

October 25, 2012

Via email to: Mr. Gary Flamm, California Energy Commission. Gary.Flamm@energy.ca.gov

Soraa Inc. Comments on Proposed Voluntary California Quality Light Emitting Diode (LED) Lamp Specification.

Soraa fully supports California's initiative to steer market incentives towards LED lighting products that provide higher quality light output—no one wants to relive the troubles of compact fluorescent lamps (CFLs). The Company believes that there is no need to compromise quality of light in achievement of greater energy efficiency. We also believe that significantly improved color performance of LED light sources is crucial to full market adoption of the technology. That is why Soraa is currently selling products that exceed the quality of light requirements of the proposed specification. Customers tell us that Soraa's Vivid MR16 has superior beam properties, color rendering and color consistency compared to the halogen MR16 it replaces.

Soraa comments on the proposed specification:

Topic	Current text	Proposed text	Explanation
Attributes of the specification – Lamp efficacy Page 9	The Voluntary California Specification uses the same efficacy requirement as the ENERGY STAR standard	The Voluntary California Specification uses an augmented efficacy requirement compared to the ENERGY STAR standard. Refer to the table below for proposed efficacy	Energy Star efficacy requirements are tied to 80CRI. >90 CRI lamps typically have a ~20% lower efficacy. The penalty is largely governed by fundamental physics, which cannot be circumvented. Lamps with even further improved color rendering properties potentially can have an even larger efficacy penalty. It is important that lamps with color quality properties that substantially exceed the proposed 90CRI minimum can be included in the program. Setting efficacy requirements too high will provide no incentive for manufacturers to

			deliver anything more than the minimum color quality requirements. A lower efficacy requirement will instead incentivize manufacturers to innovate and differentiate in the area of color quality, and provide better products for customers. Soraa proposes a high CRI tier for efficacy requirements to EPA for draft Energy Star specification.
Color Rendering Page 19	Lamps shall have an R9 value greater than 0	Lamps shall have an R9 value greater than 50	R9 is an indicator for rendering red and plays an important part to overall color rendering. For overall color impression a high R9 value is important. A value of 50 is easily achievable with 90CRI white LEDs and although still far from perfect, is a step in the right direction
Longevity Page 20	Lamps to be marketed as “Commercial Grade” shall have a rated life > 35,000 hours	Remove text	Soraa has proposed to EPA that this text be removed from the draft Energy Star spec. The required test times of 35,000h life claims are impractical, preventing or substantially delaying market introduction of innovative products
Warranty Page 20	Lamps marketed as “commercial grade”... nonresidential)	Remove text	See previous remark on commercial grade
Future Development of the specification Page 20 – 21		Text acceptable as is	Soraa is currently conducting research to develop better metrics for color perception to replace CRI and R9

Proposed efficacy requirements to EPA. For the California LED Lamp Specification only the ≥ 90 CRI column applies.

Luminous Efficacy Requirements: All Lamps		
Lamp Type	< 90 CRI	≥ 90 CRI
	Lamp Efficacy (initial Lm/W)	
Omnidirectional < 10W	55	44
Omnidirectional ≥ 10W	60	48
Directional < 2.5" diam	40	30
Directional ≥ 2.5" diam	45	34
Decorative < 10W	45	36
Decorative ≥ 10W	50	40

Thank you for the opportunity to provide comments on the proposed specification. If desired, we can provide additional explanation or background information to the California Energy Commission. Please contact Willem Sillevs Smitt (wsmitt@soraa.com 408-204-9258) for more information.