Innovaciones de EDC 7 en Puerto Rico y Resultados a Nivel Nacional

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- Catedrático, Departamento de Ingeniería Civil y Agrimensura, Universidad de Puerto Rico en Mayagüez.
- BS y MS en Ingeniería Civil del UPR-Mayagüez
- PhD en Ingeniería Civil de la Universidad de Purdue, con especialidad en sistemas de transportación e infraestructura.
- Investigador Principal del Proyecto CREATE en la UPR-Mayagüez.
- Miembro del Colegio de Ingenieros y Agrimensores de Puerto Rico (CIAPR).
- Miembro del Instituto de Ingenieros de Transportación (ITE), siendo presidente de la Sección de Puerto Rico en 2011-2012 y 2025.
- Pasado Presidente y Gerente General de la Autoridad Metropolitana de Autobuses (AMA) y primer Director Ejecutivo de la Autoridad de Transporte Integrado de Puerto Rico (ATI) durante 2013-2016.

What is the Every Day Counts Innovation for a Nation on the Move Program?

- State-based model supported by the Federal Highway Administration (FHWA) that identifies and rapidly deploys proven yet underutilized innovations

Not Implemented	The State has not started planning to implement the innovation.
Development Stage	The State is developing an implementation process and building support by participating in webinars and peer exchanges, and collecting guidance and best practices.
Demonstration Stage	The State is testing/piloting the innovation.
Assessment Stage	The State is assessing the performance of the innovation and adjusting any processes for full deployment.
Institutionalized	The State has adopted the innovation as a standard practice and uses it regularly on projects.

Shorten project delivery process

Enhance roadway safety

Reduce traffic congestion

Integrate automation

TRANSPORTATION TECHNOLOGY TRANSFER CENTER
PUERTO RICO LTAP

EDC

Puerto Rico's Participation in EDC Has Included 31 Initiatives

Round 1 2011-2012

- Adaptive Signal Control
- Technical Assistance on Stalled EISs
- Design-Build
- Flexibilities in ROW
- Geosynthetic Reinforced Soil
- Prefabricated Bridge Elements
- Safety Edge
- Warm-Mix Asphalt

Round 2 2013-2014

- ABC / PBES
- Quality Environmental Documentation
- Intelligent Compaction
- National Traffic Incident Management
- Programmatic Agreements

Round 3 2015-2016

- GRS-IBS
- IQED
- Road Diets
- Smarter Work Zones

Round 5 2019-2020

- A-Game
- Project Bundling
- STEP
- Use of Crowdsourcing

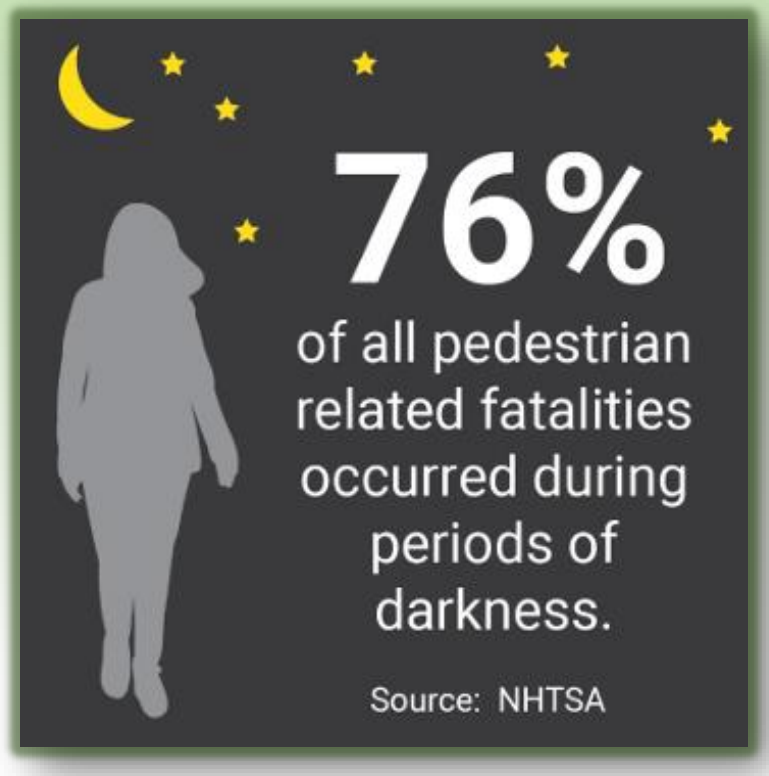
Round 6 2021-2022

- Crowdsourcing for Advancing Operations
- e-Ticketing
- Next Generation TIM
- TOPS
- UHPC for Bridge Preservation
- VPI

