NCHRP 17-113 COUNTERMEASURES

INTERSECTIONS

Install Intersection Lighting

Intersection lighting improves visibility at night by illuminating the conflict area where road users cross paths, helping reduce nighttime crashes.

Implementation Strategy

How and Where to Apply

- Intersection lighting should be installed at intersections with high nighttime crash rates, especially rural or suburban locations with limited ambient light.
- It is most effective at stop-controlled intersections, roundabouts, or complex junctions.
- Best used at rural or suburban intersections with poor visibility and high nighttime crash risk. It is less suitable for already well-lit urban areas or places where glare, light pollution, or cost outweigh safety benefits.

Use in a Safe System Approach

This countermeasure supports Safer Roads and Safer Users by enhancing nighttime visibility and reducing missed visual cues. It aligns with the Safe System Approach by addressing human vulnerability and error, helping drivers detect others earlier to reduce severe collisions.

Key Stakeholders

State DOTs, MPOs, utility companies, engineering consultants, community associations, advocacy groups.

Proactive Implementation

Agencies can identify candidate sites by conducting nighttime crash analyses or road safety audits. Installation can be bundled with resurfacing, safety, or intersection improvement projects. Systemic application may target all rural intersections with a history of nighttime crashes or poor visibility.

Countermeasure Overview

Objective: Improve driver awareness of intersections as viewed from the intersection approach.
Strategy: Improve visibility of the intersection by providing lighting.

Targeted Solution

CONTRIBUTING FACTORS	▪ Reduced visibility
TARGET CRASH TYPE	▪ Angle ▪ Rear-end ▪ Turning
ROAD FACILITY TYPE	▪ All
AREA TYPE	▪ Rural

Safety Linkage

NCHRP 500 Series

Intersection Crashes

AASHTO'S TOWARD ZERO DEATHS

Safer Infrastructure

SAFE SYSTEM APPROACH

Safe Roads

SAFE SYSTEM ROADWAY DESIGN

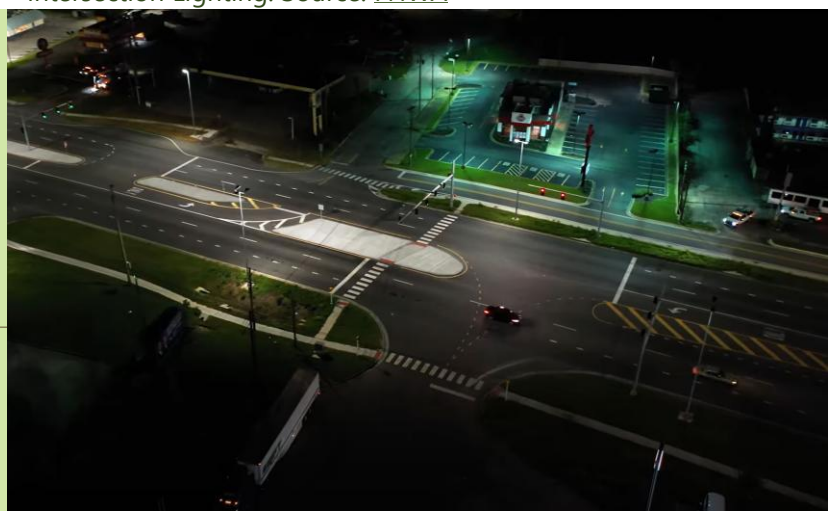
TIER 1
TIER 2
TIER 3
TIER 4

Tier 4

Selected Related Countermeasures

- CM1 Enhanced signing and retroreflective markings
- CM2 STOP AHEAD pavement markings
- CM3 Channelization or roundabout conversion

Cost: $$$ (Moderate to High)
Service Life: 15 years
Benefit-Cost Ratio: 2.6:1 to 7.9:1



Intersection Lighting. Source: FHWA

Safety Benefits

21% Reduce crashes of all types and severities on rural roads (CMF ID: 10993)

12% Reduce Nighttime crashes and all types of severities on all roads (CMF ID: 4462)

Resources

- FHWA Proven Safety Countermeasures
- NCHRP Report Chapter 3, Pg. 26