

Cree, Inc.
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Dear Richard:

One point of feedback on the subject document from an LED supplier's perspective:

For the most part, the document is a fine effort, and it appears that the targets for the indoor fixtures are reasonable and well thought out.

The one question/comment we had was on the Category B fixtures cited on p.9. On that page, 50, 60, and 70LPW targets are cited for each of three chromaticity ranges. We think this is about 20-25% beyond any currently known technological solution when all the losses (electrical, thermal, optical) are comprehended.

Part of the ENERGY STAR criteria must certainly be to stretch the technology, so in that respect, this may be entirely appropriate. If these goals stay as the targets, we expect that the first fixtures to meet this might not be available for two or more years, however.

Rough calculation for 6500K CCT:

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|--|--|
| Best LED commercially available: | 85LPW @350mA |
| Derating for thermal losses: | 10% (90% of 25 degree C rating) |
| Derating for driver/electrical losses: | 15% (85% efficient) |
| Optical losses in fixture: | Varies greatly from 10% to more than 30% |

So, the range for current capabilities would be roughly between 46 and 59 LPW. To achieve the 70LPW target, the LEDs would need to start at around 110 - 120LPW. This is, of course, on the DOE and LED supplier's roadmaps, but will not happen for another two or so years. If you add another year for a typical design cycle for a luminaire, this would mean you should not expect to award a Category B ENERGY STAR for 2-3 years with this 70LPW target.

Again, if this was the desire of ENERGY STAR to stretch the technology, then in this respect we have met the goal. Cree recommends moving each of the three Category B targets down 10 LPW from 70/60/50 LPW to 60/50/40 LPW respectively. This would require around a 100LPW LED to meet the criteria -- something we should have in volume some time late calendar 2007. If you add a year for luminaire design, then we would expect the first Category B luminaire to hit production in late calendar 2008.

Thanks for your consideration on this, and please contact me if you have questions.

Sincerely,

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