Round 7 2023-2024

- Nighttime Visibility for Safety
- Next Generation TIM
- EPIC^2
- EPDs for Sustainable Project Delivery

Pedestrian Safety and Illumination



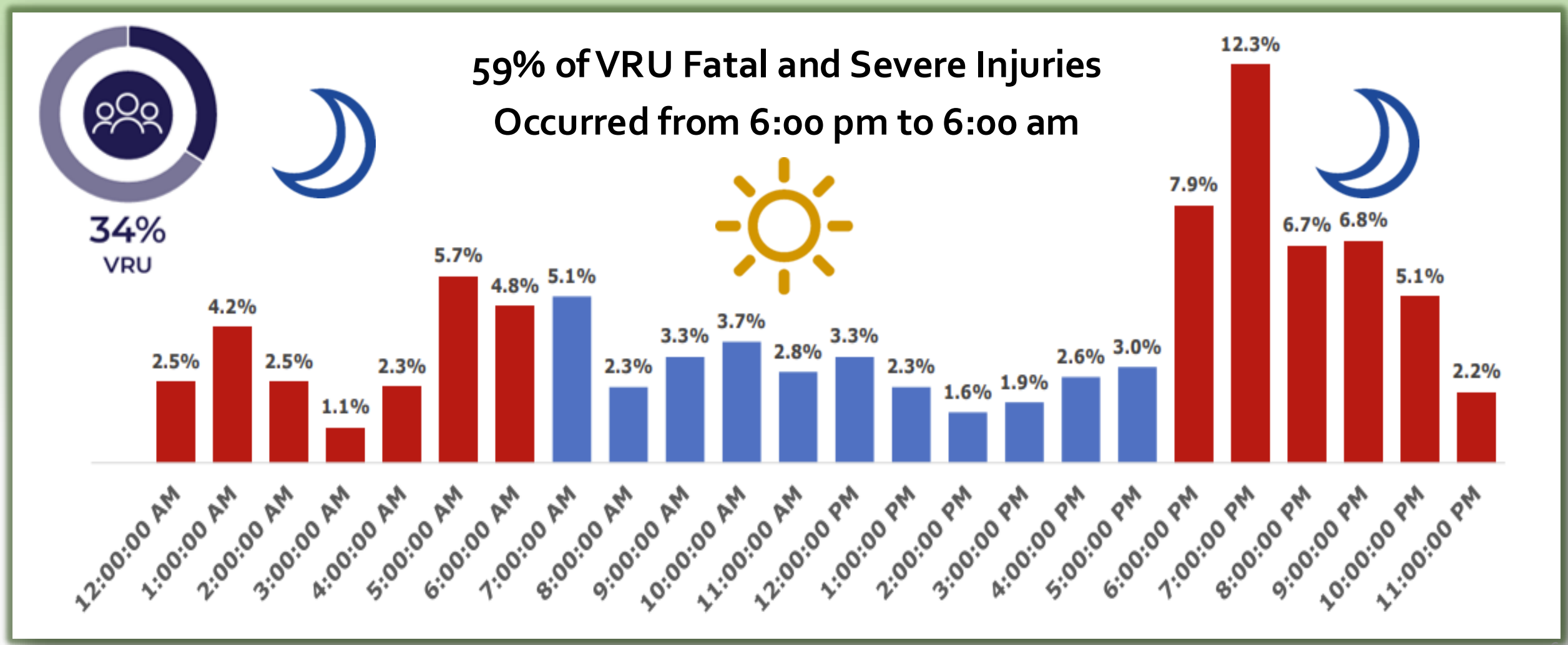
- Dark conditions also have negative effects on pedestrian security.
  - ✓ Reduced visibility and additional blind spots may reduce pedestrians' perceived sense of security.
  - ✓ Studies show that darkness constrains pedestrians and transit rider behavior, especially for women

PEDESTRIAN FATALITY RATE IN US ROADS

NIGHTTIME IS 3X > DAYTIME

Source: https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-09/Pedestrian_Lighting_Primer_Final.pdf

