



SOLID-STATE LIGHTING

Power struggle threatens LED future

You would think that US government agencies would be working closely to ensure a successful transition to energy-efficient lighting based on LEDs. You'd be wrong, writes **Michael Hatcher.**

Runaway CO₂ emissions are bad. Really bad. But demand for electricity is growing quickly, so we need energy-efficient technologies. This we know.

We also know this: a huge chunk of global electricity demand comes from the US, and one-fifth of that country's electrical energy consumption is used for lighting alone. Solid-state lighting (SSL) based on compound semiconductors offers a potentially massive efficiency improvement and should therefore be deployed widely. So far, so logical.

Where things get complicated, as always, is in the real-world implementation of such logic. And in the case of the US Energy Star program – designed to inform US consumers about energy-efficient technologies – things just got very complicated indeed.

The problem with Energy Star is that it is run by two government agencies: the Department of Energy (DOE) and the Environmental Protection Agency (EPA). Two agencies means problems: "This is our dirty laundry and nobody wants to talk about it," is how one frustrated DOE source describes the situation.

For LED makers the DOE has been key to the development and market introduction of SSL. With dozens of research programs giving it a real insight into technological developments, the DOE is uniquely positioned to manage SSL commercialization.

And the DOE has done a pretty damn good job of that, knowing that, for LED-based lighting to be a success, it is crucial to avoid the mistakes made previously with compact fluorescent lamps (CFLs). Slow start-up times and the harsh, unflattering blue-tinged emission of early CFLs set the energy-efficient technology back years in the US, and a repeat performance with SSL would hurt LED makers.

The DOE believes that it is critical to make sure that Energy Star LED-based lamps really deliver what they promise: bright, attractive illumination and very high energy efficiency. With a clear strategy in place to do that, the DOE's Energy Star criteria come into effect at the end of this month for an initial group of products, including task lights and recessed downlights. By 2011 the criteria will extend to cover all types of SSL application.

So why, in the first week of June, did the EPA surprise everybody (including the DOE) by suddenly bringing out its own separate Energy Star criteria, giving SSL companies a whole different set of standards to meet in order to get the all-important label? Surely the two agencies would have been working closely on something this important, right? Wrong.

In fact, it seems that the whole Energy Star program is affected by a power struggle between the two government institutions. "This is a real mess," said a DOE representative close to the controversy, who believes that the EPA's move jeopardizes the shift to SSL in the US. A carefully staged introduction of the

technology to consumers is crucial, he says, arguing that the broader specification announced without warning by the EPA is "suicidal" and will result in rogue products receiving the Energy Star label.

Naturally the EPA disagrees. Ann Bailey, the agency's director of Energy Star product labelling, said: "We fundamentally disagree that these standards are conflicting and that they will restrict the solid-state lighting market in the future."

So how did it come to this? It certainly never should have. At a White House meeting convened by the US Council on Environmental Quality in October 2007, the DOE received a clear mandate to lead the development, market introduction and wider deployment of LED-based lighting. However, rather than embarking on a "jaw, jaw" response, the EPA appears to have taken the "war, war" option, decamping to cook up some half-baked Energy Star criteria of its own.

According to Bailey, these criteria emerged in response to lighting-fixture manufacturers who contacted the EPA with concerns about the DOE's plans for implantation. But with rogue LED lighting already on the market, the last thing needed is what looks like government-approved fixtures that don't deliver the high-quality light that consumers expect.

In public the EPA says that it is "committed to working closely with the DOE". Speaking to the DOE, you certainly don't get the impression that this is the way the EPA is actually operating. "EPA has bypassed the DOE and created a mess," is how one DOE insider described the non-relationship. And whether it was through deliberate misinterpretation or sheer incompetence, the EPA produced a highly inaccurate representation of DOE criteria for Energy Star lighting products in its recent publications.

According to DOE insiders, there are very few lighting-fixture makers on the EPA's side. More damningly, testing fixtures to meet EPA criteria looks like causing uproar. One independent testing laboratory is angry that the EPA declared it to be supporting the EPA criteria, when in fact it does not even believe that performing the test is possible. Utility companies that support the DOE are said to have complained in writing to the EPA, while the Next-Generation Lighting Alliance is behind the DOE.

So what happens next? Time is short – the DOE criteria for Energy Star lighting come into force on September 30 and the EPA is showing no sign of backing down. Only the White House can force the EPA's hand – and with a weakened administration on the way out and the presidential election now in full swing, any White House action looks unlikely.

With high-level meetings between the DOE and EPA ongoing, one can only hope that "jaw, jaw" prevails. In our bid to use resources more efficiently, this is one power struggle that we could do without.



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