Night vision enhancement systems (NVES), which use infrared (IR) cameras, are designed to supplement the visibility provided by standard headlamps. There are two main NVES systems: active, near infrared (NIR) systems, which require an IR source but give a complete picture of the scene in front of the driver, and passive, far infrared (FIR) systems, which do not need an IR source but only enhance relatively warm objects (such as people and animals). There are three main display alternatives: a contact analog display with the camera view superimposed on the direct view of the road by means of a head-up display (HUD), a separate HUD on the top of the dashboard, and a head-down display (HDD) in the dashboard.

This report analyses what a NVES should do to improve night visibility based on night crash statistics, driver vision and visibility conditions in night driving, driver tasks and behavior, technological approaches, costs, and regulations. Potential problems with using NVES are also discussed. Finally, issues requiring future research are presented. The six main questions that need to be answered concerning NVES are: What kind of information should be presented? To whom should the information be presented? Which technological approach should be used? When should the information be presented? How should the information be presented? Where should the information be presented?


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