Puerto Rico - VRU Crash Percentage by Time of Day

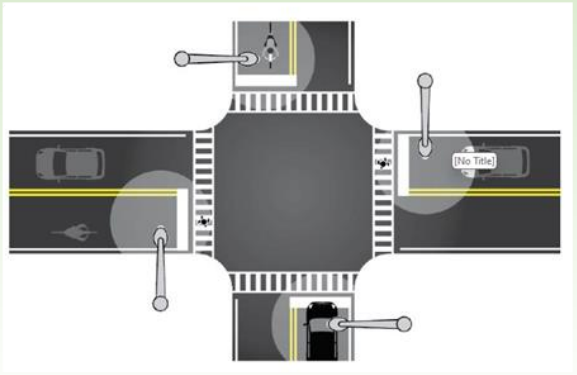


Source: https://act.dtop.pr.gov/wp-content/uploads/2023/11/Final-VRU-Safety-Assessment-and-Appendix_-Signed.pdf

Emphasis on Visibility Improvements

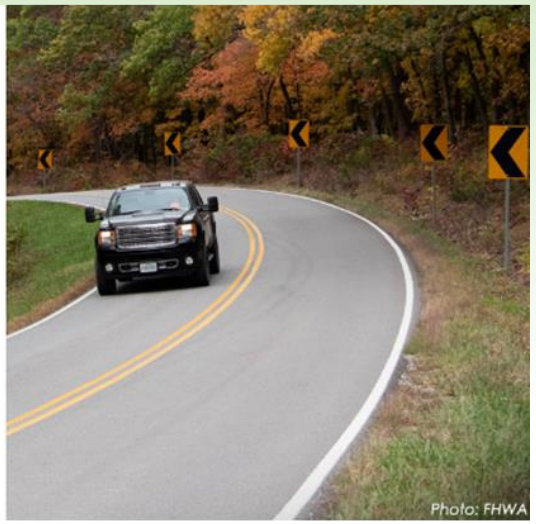
Nighttime Visibility for Safety

Crosswalk Visibility Enhancements



Improved Intersection Lighting

Enhanced Delineation for Horizontal Curves



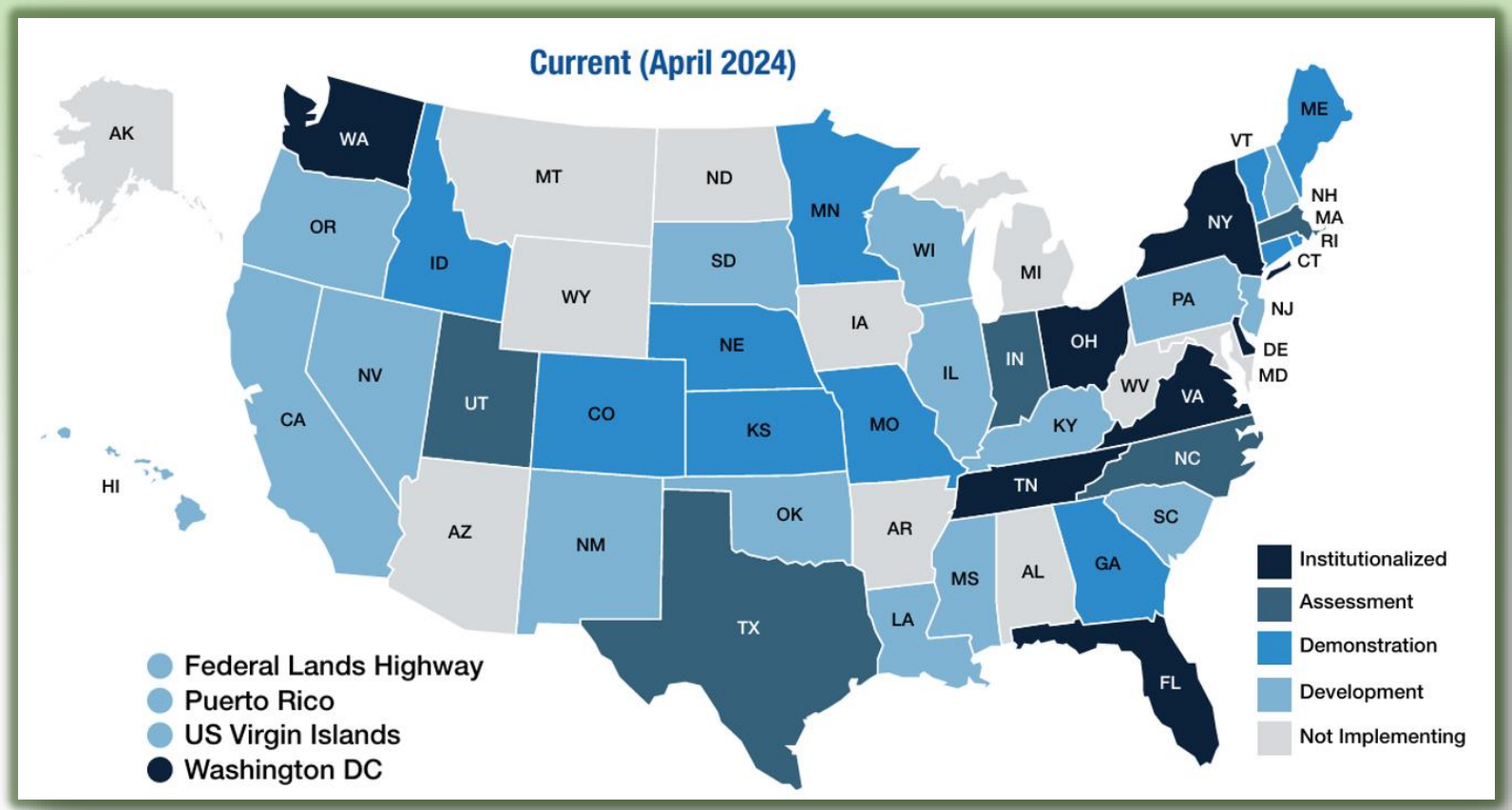
Intersections

Pedestrians / Bicyclists

Roadway Departure

National Perspective of EDC7 Nighttime Visibility Initiative

- 19 States + Puerto Rico are developing implementation plans and learning more about nighttime visibility for safety
- 16 States are demonstrating and assessing nighttime visibility for safety, while another 8 States have institutionalized it.



2024 EDC-7 Summit on Nighttime Visibility

- Puerto Rico Champions
  - Eng. David Ramos, PRHTA
  - Eng. Ashley Vargas, Metric Engineering PR

Cumbre EDC 7

Visibilidad Nocturna y la Seguridad de Usuarios Vulnerables y Accesibilidad Peatonal y Ciclista

AGENDA

8:00 AM - 8:45 AM **Registro**

8:45 AM - 9:00 AM **Bienvenida**

9:00 AM - 9:15 AM **Introducción al Programa Cada Día Cuenta (EDC)**
Dr. Didier Valdés Díaz, Director
Centro de Transferencia de Tecnología en Transportación

