

Specifier Reports: Streetlights for Collector Roads



Streetlights with light-emitting diodes (LEDs) and induction lamps are being marketed as effective replacements for high pressure sodium (HPS) streetlights for new construction and retrofit applications. Many municipalities are in the process of installing these streetlights, some with funding from the American Recovery and Reinvestment Act of 2009.

Methods

NLRIP tested eight LED and one induction streetlights and compared them with four HPS and one pulse-start metal halide (PSMH) streetlights, the incumbent technologies. All of the streetlights were selected by manufacturer representatives to be equivalent to the base case—a 150-watt HPS, Type III, medium distribution, full cutoff streetlight mounted 27 feet high. In a survey, outdoor lighting specifiers identified safety of drivers and pedestrians as their most important concern when designing streetlight systems, so the streetlights were evaluated as part of installations that meet ANSI/IESNA RP-8-00 (R2005), the *American National Standard Practice for Roadway Lighting*. NLRIP compared the power demand and costs per mile of collector road.

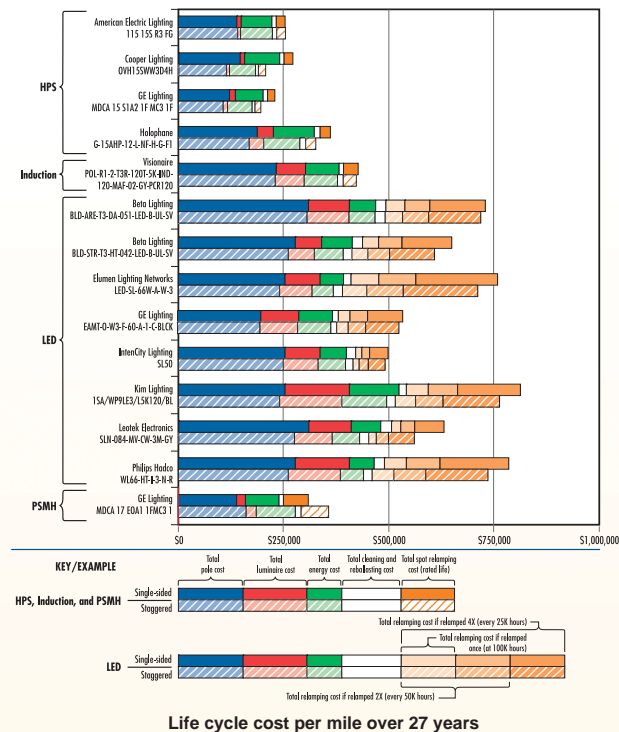


Examples of the three streetlight types tested: (l-r) HPS, induction, and LED.

Sponsors

CEATI International, Lighting Research Center, New York State Energy Research and Development Authority (NYSERDA), United States Environmental Protection Agency (US EPA)

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Results

Due to lower street-side lumens, the LED and induction streetlights could be spaced only about half the distance as the HPS and PSMH streetlights, on average, and still meet the RP-8 criteria. If an HPS or PSMH streetlight system just meeting RP-8 is retrofitted with the tested LED or induction streetlights on a one-for-one basis, the streetlight system will no longer meet RP-8.

Largely because of the narrower pole spacing needed, the life cycle costs of the LED and induction streetlights were up to twice those of the HPS and PSMH streetlights.

The average power demand of the LED streetlights was slightly lower than the average power demand of the HPS streetlights, but there was wide variation between LED models.

Overall, NLRIP found that HPS and PSMH streetlights currently provide a better cost value, and LED and induction streetlights will need to produce about the same street-side lumens as HPS models to provide similar pole spacing and be economically competitive.