

Streetlights for Local Roads

Induction and LED streetlights are often claimed to provide energy savings, better lighting uniformity and distribution, and lower maintenance costs compared with high pressure sodium (HPS) streetlights. The National Lighting Product Information Program (NLPIP) released the publication, *Specifier Reports: Streetlights for Local Roads*, designed to provide objective performance data to help lighting specifiers analyze these claims and make informed decisions.



Between February and March 2010, NLPIP purchased six streetlights identified by manufacturer representatives as equivalent to a 100-watt HPS luminaire with a Type II distribution. One used an HPS lamp (the base case model), one used an induction lamp, and four used LED modules. NLPIP determined how many of each type of streetlight were needed to illuminate a one-mile stretch of a local residential road to meet RP-8 roadway lighting criteria and calculated power demand and life-cycle cost for each.

NLPIP Sponsors

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Summary of Findings

Pole spacing

The tested LED streetlights required an average of 40% more poles per mile than the HPS base case to meet the RP-8 lighting criteria, and the induction streetlight required 64% more poles per mile. Only one of the tested LED streetlights was able to provide pole spacing similar to the HPS base case.

Power demand

The average power demand per mile of the LED streetlight layouts evaluated was 15% less than the power demand per mile for the HPS base case, but there was wide variation among the LED streetlights tested. The tested induction streetlight required 46% more power per mile, on average, than the HPS base case.

Life-cycle costs

The tested LED and induction streetlights would need to provide longer pole spacings in order to achieve a lower life-cycle cost than the HPS base case (with the exception of one LED streetlight tested, assuming a 100,000-hour life).

Tested streetlights	Replacement interval	Average life-cycle cost/mile
All LEDs	25,000 hours	1.9 times HPS base case
All LEDs	50,000 hours	1.6 times HPS base case
Best performing LED	50,000 hours	1.2 times HPS base case
Induction	100,000 hours	1.8 times HPS base case

NLPIP also considered several other factors that could affect streetlight layout and power demand including mesopic photometry, mounting height, road width, and streetlights with higher light output. In most cases, the HPS streetlight(s) provided longer pole spacings than the LED and induction streetlights, with a few exceptions. The full report is available at www.lrc.rpi.edu/nlPIP/publicationDetails.asp?id=931&type=1.