9:15 AM - 9:30 AM **Introducción a la Iniciativa de EDC 7: Visibilidad Nocturna para Mayor Seguridad**
Ing. David Ramos López, Campeón de la Iniciativa
Autoridad de Carreteras y Transportación

Ing. Ashley Vargas Figueroa, Presidenta
Metric Engineering of Puerto Rico

9:30 AM - 10:15 AM **Herramientas de Análisis del Observatorio de Seguridad Vial de Puerto Rico e Identificación de Alta Incidencia de Choques de Ciclistas y Peatones**
Dr. Kenneth Vélez Rodríguez, Gerente de Proyecto y Científico de Datos Senior
Dra. Josie Bianchi Santiago, Científica de Datos Senior
Observatorio de Seguridad Vial de Puerto Rico

10:15 AM - 10:30 AM **RECESO**

10:30 AM - 11:15 AM **Desarrollo del Nuevo Plan Estratégico de Seguridad Vial y el Avalúo de la Seguridad de Usuarios Vulnerables en Puerto Rico**
Ing. Irene S. Soria Cordero, Ingeniera en Transportación
Ing. Wilfredo R. Cordero Cruz, Ingeniero en Transportación
Metric Engineering of Puerto Rico

11: 15 AM - 12:00 PM **Proyectos de Iluminación de la Autoridad de Carreteras y Transportación**
Ing. María Marcano García, Gerente de Ingeniería Senior
Ing. Francisco Borges Aponte, Ingeniero
Autoridad de Carreteras y Transportación

12:00 PM - 1:00 PM **ALMUERZO** (por su cuenta)

1:00 PM - 2:30 PM **Reglas de Accesibilidad en Vías Públicas (PROWAG)**
Dr. Alberto M. Figueroa Medina, Director
Centro de Transferencia de Tecnología en Transportación

