

Nighttime Visibility and Illumination for Safety

As Connecticut continues to focus on reducing fatal and serious injury crashes, many safety initiatives are being discussed. One that may have an impact on this is illumination to increase nighttime visibility. The nighttime fatality rate on the nation's roadways is three times higher than the daytime rate, and 76 percent of pedestrian fatalities occur at night. In Connecticut, twenty-one percent of the pedestrian fatalities since 2021 have occurred in dark conditions.

The direct benefits

Improving illumination has the potential to reduce the number of nighttime pedestrian fatalities and injuries by making pedestrians and roadway elements more visible. It can also improve the personal security of pedestrians since researchers have found that the presence of lighting, its type, quality, and distribution have a substantial effect on perceptions of security.

For many years, the Federal Highway Administration (FHWA) has used a focused approach to safety based on traffic fatalities happening in three main areas:

- Intersections
- Pedestrians and bicyclists
- Roadway departure

However, improving visibility near locations that generate pedestrian activity, such as schools, parks, transit stops, sports complexes, and urban core areas, also has a great impact on safety. Especially when rural and urban intersections have well-designed lighting, visibility in crosswalks is enhanced, and road segments have higher lighting levels.

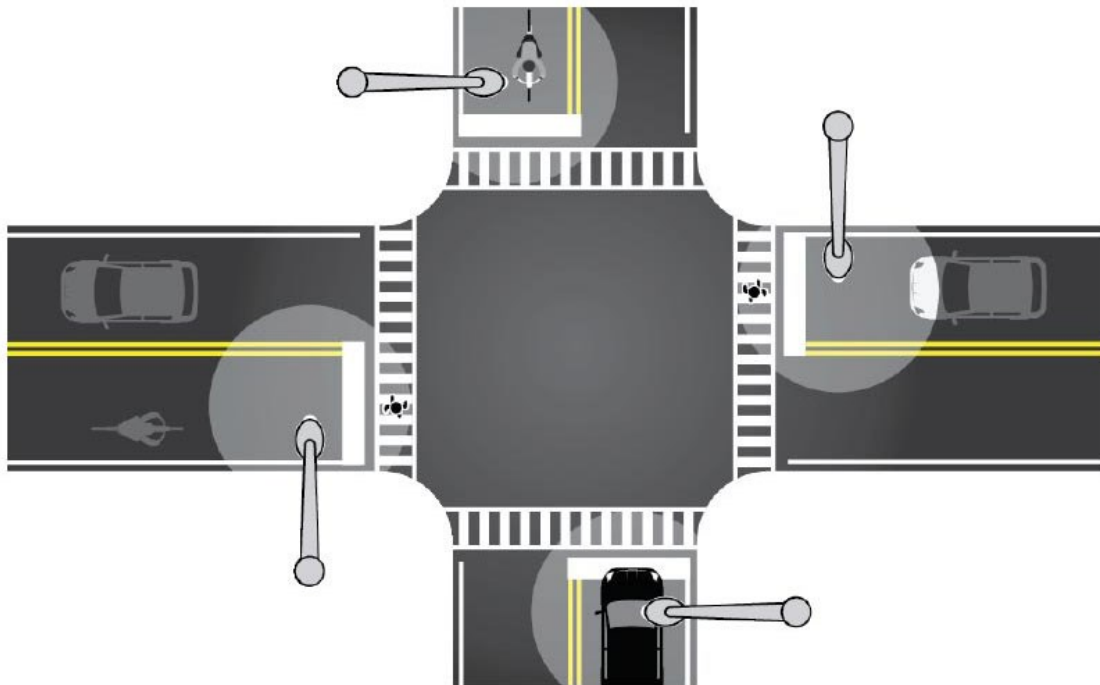
One pedestrian population that may especially benefit from improved lighting is school-age children who may walk or bike during the early morning or evening hours and, depending on the time of year, during twilight or total darkness. Think about it. What other pedestrian groups can benefit in your community?

Communities across the nation

The Florida DOT researched lighting solutions and replaced high-pressure sodium lighting with LEDs for improved pedestrian visibility along segments, at intersections and pedestrian crossings. This resulted in enhancements at approximately 80 percent of the State's most dangerous intersections.

[Florida DOT: Improving Lighting Saves Lives](#)

Lighting is installed along streets and roadways for several reasons. Lighting is key to increasing the safety performance of the roadway network, and equally important is addressing the roadway's dark conditions for the benefit of all road users.



Where to start

Providing adequate lighting at or above minimum acceptable standards to ensure safety benefits to all users of the roadway environment involves researching the appropriate horizontal and vertical illuminance levels. However, we can equitably engage with underserved communities to determine where and how new and improved lighting can most benefit the community. Many of the aspects to consider include, but are not limited to, considering community priorities, including eliminating crash disparities, connecting to essential neighborhood services, improving active transportation routes, and promoting personal safety.

Nighttime visibility has become such an important safety issue that the Federal Highway Administration has created several resources to assist practitioners.

- Every Day Counts (EDC) Round 7 [EDC-7 Innovations | Federal Highway Administration \(dot.gov\)](#) Lighting and Enhanced Crosswalk Visibility are two of the Proven Safety Countermeasures – more information can be found at [Lighting | FHWA \(dot.gov\)](#) and [Crosswalk Visibility Enhancements | FHWA \(dot.gov\)](#)

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- The recently released [FHWA Lighting Handbook \(dot.gov\)](#) to assist practitioners with improving safety for common roadway lighting applications with a focus on how best to apply roadway lighting in various applications
 - The [FHWA Pedestrian Lighting Primer](#), published in 2022 for transportation practitioners interested in the safety and security benefits of pedestrian lighting
 - FHWA's new web-based training to educate practitioners on the latest advances in nighttime lighting concepts and technologies, which can be found here: [FHWA Roadway Lighting Workshop](#)

Additionally, in support of this initiative, Connecticut DOT issued an [Engineering Bulletin](#) that requires illumination at all new pedestrian crosswalks along State roads, to align with their [Complete Streets Controlling Design Criteria](#). They will also be working to implement a process to retrofit lighting at existing midblock pedestrian crosswalks.

It is important that local agencies consider illumination as part of new projects, especially those that include pedestrian accommodations. Municipalities should also be investigating the nighttime visibility and illumination at existing crosswalk locations to determine if improvements need to be made.

This Road Safety Brief is a collaboration between the FHWA CT Division Office Safety Engineer and the CT T2 Center's Safety Circuit Rider.



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