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Additional submitted attachment is included below.

NRDC Comments on Proposed Title 20 Efficiency Standards for Small Diameter Directional Lamps and General Service LED Lamps

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On behalf of our 2 million members and electronic activists, NRDC respectfully submits these comments on the California Energy Commission's (CEC) proposed energy efficiency standards for general service LED lamps, and small diameter directional lamps. NRDC has been an active participant in the CEC proceeding which is intended to accelerate the transition to energy saving light bulbs. This proceeding is more than two years old and provided numerous opportunities for stakeholder input and dialogue. We believe the CEC has been responsive to the concerns raised by the manufacturers and other stakeholders and that its proposal reflects reasonable compromises, in particular on the topic of color rendition. With a few minor exceptions, NRDC is very supportive of the CEC proposal and recommends CEC make some small modifications to its proposal and publish 15 day or 45 day language, and then vote to adopt the updated proposal without further delay.

Small Diameter Reflector Lamps – Small diameter reflector lamps are currently not regulated by the CEC or at the national level and this product category offers energy savings of 75% or more compared to the incumbent halogen lamps. We believe the goals of this standard are to move the market from halogen and halogen infrared based lamps to LED lamps due to the dramatic energy savings such a shift accomplishes, and to make sure the new lamps do not disappoint the users. The current CEC proposal which goes into effect on 1/1/2018, requires these lamps to have a minimum efficacy of 80 lumens per watt, or a minimum efficacy of 70 lumens per watt provided the sum of the efficacy and color rendering index (CRI) add up to a compliance score of at least 165. It also establishes a minimum rated life of 25,000 hours. Overall we are supportive of the lifetime and offer the following recommendations:

a) *Add a minimum color quality requirement for all small diameter lamps, not just those with efficacy between 70 and 80 LPW.* - The current proposal essentially sets a minimum CRI for lamps with efficacies between 70 and 80 and then sets no CRI limit for lamps with an efficacy above 80. While there has been a lot of debate during this rulemaking about where to set the floor for CRI, there seems to be general consensus that 80 CRI provides a level which eliminates the poor performing products from the market in terms of color quality and is consistent with the CRI requirements set by ENERGY STAR. While it's true that the majority of these bulbs are installed in commercial applications whose purchasers tend to be more knowledgeable, roughly one third of the market are residential customers and they have little to no knowledge of the CRI metric or what CRI value they should be seeking. *To prevent a race to the bottom for lamps with efficacy >80 LPW, which would not have any CRI requirement per the current CEC proposal, we recommend CEC adopt the color quality requirements in the ENERGY STAR specification of: a) minimum CRI of 80 and b)R9 requirement of >0, which addresses the color rendering of red objects, an area where consumers complained about CFL color rendition in the past.*
b) *Regarding efficacy, NRDC would not oppose a flat minimum efficacy level of 70 lumens per watt, as that would help further ensure that a LED bulb is available for all regulated light output levels. This efficacy requirement would be coupled with the minimum CRI and R9 requirements we proposed above.* This provides some safety in the CEC proposal for the brighter LED lamps which today have very few models that meet the 80 LPW minimum.

General Service LED Lamps – NRDC offers three recommended changes to the CEC's general service LED lamp proposal.

a) *Review the minimum efficacy requirements for decorative LED lamps and if necessary establish a slightly less stringent equation for these products* – Decorative LED lamps typically have a lower efficacy level than omni directional lamps that give off the same amount of light. This is due to their small form factor and can result in a 10% or so efficacy penalty (i.e these bulbs have 10% lower efficacy values). As such, we recommend the CEC review the efficacy levels for this subcategory of lamps and see whether decorative lamps are on track to meet the proposed standard or not. If not, we recommend the CEC

create a tightly defined subcategory of lamps called decorative lamps and establish a new equation that is a little less stringent and will help ensure that LED decorative lamps will continue to be available in CA after the standard goes into effect.

