

# Developing the Next Generation of Warning Beacons

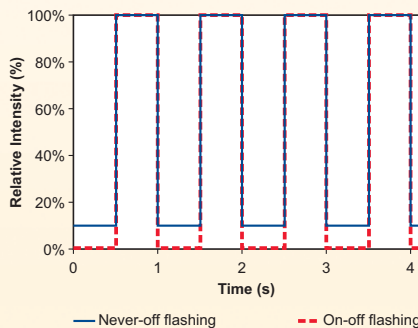
**F**lashing yellow warning beacons on highway maintenance vehicles, utility trucks, delivery vans and other service vehicles are an important line of defense for front line service workers, who are over-represented in workplace fatalities. The Lighting Research Center (LRC) is working with the National Institute of Occupational Safety and Health (NIOSH) to identify the characteristics of warning beacons that will help keep service workers safer.

The LRC is undertaking human factors studies in the laboratory and in the field to investigate several dimensions of warning beacon performance including:

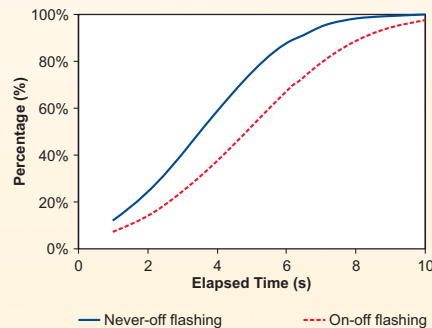
- Intensity of light to ensure visibility during the daytime while avoiding glare at night.
- Temporal profile to capture the attention of approaching drivers without impairing the judgement of closure distance.
- Chromaticity to provide information about the orientation of vehicles and barricades containing warning beacons.
- Coordination among multiple warning beacons (e.g., synchronization, sequencing) without visual chaos.



Early results suggest that when flashing lights never go completely off, people are more likely to judge closure speed correctly, compared to lights that flash on and off. Through these ongoing research efforts, the LRC will develop performance specifications for warning beacons to enhance the safety of front line service workers.



Temporal intensity profiles for a flashing light with never-off flashing and one that flashes on and off.



Percentage of observers able to detect closing movements of a pair of flashing lights, as a function of the time elapsed after movement started, for lights with never-off flashing and with on-off flashing.

## Sponsor

National Institute of Occupational Safety and Health

