

Maintaining LED Traffic Signals

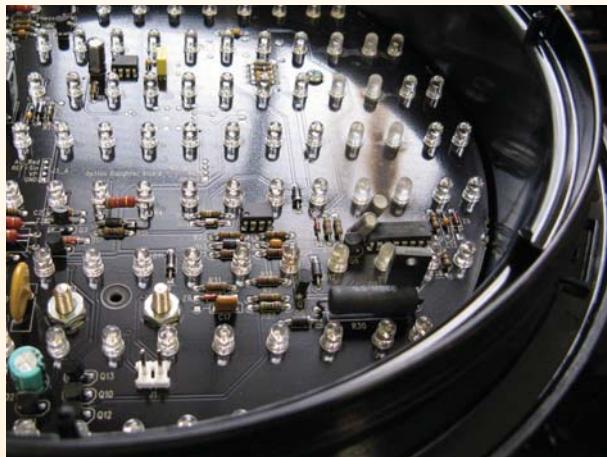
LED traffic signal modules have largely lived up to their promise for increasing the energy-efficiency of the nation's traffic signal system and have most likely reduced the costs of labor associated with traffic signal maintenance.

However, some LED traffic signal modules fail sooner than anticipated. While future designs are beginning to address the issues behind these failures, a large portion of installed signals using earlier product designs exist and will need to be dealt with by transportation agencies.

Through a project funded by the National Cooperative Highway Research Program, the LRC examined LED traffic signal maintenance and monitoring issues and developed recommendations for replacement strategies.



Examples of failed LED traffic signals.



Heat and smoke from a failed circuit board component contributed to failure of several LEDs in this traffic signal module (note the frosted appearance of LEDs on the right-hand side of the module).

Replacement analysis

Subject to some uncertainty in the failure rates for LED traffic signal modules, the cost comparison of group versus spot replacement strategies suggests:

- Group replacement can reduce agency costs.
- If a 10-year operating life is expected, a replacement period of around eight years will probably reduce overall long-term replacement costs. In this case, about 12 percent of signal modules would be replaced each year.
- If a 7-year operating life is expected, a replacement period of around six years will probably reduce overall long-term replacement costs. In this case, about 17 percent would be replaced each year.

Sponsor

National Cooperative Highway Research Program (NCHRP)



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