Postings: from the desk of Jim Brodrick

I often get asked about the status of the L Prize℠ competition, and since it's been a while since I last wrote about it in these *Postings*, I thought I'd give you an update. If you'll recall, the competition was launched by DOE in 2008 to spur manufacturers to develop high-quality, high-efficiency SSL products to replace the common light bulb. To date we've received one entry – a 60W replacement lamp submitted by Philips Electronics.

Why haven't we been inundated with L Prize submissions? Because the bar was intentionally set extremely high. Congress established the L Prize in the Energy Independence and Security Act of 2007 as a technology race, to encourage and reward the first manufacturer to prove they could meet exceptional performance levels. So it's no easy matter for manufacturers to come up with a product that can pass muster. Remember, the whole idea is to replace the common light bulb with something that performs as well or better and is much more energy-efficient.

The L Prize winner in the 60W replacement category has to produce more than 900 lumens, and have a lifetime of more than 25,000 hours, which is 25 times greater than that of a typical incandescent. The color has to be just right, too: the competition's requirements call for a Color Rendering Index (CRI) of more than 90, which is a high measure of light quality, and a Correlated Color Temperature (CCT) of between 2700K and 3000K, which is warm-white light comparable to that produced by incandescent sources. As if all that weren't enough, to be considered an energy-efficient replacement for the 60W incandescent bulb, the L Prize winner must consume

less than 10W of electricity, and have an efficacy of over 90 lm/W, which exceeds the efficacy of all incandescent and compact fluorescent sources (10-70 lm/W).

But it looks like the Philips entry may have company soon, because Lighting Science Group (LSG) has officially announced its intention to submit its own L Prize entry, also in the 60W replacement category. We're delighted that LSG has decided to enter this exciting competition, and we look forward to receiving their full application.

But what about the Philips entry? It was submitted more than a year ago – back in late 2009. Hasn't all the testing been completed? The answer is: almost. Each entry is subjected to a battery of rigorous tests, which takes time. In the first phase of testing, 200 Philips product samples underwent short-term photometric testing, in which they were subjected to IES LM-79-08 procedures measuring luminous flux, intensity distribution, CCT and chromaticity, CRI, and power factor. Then, last summer, more than 1,300 samples were field-tested by 14 L Prize partners at over 40 sites, in a wide range of applications – from single and multi-family residential to commercial offices, hospitals, and retail stores. And stress testing, in which samples were exposed to extreme conditions such as high temperatures and humidity as well as rapid cycling, was just completed.

The results of all of this testing are currently being reviewed by the L Prize Technical Review Committee (TRC), which consists of experts in new technology market introduction and lighting technology who are determining whether the entry meets the competition requirements. The TRC is also reviewing the commercial manufacturing plan submitted by Philips, and other related findings and documentation.

So what remains to be done with the Philips entry? Long-term testing to estimate product lifetime. This testing phase is especially

important with SSL, which is often touted as lasting far longer than traditional lighting technologies. Long-term testing on 200 of the Philips lamps began last spring at Pacific Northwest National Laboratory; it requires at least 5,000 hours of testing, in a specially built high-temperature test facility designed to simulate actual operating conditions. Completion is expected sometime this spring – so stay tuned.

I also get a lot of questions about the L Prize competition's PAR 38 category, which involves another of the most widely used and inefficient lighting technologies. Back in January, DOE temporarily closed the PAR 38 competition in order to retool it to better reflect the current realities of the marketplace and technology. This decision was based on the experience of researchers and product developers who have been hard at work on the PAR 38 replacement challenges, as well as on the experience of those involved in the 60W replacement lamp competition. No PAR 38 entries will be accepted until after the new program requirements are announced.

Although the first entry in each category to meet the competition's requirements will win a cash prize, up to two additional entries in each category can be recognized, making them eligible for widespread promotion with the L Prize energy efficiency program partners, as well as in the Federal sector. In other words, there could be multiple winners. But the ultimate winner will be consumers, who'll not only save energy and money but benefit from a cleaner, healthier environment.

As always, if you have questions or comments, you can reach me at postings@lightingfacts.com.