2:30 PM - 2:45 PM **RECESO**

2:45 PM - 3:05 PM **Plan de Transición de ADA**
Jorel López Villamil, Strategic Solutions Advisor
Acumenian

3:05 PM - 4:20 PM **Avalúo de Instalaciones Peatonales y Ciclistas**
Dr. Alberto M. Figueroa Medina, Director
Centro de Transferencia de Tecnología en Transportación

4:20 PM - 4:30 PM **Clausura**

Fecha y Hora

Miércoles, 22 de mayo de 2024
8:00 AM Registro
8:45 AM - 4:30 PM

Horas Contacto: 6 horas técnicas para ingenieros y horas generales para agrimensores

Lugar

Colegio de Ingenieros y Agrimensores de Puerto Rico
Teatro Ing. Salvador Caro
Ave. Domenech, Calle Ing. Antolín Nin
Hato Rey, Puerto Rico

REGISTRO

Información de Contacto

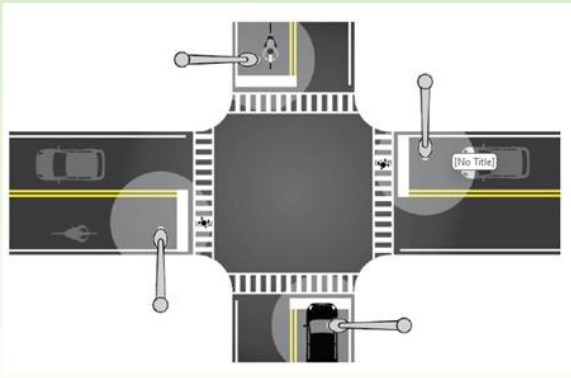
Centro de Transferencia de Tecnología en Transportación
Grisel Villarrubia
grisel.villarubia1@upr.edu
Tel. 787-834-6385
787-832-4040 Exts. 3393, 3403

Utilice el siguiente código para mayor información relacionada a la iniciativa de *EDC 7 Nighttime Visibility for Safety*

Examples of EDC7 Innovations

Nighttime Visibility for Safety

Crosswalk Visibility Enhancements



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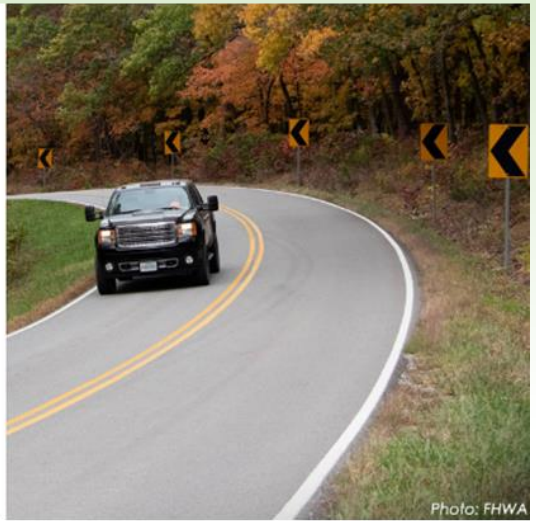


Intersections

Pedestrians / Bicyclists

Roadway Departure


STATE
LAW
STOP
FOR
WITHIN
CROSSWALK
ONE WAY


STATE
LAW


30

Tennessee – Vulnerable Road User Safety Assessment

- **Overview:**
  - ✓ TDOT developed a Vulnerable Road User (VRU) Safety Assessment as part of its broader strategy to enhance safety for all users.
- **Key Objectives:**
  - ✓ Install pedestrian-scale lighting to improve visibility in areas with high pedestrian activity.
  - ✓ Enhance crosswalks in disadvantaged areas.
  - ✓ Improve street lighting to increase nighttime safety for both pedestrians and drivers.
- **Current Status:**
  - ✓ TDOT is actively implementing these strategies as part of its 2025–2029 Strategic Highway Safety Plan.

