

LED Retrofit Highway Lighting

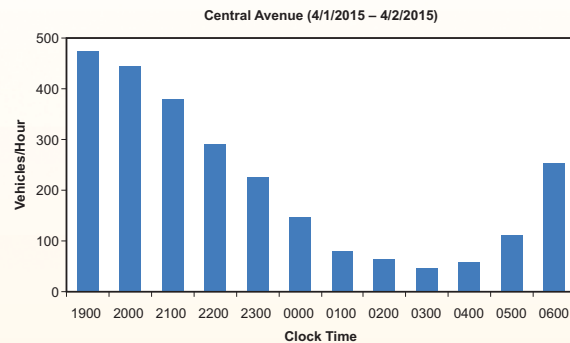
Solid-state lighting technology is advancing rapidly to a point where light-emitting diode (LED) lighting systems can be viable replacements for existing lighting systems using high-pressure sodium (HPS). In this project, the Lighting Research Center conducted analyses to document existing lighting conditions along a parkway (Southern State Parkway, Long Island) and an arterial roadway (Central Avenue, Albany County) in New York State.

Energy economic analyses confirmed that the initial investment could be paid back in terms of reduced operating costs, and that energy savings were larger for LED systems when compared to HPS systems that produced similar levels to those from the LED alternatives. Further energy cost savings would be expected with the use of adaptive lighting controls specified to take advantage of temporal nighttime traffic patterns on the roadways investigated.



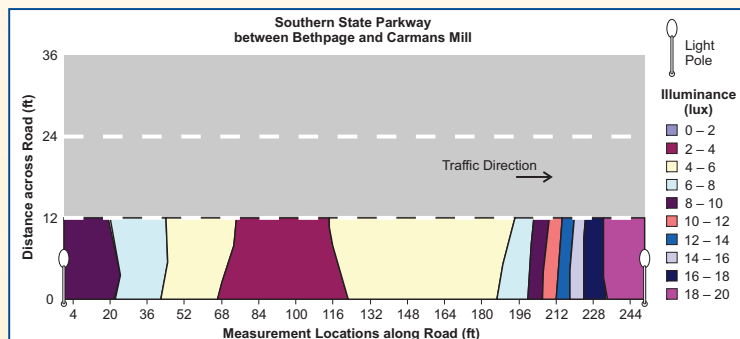
LED technologies are being used more frequently for street lighting.

Several LED alternative lighting systems were compared using photometric analyses to identify ones that meet light level criteria for each roadway type; several options were available that resulted in energy savings compared to the existing HPS lighting systems, which were also measured to ensure accuracy of the photometric models.



Nighttime traffic volume differed substantially for different times of the night.

The project report concludes with considerations for incorporating LED performance characteristics, such as ensuring they do not produce interference with radio equipment, into specifications for LED retrofit alternatives.



Measured light levels along one section of the Southern State Parkway on Long Island.

Report

A copy of the LRC's report to NYSDOT may be downloaded from:
www.dot.ny.gov/divisions/engineering/technical-services/trans-r-and-d-repository/C-14-12-Final%20Report_June%202015.pdf



Sponsor

New York State Department of Transportation (NYSDOT)

