

Examining How Headlight Glare May Affect Driver Behavior

Rensselaer Polytechnic Institute's Lighting Research Center (LRC) has demonstrated that headlight glare may increase driver discomfort and result in poor visibility.

Now, through a two-year, \$890,012 award from the National Highway Transportation Safety Administration (NHTSA), LRC scientists will further their work in this field. The LRC will examine the causes and effects of headlamp glare and develop technological solutions through advanced forward lighting systems designed to meet performance requirements while minimizing unnecessary glare.

“Recent headlamp technologies are presenting new oncoming appearances for drivers, which have resulted in increased complaints of glare to the National Highway Transportation Safety Administration,” said Mark Rea, Ph.D., LRC director. “To help assess the issue, the LRC is conducting research to examine the intensity, color, and size of oncoming headlamps and determine the effects of these parameters on visibility, as well as impressions of visual discomfort.”

Some drivers may experience problems with visual re-adaptation—the ability of the eyes to recover their sensitivity to see objects after being exposed to glare. According to Rea, glare can be deceiving. A driver's visibility may be impaired by glare without the driver experiencing discomfort.

New headlamp systems presently promoted by lighting and vehicle manufacturers claim to provide drivers with additional visibility under certain driving scenarios. However, there are still many unanswered questions regarding how these new technologies relate to visibility, glare, driver behavior, and safety, according to the LRC research team now delving into these issues.

As the LRC scientists move ahead in their research, the team plans to outline what new aspects of headlamp systems should be further examined. The results of the research will be reported to Congress as part of the requirements of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), signed into law August 10, 2005, by President Bush.

SAFETEA-LU legislation addresses the many challenges facing the nation's transportation system today—improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing intermodal connectivity, and protecting the environment—as well as laying the groundwork for addressing future challenges. For more information about SAFETEA-LU, visit <http://www.fhwa.dot.gov/safetealu/legis.htm>.

LRC's research award will be administered through Westat, Inc., a contract research organization serving agencies of the U.S. government, as well as businesses, foundations, and state and local governments.

The Transportation Lighting Group at the LRC is committed to exploring lighting and visibility issues associated with transportation. The group examines roadway visibility by considering vehicle lighting, fixed roadway lighting, and signal and marking devices separately and as an interactive system.

Source: Rensselaer Polytechnic Institute

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