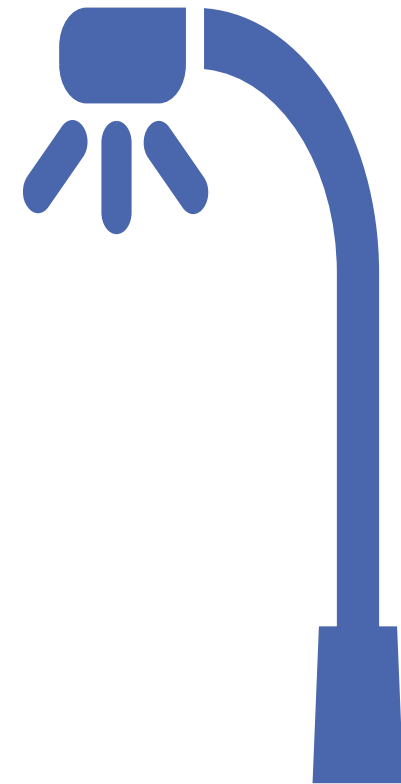


Life-Saving Lighting

Enhancing nighttime visibility for
pedestrian and bicyclist safety



NJ BICYCLE AND PEDESTRIAN RESOURCE CENTER AT THE ALAN M. VOORHEES
TRANSPORTATION CENTER, RUTGERS UNIVERSITY

