

**Response to Postings: from the desk of Jim Brodrick  
regarding Specifier Reports: Streetlights for Collector Roads**

November 15, 2010

In September, The National Lighting Product Information Program (NLPIP) released *Specifier Reports: Streetlights for Collector Roads*, designed to provide objective performance information on street lighting technologies including high pressure sodium (HPS), induction, light-emitting diode (LED), and pulse start metal halide (PSMH). The streetlights selected for evaluation were recommended in 2009 by nine different manufacturer representatives as equivalent to the incumbent 150W HPS streetlight. The report concluded that the LED streetlights recommended by the manufacturer representatives as replacements for the incumbent streetlight would cost more than twice as much to own and operate over the life of the streetlights, primarily because the LED streetlights required narrower pole spacings to meet the recommended practice for illuminating collector roads, and the cost of the poles per mile dominated the life cycle costs.

Following publication, Jim Brodrick wrote in a *Postings: from the desk of Jim Brodrick*:

As for the LRC study, a critical error was committed at the outset which affects all of its conclusions. Although I'm sure it wasn't intentional, LRC selected some woefully underpowered LED products to compare with HPS street lamps, and then concluded that LED products aren't competitive because of the high cost of having to purchase additional luminaires and poles to make up for the insufficient light. That's kind of like racing a Ford Pinto against a Chevy Corvette and then concluding that all Chevys are faster than all Fords.

There are plenty of higher-powered LED products on the market that are appropriate for the study application, and selecting them would have resulted in higher luminaire output, thereby providing a fair comparison with the HPS products that were selected. This fundamental flaw in methodology completely undermines the LRC's general statements about LED performance. The conclusions that LED systems need more luminaires and poles, and therefore have significantly higher first costs, are a direct result of this critical error in product selection, and consequently are baseless.

NLPIP offers two points of clarification of its findings. First, NLPIP did not select the streetlights included in the *Specifier Reports*. In the same process used by many lighting specifiers, NLPIP asked manufacturer representatives to identify an LED streetlight equivalent to an HPS luminaire with certain specifications. Rather than negate the findings, this methodology leads to real-world results that occur when manufacturers and their representatives claim "underpowered" luminaires to be equals to existing fixtures, even though "higher-powered" models might be available. We believe that this is an issue in the LED outdoor lighting industry at the moment, as demonstrated by the fact that all six of the LED manufacturer representatives polled identified "underpowered" streetlights to NLPIP as equivalent to the given performance specification.

Second, Jim Brodrick suggested that a fairer comparison would use "higher-powered" LED streetlights, so NLPIP recently conducted an additional investigation of LED streetlights with enough light output to meet IES RP-8 roadway lighting criteria at the same pole spacing as typical HPS streetlights. The results are published as an addendum to the original Specifier Reports, starting on page 42 of the report.<sup>1</sup> In a procedure that differed from the main report, NLPIP itself identified LED streetlights from the websites of the LED streetlight manufacturers included in the main report. Because poles dominate the total life

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<sup>1</sup> Available at <http://www.lrc.rpi.edu/nlPIP/publicationDetails.asp?id=927&type=1>.

cycle costs of roadway lighting systems, the pole spacing was held constant for this analysis. Current (October–November 2010) LED streetlight prices and manufacturer-provided photometric data were used. The results show that the average relative life cycle cost (excluding pole costs) for the LED streetlights would be 2.3 times the average relative life cycle cost of the 150W HPS streetlights if the LED modules were to require replacement after 25,000 hours of operation. An LED module life of 50,000 hours would result in the LED streetlights having an average relative life cycle cost 1.7 times that of the 150W HPS streetlights.

These results are based on a careful comparison between lighting technologies, using a technology-neutral methodology. In the document *Response to correspondence sent by Pacific Northwest National Laboratory to the National Product Information Program regarding the GATEWAY program*,<sup>2</sup> NLPIP listed eight specific ways that GATEWAY case studies are biased toward LEDs. In his *Postings*, Jim Brodrick responds to NLPIP's critique that several GATEWAY reports compare outdoor lighting systems with different illumination levels, but do not account for this in the economic calculations, resulting in artificially short payback periods for LED streetlights. His *Postings* counters that "...the report for that GATEWAY study contains a very clear caveat urging readers not to attribute the energy savings to the new technology, and makes clear in its conclusions that the energy savings were due to reducing illumination levels at an over-lit location." However, if a lower illuminance level is acceptable at a study site, then this could possibly be achieved less expensively with a lower-powered HPS luminaire rather than an LED luminaire, but this option is not included.

NLPIP asks that specifiers read the *Specifier Reports* and form their own conclusions, rather than drawing information about it from the *Postings*, which contains several inaccuracies and exaggerations. For example, the *Postings* says that NLPIP "found LED street lighting to be vastly inferior to high-pressure sodium (HPS) and pulse-start metal halide (PSMH) fixtures for collector roads." The report neither makes this conclusion nor offers data from which this conclusion can be made. As noted above, the *Postings* also says that NLPIP "concluded that LED products aren't competitive," which is not true. NLPIP carefully described the selection process for the streetlights it studied and then discussed the economic findings for only those streetlights.

NLPIP believes that LED luminaires will play a strong role in the future of lighting. The best way to achieve that future is for lighting specifiers to be aware of the strengths and weaknesses of the product choices because this will help prevent a backlash against new technologies as they enter the marketplace.

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<sup>2</sup> Available at [www.lrc.rpi.edu/programs/NLPIP/SR\\_StreetlightResponses.asp](http://www.lrc.rpi.edu/programs/NLPIP/SR_StreetlightResponses.asp)