

October 25, 2012

**VIA E-MAIL DOCKET@ENERGY.
CA.GOV**California Energy Commission
Dockets Office, MS-4
Re: Docket No. 12-BSTD-03
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Building Standards/California Quality LED Lighting Specification: Comments of Pacific Gas and Electric Company on the Draft Proposed California Quality Light Emitting Diode (LED) Lamp Specification

I. INTRODUCTION

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments on the California Energy Commission (CEC) draft proposed California Quality LED Lamp Specification (Specification).

Generally, PG&E supports the draft Specification and its goals. One of the most important ways to enable market transformation is to support the development of higher quality LED products that will be more likely to meet (or exceed) consumer expectations for product performance. Many consumers will make their first LED lamp purchases in the next few years, and the market is entering a critical window for making a positive impact on consumers' first impressions of LED technology. Improving quality and achieving increased customer satisfaction with early LED purchases will lead to long-term, sustained success and market adoption of LED lamps.

There are a number of areas in the draft Specification where additional clarification or information is needed. PG&E's comments focus on implementation of the voluntary standard, product availability, and other issues. PG&E would be happy to meet with CEC staff to discuss any questions on the content of this letter.

II. IT IS UNCLEAR WHO WILL BE RESPONSIBLE FOR OVERSEEING COMPLIANCE WITH THE VOLUNTARY STANDARD

During the October 11 workshop, numerous comments were made about work that the utilities would be doing to implement the voluntary standard. It is not clear to PG&E that it is appropriate for the utilities to verify that products meet the voluntary standard because it would place the utilities in a role similar to that of a regulatory agency, which would not be appropriate.

It may be more appropriate for the CEC to contract with a third-party vendor to perform this function, as well as to establish, maintain, and monitor a database or list of products meeting the voluntary standard.

Regardless of the entity tasked with implementation of the voluntary standard, the source of funding for this activity is not clear. PG&E has not been authorized by the CPUC to spend monies to administer such a program and a recent proposed decision on the 2013-14 Energy Efficiency Program cycle appears to indicate that the CPUC envisions reducing the monies that would be available for these types of programs. Therefore, the CEC should explore sources for funding these activities outside of the IOUs.

More thought is needed to ensure that incentives are directed to compliant products. However, the utilities cannot be expected to enforce compliance with a standard approved by a regulatory agency because the utilities do not have enforcement powers that are more appropriately conveyed to a regulatory agency. In addition, PG&E would like clarification on the aftermarket testing proposed by the Specification. For example, ENERGY STAR has a robust aftermarket testing program identifying lamps which should no longer be qualified. The CEC may wish to add a similar requirement in the California Specification.

III. NUMEROUS MARKET ISSUES NEED TO BE ADDRESSED

While the draft Specification is pending, the utilities expect to support the move to LED lamps by incenting the ‘top half’ of the market in terms of quality. The utilities have defined the ‘top half’ to mean ENERGY STAR qualified LED lamps products (excluding semi-directional and non-dimmable), which represent the top half of the overall LED lamp market.

Numerous questions remain, however, about how to address timing differences that may occur between the approval of ENERGY STAR specifications and the CEC Specification. For example, if the CEC’s specification relies on pending modifications to the current ENERGY STAR specification, the effectiveness of the CEC’s specification could be delayed until the ENERGY STAR specification modifications are approved. The CEC may wish to adopt a two-step approach to address the potential timing difference in the specification adoptions and clearly indicate the CEC specification requirements prior to adoption of any ENERGY STAR specification updates.

Another issue the CEC may wish to address is the question of whether every product that qualifies under the California specification should be required to carry the ENERGY STAR label. PG&E supports a requirement that all products that qualify under this Specification be required to carry the ENERGY STAR label. Such a requirement will reduce customer confusion about whether a product meets the Specification and allow for more consistent marketing of eligible lamps.

In any event, once the voluntary LED lighting Specification is adopted, the CEC should provide an appropriate “grace period” to the Specification’s effectiveness to allow time for the necessary

program infrastructure to be developed. Tasks to be completed include the creation of the database of allowed products, development of customer communication and transition from other programs, development of new testing protocol for attributes of the spec that are not currently included in LM79 or LM80 reports, and time for the manufacturers to test new products to ensure they meet the final specification.

