

Improve Street Lighting Illuminance and Uniformity



Improving street lighting illuminance and uniformity increases nighttime visibility, helping reduce run-off-road and other low-light crashes.

Implementation Strategy

How and Where to Apply

- This treatment is best suited for rural roads, curves, and segments with high rates of nighttime or run-off-road crashes.
- It can be implemented during corridor upgrades, safety retrofits, or lighting replacements.
- According to **FHWA** guidelines, uniform and sufficient lighting levels should be applied to minimize dark spots and contrast glare that impair driver recognition.

Use in a Safe System Approach

This countermeasure supports Safer Roads and Safer Drivers by increasing visibility and visual cues under low-light conditions. Uniform lighting helps drivers detect road edges, curves, signs, and other users earlier—especially at high speeds. It improves driver comfort and reduces visual fatigue, contributing to more forgiving roadway environments.

Key Stakeholders

State and local roadway agencies
Traffic engineers and lighting designers

Proactive Implementation

Agencies can use crash data, night/day crash ratios, or visibility audits to identify corridors where poor lighting contributes to risk. Installing high-performance LED luminaires or retrofitting outdated fixtures can be part of systemic safety strategies, especially on road segments without ambient lighting

Countermeasure Overview

Objective: Reduce the severity of the crash

Strategy: Improve design of roadside hardware

Targeted Solution



CONTRIBUTING FACTORS

- Reduced visibility



TARGET CRASH TYPE

- Nighttime



ROAD FACILITY TYPE

- Arterial
- Collector



AREA TYPE

- Urban
- Suburban

Safety Linkage



NCHRP 500 Series

Run-off Road



SAFE SYSTEM APPROACH

Safe Roads



AASHTO'S TOWARD ZERO DEATHS

Safer Infrastructure

SAFE SYSTEM ROADWAY DESIGN

TIER 1

TIER 2

TIER 3

TIER 4

Tier 4

Selected Related Countermeasures

- CM1** Intersection lighting upgrades
- CM2** Wider longitudinal pavement markings
- CM3** Delineators edge enhancements on curves

Cost: \$ (Moderate to High)

Service Life: 15 years

Improve Street Lighting. Source: [Lighting](#)

Safety Benefits

42%

Reduce crashes in Urban and suburban¹

32%

Reduce urban crashes²

¹ CMF ID: 11027

² CMF ID: 11026

Resources

- [FHWA Lighting Handbook](#)
- [NCHRP Report](#)