Source: https://www.tn.gov/content/dam/tn/tdot/strategic/TN-SHSP-2025-2029-Update.pdf

Florida - Nighttime Visibility Improvements

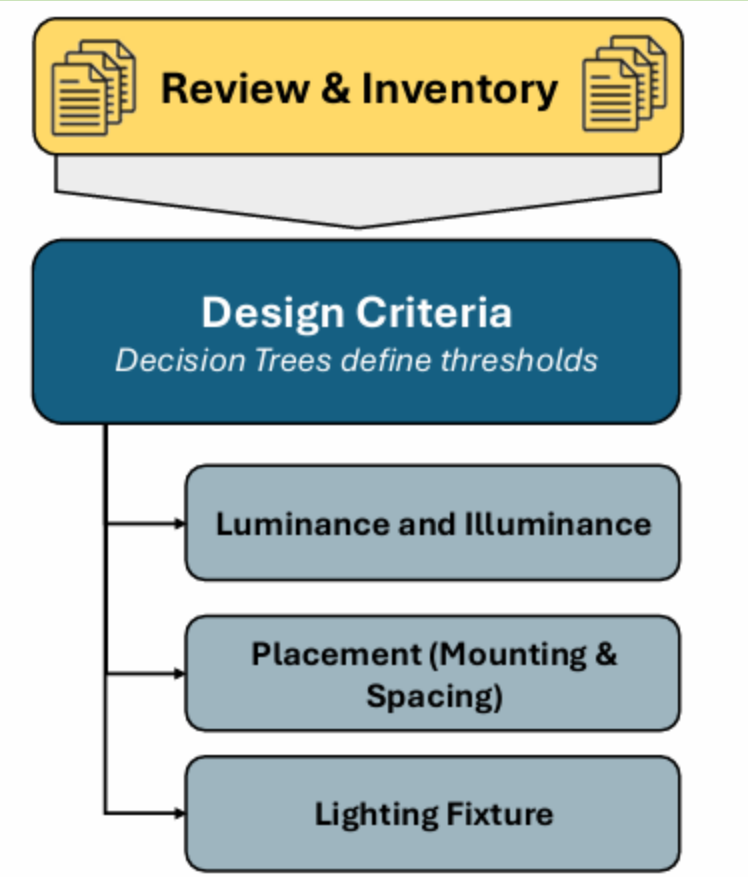
- **Overview:**
  - ✓FDOT is improving nighttime visibility at high-risk intersections by upgrading lighting.
- **Key Objectives:**
  - ✓Replace high-pressure sodium lights with LED technology at critical intersections.
  - ✓Improve pedestrian visibility and reduce nighttime crashes.
  - ✓Enhance safety in urban and rural areas with high pedestrian activity.

Source: https://youtu.be/EoA6Ha5eQmo?t=43

- **Current Status:**
  - ✓Over 400 intersections in Tampa Bay upgraded, with up to a 65% reduction in nighttime crashes.
  - ✓Covers about 80% of the state's most dangerous intersections.
  - ✓LED lighting improves control of illumination and detection of pedestrians and cyclists.

New Jersey – Pedestrian Lighting Guidance Development

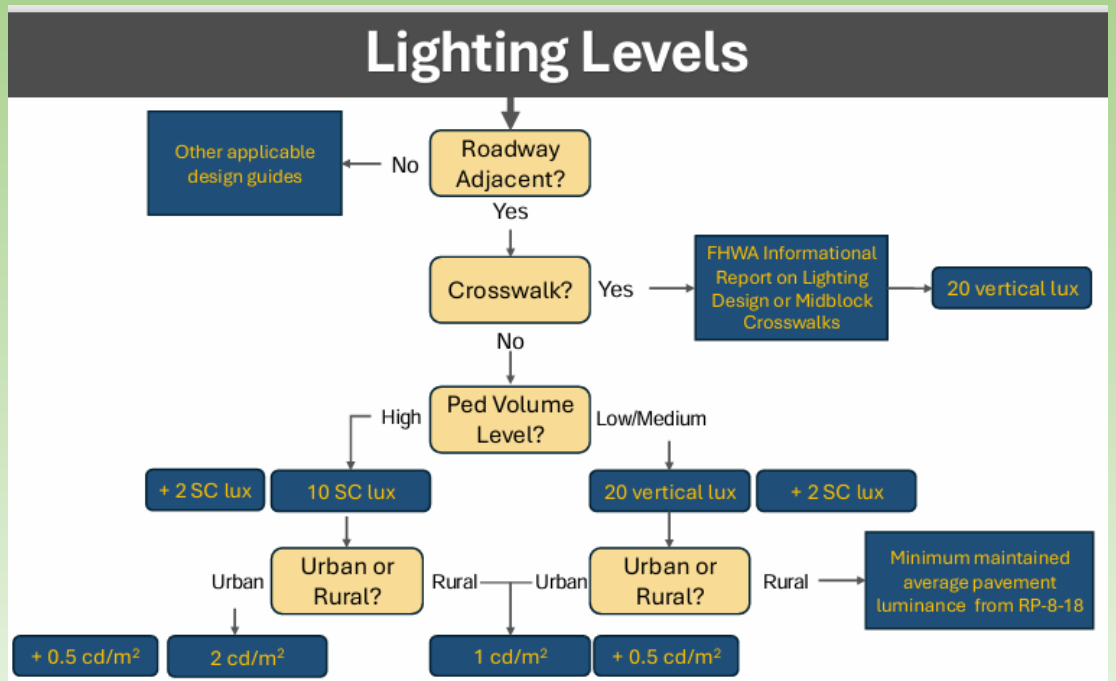
- **Overview:**
  - ✓NJDOT, in collaboration with Rutgers-VTC and Rowan University, is developing a statewide guide for pedestrian lighting.
- **Key Objectives:**
  - ✓Establish recommended pedestrian lighting levels at intersections and crossings.
  - ✓Provide a decision-making framework that accounts for public health and environmental impacts.
  - ✓Train municipal and county engineers and planners across the state.
- **Current Status:**
  - ✓Preliminary research and analysis completed.
  - ✓Final guide expected to be published in 2025.