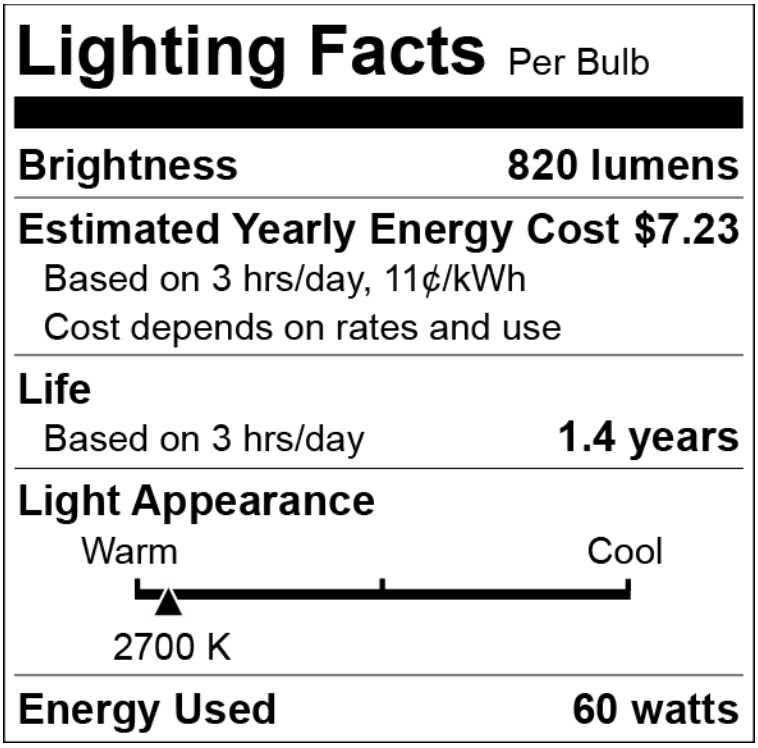
As we stated at the beginning of our comments, the goal of this proceeding is to accelerate the shift to energy savings lamps and away from the much less efficient incandescent and halogen lamps. An unintended consequence of setting too stringent a standard would be to block the sale of LED decorative lamps in California and cause sales of incandescent and halogen lamp to rise, resulting in massive lost energy savings. Note, the federal standards for general service incandescent lamps currently only restricts candelabra lamps to 40 or 60W, depending on its base type.

b) *Modify the lamp marking section regarding comparisons to incandescent lamps*– We have the reviewed the text in Section B -- which require a lamp to meet multiple requirements in order to make wattage equivalencies— and recommend it be revised. As written, lamps that have a color correlated temperature greater than 3000K would **not** be able to make legitimate claims such as 11 W = 60W, or replaces 60W bulb. While in the long term we are all working towards a place whereby consumers shop for lumens and not Watts, very few consumers today know how many lumens the old 60W incandescent used and in many cases may not even know what a lumen is. As such these incandescent equivalency claims play an important role in the market. In the absence of this information, some consumers may choose to purchase a 20W bulb when they all they needed was a 13W bulb, resulting in unnecessary extra energy use.

As the proposed regulations are currently written, these types of claims would be prohibited for lamps with cooler color temperatures such as 5000K or 5600K which produce bluer light which some consumers prefer. While its true that most consumers are seeking the yellowish white light similar to the light color produced by incandescents, some consumers especially those from many SE Asian countries are used to buying these cooler, high CCT lamps. In our opinion, these customers should also be provided with lumen equivalency claims on the products they prefer to buy.

As such, we recommend CEC modify section B in the following way:

i) Equivalency claims – do not require usage of equivalency claims, but if equivalency claims are made they must meet the lumen output levels set by the CEC in a published table. (we support the values currently proposed in Table K-15).
ii) Dimmability – lamps claiming to be dimmable must meet CEC's lamp dimmability requirements. If the lamp does not meet the dimming requirements/is a non dimmable lamp, it must include text on the front of the package clearly stating that the lamp is NOT DIMMABLE.
iii) CEC shall not restrict the allowable CCT of lamps offered for sale in CA. CEC is encouraged to work with utilities, retailers and manufacturers to educate consumers about the "light appearance" information that is required by the Federal Trade Commission to be shown on light bulb packages. See example below:



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