

Improve Visibility of Signal Heads



The FHWA defines improving signal visibility as enhancing clarity with tools like backplates and placement to reduce crashes by ensuring timely driver response.

Implementation Strategy

How and Where to Apply

- This is applied at signalized intersections with frequent red-light violations, visibility issues, or crash histories, especially in areas with complex backgrounds or poor lighting.
- Install retroreflective backplates and ensure proper signal alignment, mounting height, and lateral positioning per **MUTCD** standards to maximize visibility and driver recognition.

Use in a Safe System Approach

Improving the visibility of signal heads supports the SSA by enhancing road design (Safe Roads) and helping all road users recognize and respond to signals (Safe Road Users). This reduces confusion, supports safer decision-making, and lowers the risk of intersection crashes.

Key Stakeholders

Agency maintenance personnel, DOT, Active road users

Proactive Implementation

To implement this countermeasure proactively, agencies should assess intersections with high nighttime traffic, frequent red-light running, or poor signal visibility. Evaluating site conditions and crash trends can help prioritize locations where enhanced signal conspicuity would prevent future incidents. Applying retroreflective backplates in advance of crashes offers a cost-effective way to boost driver awareness and intersection safety.

Countermeasure Overview

Objective: Improve driver awareness of intersections and signal control

Strategy: Improve visibility of signals and signs at intersections

Selected Related Countermeasures

- CM1** LED-enhanced signal lenses
- CM2** High-visibility signal backplates
- CM3** Advance warning flashing beacons

Cost: \$ (Low)

Service Life: 10 years

Targeted Solution



CONTRIBUTING FACTORS

- Reduced Visibility
- Driver Inattention
- Red light running



TARGET CRASH TYPE

- Angle
- Rear-end
- Turning



ROAD FACILITY TYPE

- Not Specified



AREA TYPE

- Urban

Safety Linkage



NCHRP 500 Series

Signalized Intersection



AASHTO'S TOWARD ZERO DEATHS

Safer Infrastructure



SAFE SYSTEM APPROACH

Safe Roads

SAFE SYSTEM ROADWAY DESIGN

TIER 1
TIER 2
TIER 3
TIER 4

Tier 4

Improved signal visibility. Source: [Yunex Traffic](#)

Safety Benefits



Reduce all types of property damage severity crashes.¹



Reduce all types of crashes of all severity in urban area.²

¹ CMF ID: 1432

² CMF ID: 1433

Resources

- [FHWA proven-safety-countermeasures](#)
- [Signal head improvement](#)