ROWAN UNIVERSITY

MARCH 15, 2023



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Example 1a

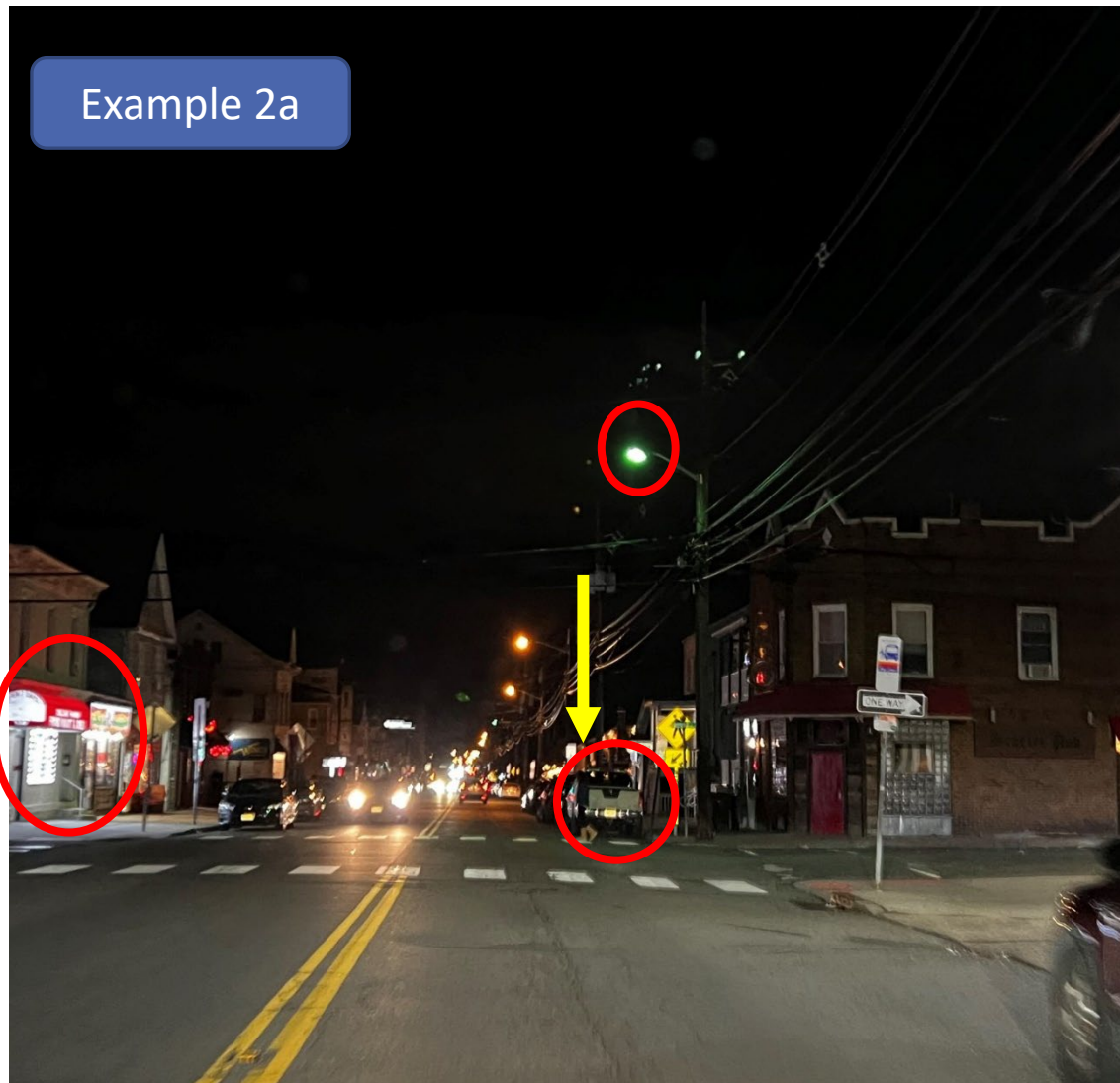


Example 1b

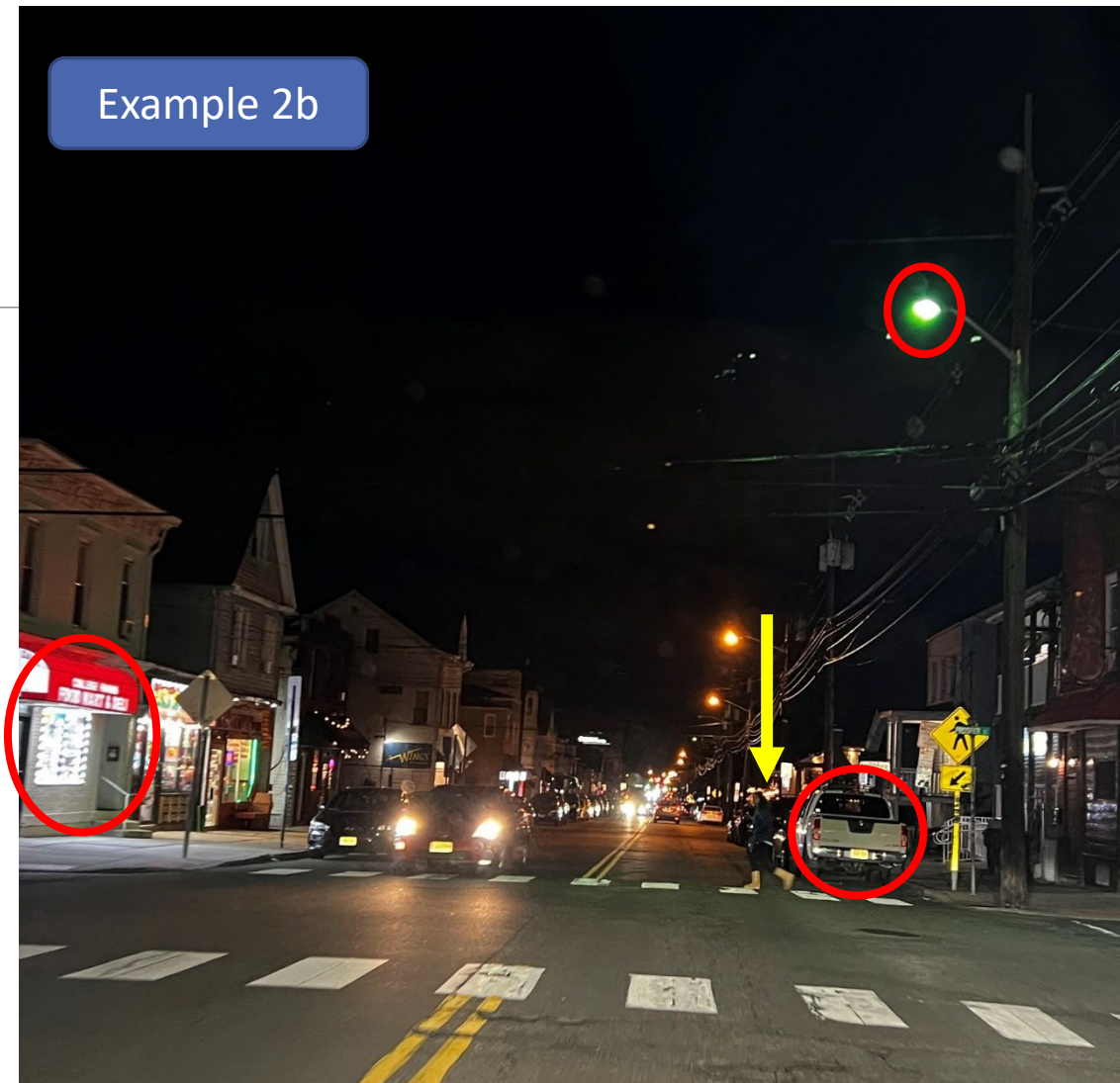


