

Research Need for Mobility Safety Technical Advisory Group

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1. Issue Identified:

Personally worn LED lighting for workers

2. Summary of Problem:

LED lighting for worker safety is an emerging technology. Construction workers, law enforcement, runners, and cyclists are using body-worn rechargeable LED lights, LED lights on hats, body sashes, ANSI-approved vests with LED enhancement, and other technologies. Other transportation agencies are providing these technologies for their workers. There is very little published research on what is or is not effective in this space. What styles and colors are most/least effective? Are some brands/styles more effective or more durable? This should be a small research project where several competing brands and styles of equipment are purchased and distributed to Illinois Department of Transportation employees for feedback. The research team could also set up visibility tests in controlled areas to gather data on the effectiveness of various units.

3. Desired Results/Outcome:

This research should develop an understanding of the competing products and technologies presently in the market. The project should deploy some competing products in various applications present to IDOT, including emergency patrol applications, nighttime construction, night maintenance, and occasional-use technologies. Both lighted urban work areas and completely dark rural applications should be considered.

The outcome of this study should include recommendations for an IDOT policy on personal LED lighting, including what colors are most effective in various environments/applications. The study should also attempt to determine maximum and minimum light levels for various applications. The applications should include emergency patrol drivers, construction workers working at night, highway maintenance workers who occasionally respond to emergencies at night, and office staff who occasionally perform night inspections.

The study should include theoretical support for recommendations, along with data gathered through field evaluations and surveys of users and people observing various alternatives. Types of devices, colors, and light intensity should be included in the recommendations. Different recommendations for various applications are acceptable. The goal of this study is not to find a singular solution; multiple solutions are acceptable.

The overall goal of this study is to determine if personally worn LED technology provides safety and operational advantages for IDOT workers and others engaged in nighttime work on IDOT roads.