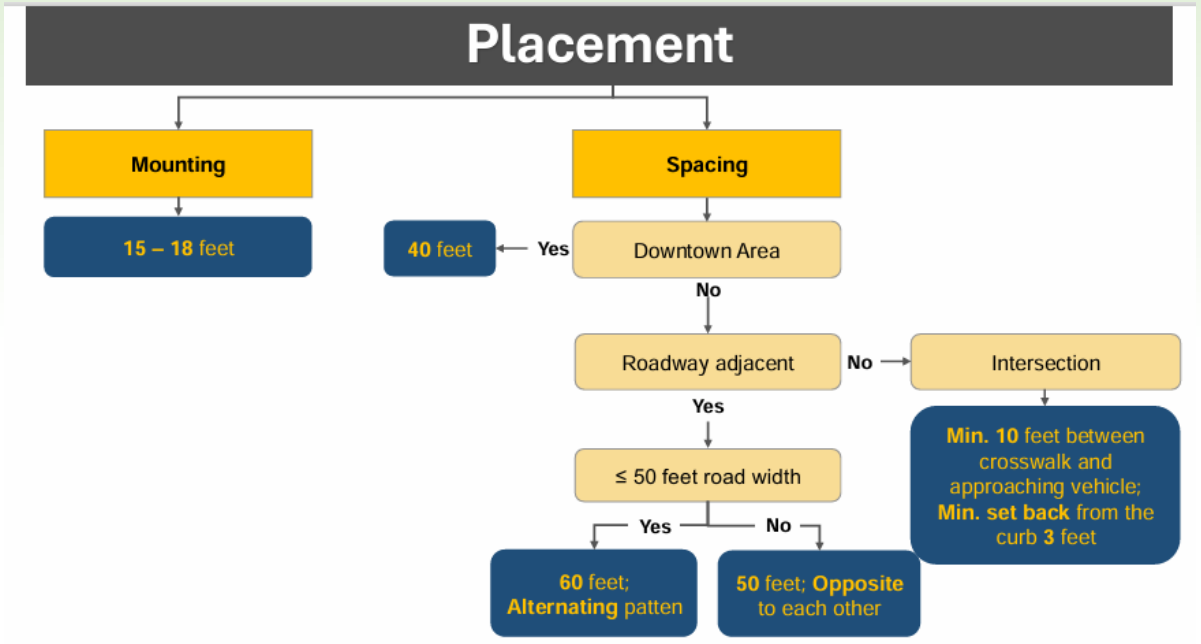


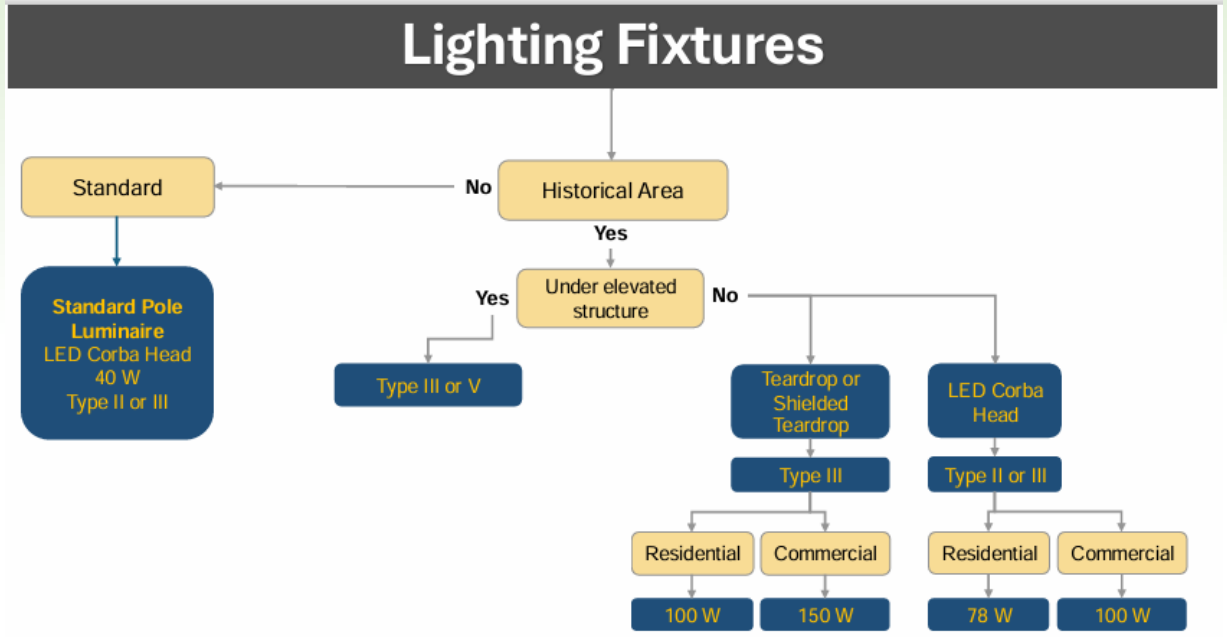
Pedestrian Scale Lighting Design Criteria

Source: https://www.njdottechtransfer.net/nighttime-visibility-for-safety/
https://www.njdottechtransfer.net/wp-content/uploads/2024/11/Pedestrian-Scale-Lighting_Ruqaya-Alfaris-and-Greg-Woltman.pdf

New Jersey Pedestrian Lighting Guidance







https://www.njdottechtransfer.net/wp-content/uploads/2024/11/Pedestrian-Scale-Lighting_Ruqaya-Alfaris-and-Greg-Woltman.pdf

Delaware – Nighttime Visibility Enhancements

- **Overview:**
  - ✓ DelDOT prioritized nighttime visibility as part of its Strategic Highway Safety Plan under EDC-7.
- **Key Objectives:**
  - ✓ Improve lighting at high-risk intersections and pedestrian crossings.
  - ✓ Maintain retro reflectivity of pavement markings and signage.
  - ✓ Follow a lighting policy focused on pedestrian safety.
- **Current Status:**
  - ✓ Targeted lighting upgrades completed in several corridors.
  - ✓ Ongoing implementation guided by DelDOT's lighting policy.
  - ✓ LED upgrades and proper maintenance are strongly recommended.

Source: https://sites.udel.edu/dct/2025/02/05/safety-corner/?utm

Texas - Advancing Nighttime Visibility for Safety

- **Overview:**
  - ✓ TxDOT, in collaboration with Texas A&M TTI and UT-Tyler, is actively participating in the EDC-7 Nighttime Visibility for Safety initiative.
- **Key Objectives:**
  - ✓ Use of smart sensors and flashing lights to warn drivers of pedestrians at night.
  - ✓ Application of reflective thermoplastic markings to improve road visibility.
- **Current Status:**
  - ✓ Development of a process to identify and assess areas prone to nighttime crashes,
  - ✓ Create predictive models relative to roadway lighting.

Source: https://www.txdot.gov/content/dam/docs/str/tia/str-tia-spring-inperson-meeting-2024-slides.pdf

Texas - Advancing Nighttime Visibility for Safety

- Prediction Regression Model
- GIS-based Dashboard
- Guideline to Collect, Monitor, and Assess Illumination Needs

Source: https://www.txdot.gov/content/dam/docs/str/tia/str-tia-spring-inperson-meeting-2024-slides.pdf

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