South Bound Brook, NJ

Example 2a



Example 2b



New Brunswick, NJ

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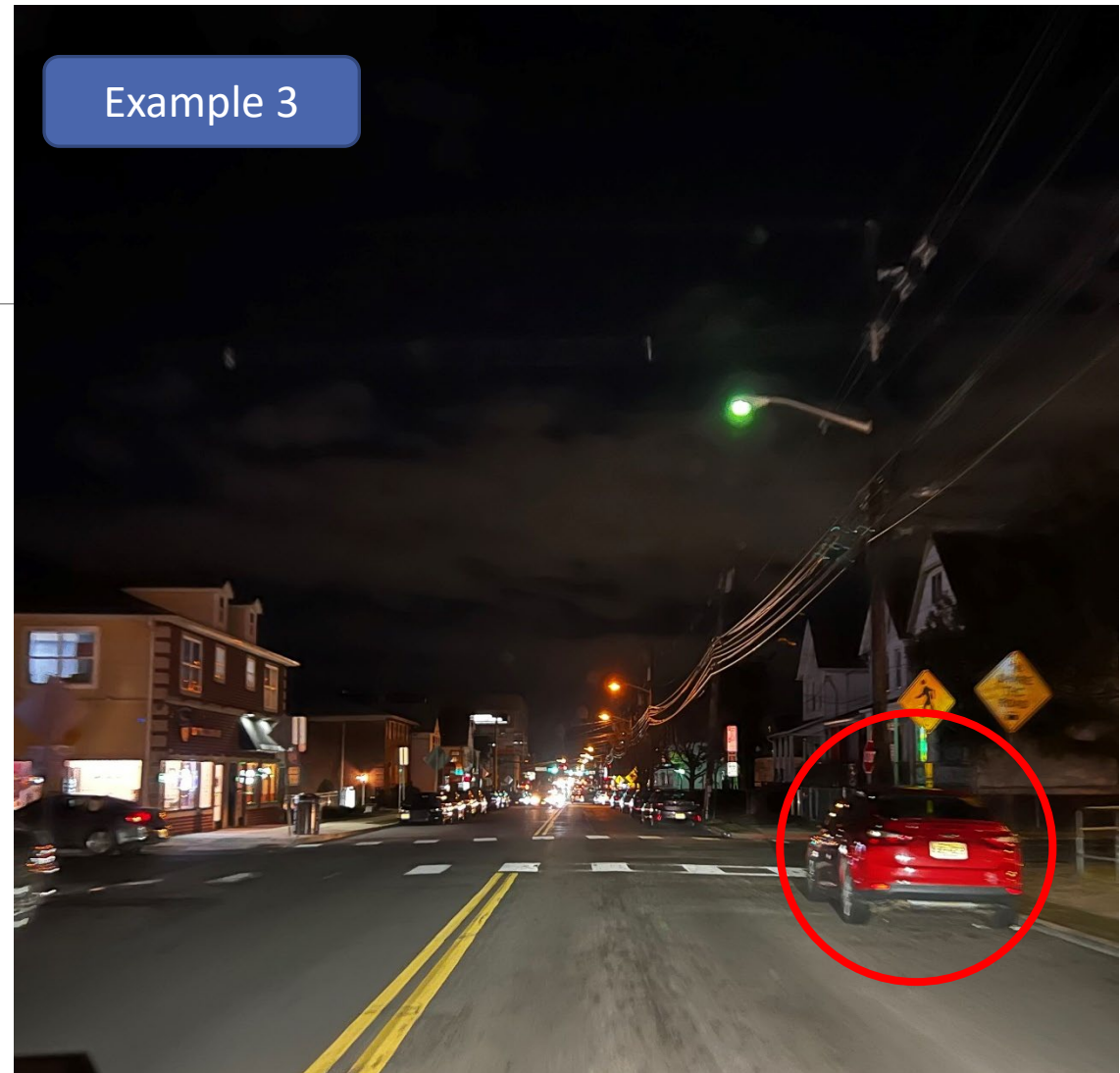
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Already, we know...