At the CEC workshop, it was noted that there are very few lamps that currently meet the proposed specification requirements. PG&E is curious as to whether the CEC will evaluate whether complying lamps are sufficiently available at a reasonable price prior to restricting IOU support to what could be a very limited product pool. The CEC may wish to seek manufacturers' forecasts of how many products (by product classes and lamp shapes) will be available should the Specification be approved, along with an approximate time frame for product availability.

IV. ADDITIONAL TECHNICAL QUESTIONS MUST BE ADDRESSED

PG&E offers numerous questions and comments about the draft Specification, as indicated below.

A. Parameter Coverage

It is not clear to PG&E whether ALL other parameters are available on LM-79 or LM-80. For example, the 2-step MacAdam ellipse is one parameter which might not be covered. Additional clarity is needed on this issue.

B. Dimmability, Reduced Flicker, and Noise-Free Operation

Dimmability, reduced flicker, and noise-free operation are important features of LED lamps and ones of value to customers. Appropriate tests for these feature are critical.

In developing tests as to whether a product's dimming features meet the Specification's requirements, a focus is needed in designing dimming tests that are scalable and reproducible, and not dependent on subjective human observation as proposed in the Specifications, where it is indicated that "flicker testing should be conducted by observers who are flicker sensitive." A more robust testing process that relies on some objective criteria and is easily duplicated may be more helpful to industry than the proposed human observations.

While industry is working to develop dimmability and other testing protocols, it is not clear when those protocols will be available. Therefore, the CEC may wish to propose test procedures and metrics for dimmability, flicker reduction, and noise reduction and gather input from stakeholders on these draft procedures. Furthermore, PG&E is conducting testing efforts on both dimmability and flicker reduction that should be complete later this year. PG&E would be pleased to share this work with the CEC when it becomes available.

The Specification currently references use of the same test procedures as ENERGY STAR, to make compliance as easy as possible. However, there is no dimmability test procedure outlined in the ENERGY STAR specification, so the applicable test procedures are unclear.

Finally, additional discussion is merited around the issue of dimmer compatibility. The CEC again referenced ENERGY STAR's dimmability labeling and compatibility requirements, but these do not yet exist. For example, if dimmer models were to be listed on a package, would additional testing be conducted to verify that the lamp works with the listed dimmers?

C. Color Parameters and other Technical Requirements

PG&E suggests the Specification be modified to expand the flood beam angle from 90 degrees to 120 degrees, given customers have indicated a preference for a wider beam. Ultimately, the success of the voluntary standard is dependent on customer procuring the desired products and this is a reasonable accommodation of an important customer issue.

In establishing the color parameters, a careful balancing is needed between color consistency and cost. For example, information on the cost to move from a 7 step MacAdam ellipse to a 4 or 2 step MacAdam ellipse could help inform the Specification. If the cost to move to a 2 step MacAdam ellipse is significantly higher than the cost of moving to a 4 step, it may be important to move incrementally toward improved color consistency over a number of years. Customers are more likely to buy the higher quality product that is slightly more expensive, but are not likely to be willing to pay orders of magnitude more.

Similarly, while PG&E supports a CRI of 90, additional information is needed on the associated cost. Additional information on how this improvement may affect the market and availability of products in California is important. Establishing a Specification that does not result in development of products that meet that Specification would result in much wasted time and energy on the part of all stakeholders. Again, it may be important to adopt an "incrementality" approach to increasing the CRI, rather than pushing to achieve substantial improvements in just one tranche.

There may be some benefit to including a minimum R9 value in the specification, rather than simply requiring that the R9 value be positive. Setting a minimum value will help ensure that products meet a consistent minimum threshold, while still allowing for flexibility in the market and improved product quality.

PG&E would like to have a better understanding of the tradeoffs on how efficacy is affected by the combination of an increased CRI and a positive R9 value. PG&E is concerned that there will be diminished energy savings potential with this combined higher specification.

