lighting power density limits and requires a certain level of lighting control while giving lighting designers space to bring creativity and expertise designing the luminous environment.

As long as the energy saving goals are met, we should not impose specific color temperatures - particularly for those who are building their own houses. California has a diverse population. If someone from Japan wants 5000K lighting for his or her home office why should the energy code stop it? Furthermore we know CRI is a problematic metric for color rendering (based on 9 baseline colors) which is being challenged by TM-30-15 (based

on 99 baseline colors). It has been demonstrated many times that higher CRIs do not necessarily correlate to more preferred color rendering, as chosen by people. If it is legal to use a 70 lumens/ watt fixture with a 80 CRI compact fluorescent at 6500K "Full Spectrum Daylight", why should it be illegal to use a LED fixture at 120 lumens/ watt with a 85 CRI and red enhanced at 4100K? If the best effect for illuminating an architectural niche is using a single LED fixture with a narrow beam, at 5W, 40 lumens per watt, and 95 CRI should the energy code really prevent this while allowing an inferior performing LED fixture at 15W, 45 lumens per watt, and 90 CRI?

The lighting industry is currently in the midst of a renaissance. The last ten years have brought more innovation than the previous 50 years. The manufacturers of the highest quality lighting products are in intense competition to increase energy efficiency, increase visual comfort (reduce glare), and to design more precise optics. The pace of new product offerings and the often "modular" product offerings (made up of light engine, housing, lens, driver, etc) is significantly outpacing the CEC approval process. There are also high quality, high-end "commercial" products that happen to meet all the JA8 criteria, yet the manufacturers have no interest in having their products on the CEC database. This is because they fear it will damage their brand by being associated with "residential" products many of which are poorly made or produce too much glare.

There must be an alternative path available for lighting designers who do high-end work and their clients. At this point in our work there are few products in the database that our clients will approve. We know that the database will grow, but the time and process it takes to include a product is long, sometimes longer than the product's life on the market. This can bring more products to the residential market and spur more competition for higher efficiency and better optics. Being overly restrictive serves nobody. We fear it will promote post inspection retrofits, similar to what happened with the introduction of CFLs, or inspectors may choose to ignore the requirement altogether.

As a last comment on this, we are wondering why light fixtures were singled out for this approach? Title 24 does not mandate pre-approved paints based on their reflectances (darker paints absorb light requiring more electric light and more energy use). We understand that some describe the database as an analogy to requiring NFRC rating for windows, but even there we have options for field rating or getting specific products rated. It is important to allow for innovation in design. It will much better serve the purpose and spirit of Title 24 and we will save a lot more energy.

Sincerely,

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