1. Crossing the street as a pedestrian is already difficult in daylight
2. Road lighting does not necessarily serve pedestrians
3. Illegal parking is a compounding factor to poor pedestrian visibility
4. Visibility can change by the foot



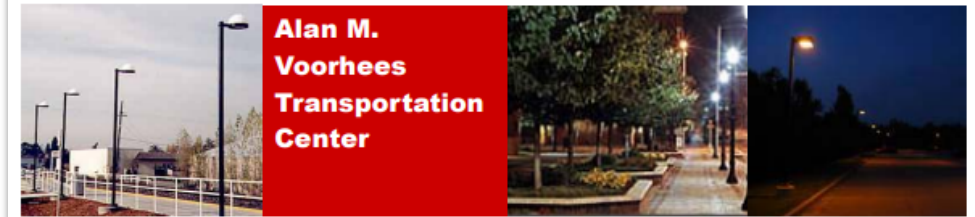
New Brunswick, NJ

Prior VTC Work

Integrating pedestrian lighting into all planning and design

Underscores a gap in expertise in pedestrian lighting in most localities

Identifies a lack of relevant planning and design guidance



Pedestrian Lighting in New Jersey: *A Means to Improve Pedestrian Safety*

Prepared by:

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Prepared for:

NJDOT

Funded by:

FHWA and NJDOT

January 2007

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Prior Work: BPAC Ped Lighting Guide

Visit: njbikeped.org/safety/

Key Resources

Numerous agencies and organizations have published research and guidance concerning pedestrian-scale lighting best practices. Some are listed below:

New Jersey Department of Transportation
Pedestrian Compatible Planning and Design Guidelines
<https://www.state.nj.us/transportation/about/publications/PedComp/pedintro.pdf>

New Jersey Outdoor Lighting Ordinance Guide
https://www.nj.gov/dep/ops/docs/Sample_Lighting_Ordinance.PDF

Voorhees Transportation Center Report on Pedestrian Lighting in New Jersey: A Means to Improve Pedestrian Safety
http://vtc.rutgers.edu/wp-content/uploads/2014/07/Pedestrian_Lighting_NJ_Final_Report.pdf

Pedestrian and Bicycle Information Center
http://www.pedbikeinfo.org/webinars/webinar_details.cfm?id=13

FHWA Informational Report on Lighting Design for Midblock Crosswalks
<https://www.fhwa.dot.gov/publications/research/safety/08053/>

U.S. Department of Energy Report on Pedestrian Friendly Outdoor Lighting
https://www1.eere.energy.gov/buildings/publications/pdfs/ssl/2013_gateway_pedestrian.pdf

Seattle Pedestrian Lighting Citywide Plan
<http://www.seattle.gov/Assets/Documents/Departments/SDOT/About/DocumentLibrary/PedMasterPlan/PedLightingFINAL.pdf>

Chandler (AZ) Report on Crime Prevention Through Environmental Design
<http://www.chandlerpd.com/wp-content/uploads/2010/12/CPTED-Handbook-v4-20170627.pdf>



Pedestrian-Scale Lighting Guide for New Jersey

Importance

Pedestrian-scale lighting does more than make a neighborhood look good. Most street lighting in New Jersey was designed with motorists' in mind; assuring there was proper lighting to navigate roads at high speeds. This lighting does not take into account pedestrians. Pedestrian-scale lighting is first and foremost a safety concern, helping to improve pedestrian safety, security and comfort.