PG&E urges the CEC to ask for cost estimates from those manufacturers that intend to supply compliant products in 2013, to assess the cost impacts of each parameter. PG&E is also

conducting its own analysis of the cost implications of various lamp features and can share this analysis with the CEC by the end of 2012.

D. Allowable Products

Additional clarity is needed on the eligibility of various products to meet the Specification. The draft Specification contains conflicting guidance for three products in particular, candelabra, spotlights, and floodlights.

For candelabra, on page 18 of the Specification, it is indicated that candelabra (C or CA) lamps are eligible as omnidirectional. However, other information on the same page indicates that only A or G type lamps are eligible for omnidirectional. PG&E supports the eligibility of all of these lamps, because they will provide greater flexibility for customers.

Similarly, on p.18, the chart shows that MRs can only be spotlights, but the bullets below indicate an MR can be classified as a floodlight. We request clarification from the CEC on these issues.

E. Start Time

Based on comments from industry participants at the October 11 workshop, PG&E recommends the CEC modify the Specification to require a shorter start time of one-quarter of a second (250 milliseconds).

F. Early Lamp Failure

The CEC may wish to consider additional or different approaches to address early lamp failure, and/or including performance requirements such as the EU's "Premature Failure Rate" metric. The Codes and Standards team, in coordination with the lighting team, would be happy to work with the CEC to help identify appropriate metric(s) and test procedure(s) to address early failure. While no industry-standard test currently exists, PG&E has been participating in a working group on this subject.

V. GUIDANCE IS NEEDED ON FUTURE UPDATES TO THE SPECIFICATION

PG&E supports the parameters established in the Specification for color temperatures of 2700 and 3000K. However, PG&E would also like to establish more flexibility for program managers to potentially support lamps with higher color temperatures. Although most American consumers prefer "warmer" color temperature lights, there is a significant minority (in particular consumers from Asian and South American countries) who want the option to purchase higher CCT lights (in some cases as high as 5000K). Thus, PG&E would like to determine a structure to potentially support these higher CCT lamps outside of the Specification. One method to enable PG&E more flexibility would be to create a tiered approach for supporting the CA

Quality Specification whereby ENERGY STAR lamps would receive a base incentive and lamps meeting the Specification would receive a higher incentive.

As noted above, it is important to establish a voluntary standard that incrementally improves the quality of LED lamps, and it is equally important to do that in a way that appropriately balances quality, cost, efficacy, and availability of product. Implementing these improvements over time is a good way to improve product quality without adversely affecting the marketplace by making it significantly more expensive to buy a qualifying LED lamp than a non-complying product.

With an incremental approach, however, the CEC should make clear to stakeholders the anticipated path for periodically updating the Specification. That will allow manufacturers and other stakeholders to plan accordingly and allow manufacturers to transition to the newer Specification. Furthermore, guidance is needed on the length of a grace period for lamps that meet an earlier Specification. This is an important consideration to allow the market to prepare for the introduction of new models that would meet any updated Specifications.

Other guidance is needed on when certain elements of the current draft Specification will be updated. For example, Appendix C remains to be populated. It would be helpful for parties to know when that information will be made available for public review and comment.

PG&E would also like the CEC to consider whether a tiered approach can be used to support products that qualify under the specifications. For example, it may be helpful to allow the utilities to continue to support ENERGY STAR qualified lamps, while providing additional incentives for products that meet the more stringent California Specification for LED lamps. At the same time PG&E can work with ENERGY STAR to adopt the California Specification as ENERGY STAR PLUS. This would likely help develop the LED lamp market more quickly and provide greater customer choice nationwide. Also by broadening the pool of eligible products, there may be more of an impetus for manufacturers to offer more competitive pricing.

VI. CONCLUSION

PG&E is happy to meet with CEC staff to discuss these comments on the draft LED lamp specification and looks forward to continuing discussion on the development of this voluntary standard.

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Sincerely,

/s/

Valerie J. Winn

cc: G. Flamm by email (gary.flamm@energy.ca.gov)
O. Howlett by email (owen.howlett@energy.ca.gov)