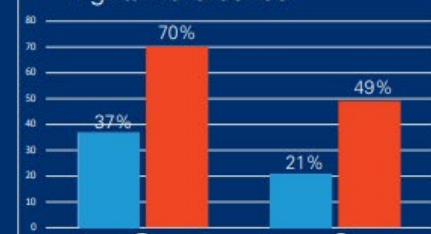
i The presence of adequate pedestrian lighting helps promote visibility between motorists and pedestrians, reducing the frequency of crashes

Crashes

- bike/ped fatalities in New Jersey disproportionately occur at night

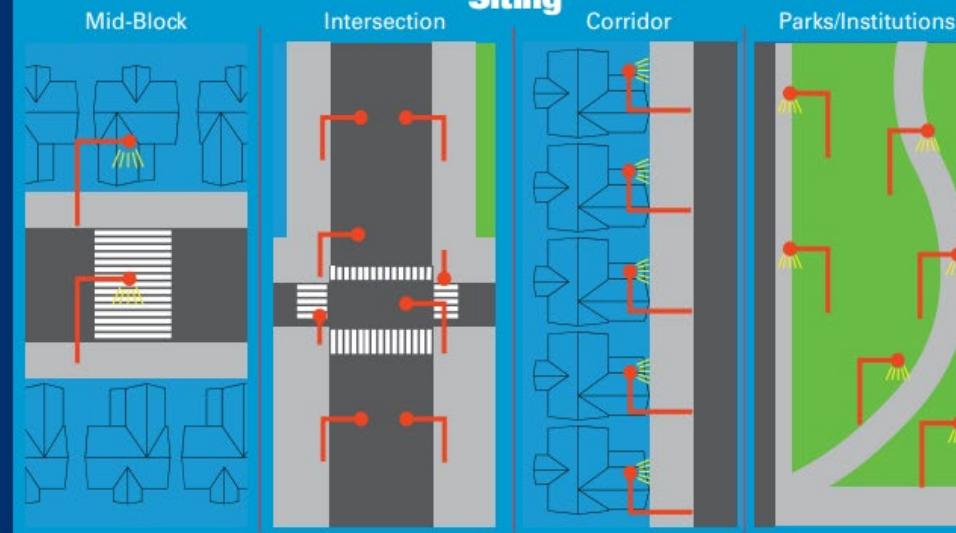


Nighttime Crashes



i Pedestrian-scale lighting helps illuminate sidewalks and improve pedestrian safety, security and comfort. Properly designed and installed pedestrian-scale lighting can both help define a streetscape and create a sense of place in a community.

Siting



Factors to Consider



Proximity

should light sidewalks and crosswalks without blocking them



Spacing

evenly distributed approximately 60 feet apart



Brightness

20 lux measured at a height of five feet from the road surface



Direction

fixtures faced downward to direct light onto pedestrians and avoid causing nuisance



Height

Poles should be shorter than street lights; 12-16 feet



Glare

brighter is not always better; glare factors include fixture and background luminance, and size and angle of the fixture



Energy Efficiency

due to light depreciation, initial light levels should be above what is required; adaptive technology can allow to operate at maintained level for longer times

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Factors impacting the fatality of non-motorist involved crashes in New Jersey



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1/24/2023

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Selected results relating to lighting



Compared to daylight, crashes that occurred in dark conditions (no streetlights) were **6-7.5 times** more likely to be fatal.

At night, a crash is **twice as likely** to be deadly if there are no lights available or if they are broken or off.

Pedestrian- and bicyclist-involved crashes: associations with spatial factors, pedestrian infrastructure, and equity impacts

Authors: Hannah Younes, Ph.D., Robert Noland, Ph.D., Leigh Ann Von Hagen, AICP/PP, Sean Meehan

Publication: Journal of Safety Research, JSR-D-22-00872

Date: Volume 86, anticipated release date between April 15-July 1, 2023

New Research Task: Life-Saving Lighting

Joint research task between Rutgers-VTC and Rowan University

Conduct research, including a literature review, on best practices for streetlights to improve roadway safety with a focus on vulnerable roadway users (VRUs).

- Current research connecting lighting design types to reductions in KSI for VRUs
- Existing design guides, memoranda, and presentations with a focus on pedestrian-scale lighting

Produce a non-technical, easy-to-use lighting design guide

- Draw attention to the needs of VRUs during design and implementation of streetscapes
- Recommend a set of luminaire types for street and trail lighting
- Focus on key facts and site conditions to assist designers with choosing appropriate lighting
- Rely on figures, example images, and graphics to help explain benefits of specific design options

Give your feedback on Menti!

What should we focus on to help municipalities incorporate safe lighting for vulnerable roadway users (VRUs)?

VRUs = people walking, bicycling, and using scooters, wheelchairs, and other mobility devices

Go to: www.menti.com

Use the code: **7485 7205**

Thank you!



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njbikeped.org

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