

**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ROADWAY LIGHTING POLICY**



Effective Date: October 1, 2020

Roadway Lighting Committee: Brenda Moore, PE, MBA..... Roadway Design Unit
Roger Kluckman, PE..... Roadway Design Unit
Chris Werner, PE..... Technical Services Division
Lamar Sylvester, PE..... Field Support Division
Kevin Lacy, PE..... Transportation Mobility & Safety
Division
Van Argabright, PE..... Planning & Programming
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Greg Hall..... Roadway Design Unit

Oversight: Brad Hibbs, PE..... Federal Highway Administration

APPROVED BY:

9/29/2020

Date of Approval

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Chief Engineer

9/24/2020

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Director of Technical Services

9/23/2020

Date of Approval

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for Policy:

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POLICY STATEMENT

Roadway lighting may be beneficial in the reduction of nighttime accidents and in the identification of conflict points along the roadway by motorists. Because it is not economically feasible to light every conflict point along the roadways of the State, it is the policy of the Department to construct and maintain lighting systems at interchanges and along continuous sections of fully controlled access (C/A) roadways which meet specific criteria established by the American Association of State Highway Transportation Officials (AASHTO) and the NCDOT Roadway Lighting Committee. The Department will allow the construction and maintenance of lighting systems by local governing bodies on State maintained roadways in accordance with the manual titled *Policies and Procedures for Accommodating Utilities on Highway Rights of Way* (Utility Manual) through the encroachment process.¹

RESPONSIBILITIES AND PROCEDURES

It will be the responsibility of the Lighting and Electrical Team Lead of the Roadway Design Unit to monitor updates of the Transportation Improvement Program to determine which interchanges might warrant lighting. Requests for lighting evaluations may also originate from other Units within the Technical Services Division, the Right of Way Branch, or the Divisions.

After the preliminary plan review has been completed, the Lighting and Electrical Team Lead will request information required to evaluate specific interchanges and continuous roadway sections from the appropriate Design Engineer. The Lighting and Electrical Team Lead will request information relative to geometrics, operational features, environmental aspects, and accident data.

It will be the responsibility of an Electrical Engineer on the Lighting and Electrical Team to apply the Total Design Process to all interchanges and continuous sections of fully controlled access roadways that may warrant lighting, and issue a lighting evaluation report summarizing the findings.^{2,3,4} The Total Design Process generates a Priority Index based on a numerical weighting and scoring process. The Total Design Process incorporates roadway geometrics, nighttime average daily traffic, and the annual cost of providing lighting to develop the Priority Index for an interchange or continuous section of roadway. If the Priority Index meets or exceeds the Base Priority Index established by the Roadway Lighting Committee, the Lighting and Electrical Team Lead will submit a request to the Committee to include lighting in the roadway contract.

In general, after a lighting evaluation request is submitted by other Units or the Division, the Lighting and Electrical Team will complete and issue the lighting evaluation report within 30-days. The final decision on lighting inclusion will be determined in the next Lighting Committee quarterly meeting.

The Committee will review the lighting evaluation reports prepared by the Electrical Engineer, along with comments and information from Division personnel. Information from Division personnel may include Division maintenance capabilities, community support, and local government and law enforcement benefits.

Based on the lighting evaluation reports and Division input, the Committee will decide if lighting will be included in the roadway project. If lighting is approved by the Committee, the Chair of the Committee will officially notify the Lighting and Electrical Team Lead in writing to proceed with lighting system design.

The Roadway Lighting Committee membership shall include the following voting members: the State Roadway Design Engineer (Chair), the Director of Technical Services, the Lighting and Electrical Team Lead in the Roadway Design Unit, the State Traffic Safety Engineer, the Director of Planning and Programming, the Director of Field Support, and the Roadway Design Specialty Functions and Support Services Group Lead in the Roadway Design Unit. The FHWA Operations Engineer provides oversight as a nonvoting member of the Committee. Prior to making a final decision concerning the inclusion of roadway lighting in the roadway contract, a quorum of 50% +1 of all voting members must be present or have provided feedback.

It will be the responsibility of the Roadway Lighting Committee to establish the Base Priority Index and to make the final decision concerning the inclusion of roadway lighting in the roadway contract. The Committee will review the Base Priority Index every two years. The Committee may adjust the Base Priority Index depending on past and projected future transportation funding needs. The Lighting and Electrical Team Lead will utilize the most current Base Priority Index to develop requests for the inclusion of lighting in roadway contracts.

EXCEPTIONS

The following exceptions shall allow for lighting to be provided by the Department when the Priority Index of the interchange is lower than the Base Priority Index:

1. Full or partial interchange lighting should be provided when two or more major freeways intersect, and existing lighting is installed, or proposed lighting is planned for successive interchanges in either freeway corridor.
2. Strong written support from the Division is provided, including input from the local Municipality concerning the Municipality's support for interchange lighting.
3. Full interchange lighting shall be provided at complex interchanges such as Single Point Urban Diamond Interchanges (SPUI) and Diverging Diamond Interchanges (DDI), due to the complexity of movements.
4. Full roundabout lighting shall be provided where the roundabout is within a fully controlled access interchange and where interchange lighting is approved by the Committee. Refer to the section below titled "Complex Intersections" for guidance on roundabouts in non-C/A facilities.
5. The Committee may approve the inclusion of lighting at the request of local governments contingent upon the local government entering into a formal agreement to reimburse the Department for the total cost of designing and constructing the lighting system or the local government agreeing to maintain and operate the lighting system in a manner acceptable to the Department. Where local governments fail to maintain and operate the lighting

system in an acceptable manner, the Department shall withhold a portion of Powell Bill funds due to the local government equal to the amount required to maintain and operate the lighting system.

OTHER REQUESTS

The Department will consider allowing the construction and maintenance of lighting systems by local governments on existing highways through the encroachment process in accordance with the Utility Manual.

COMPLEX INTERSECTIONS

Lighting may be considered at all roundabouts or other complex intersections to assist drivers in maneuvering through the intersection. In consideration of the large number of roundabouts in non-C/A facilities in the State, the Division is recommended to consider entering into an encroachment agreement with the local utility to provide lighting at these roundabouts, where applicable. This approach is generally more cost effective and will help in not overburdening the Division Traffic Services with roundabout lighting operation and maintenance.

APPEALS

If the lighting evaluation report has determined that lighting is not justified and/or the Lighting Committee has determined that lighting will not be included in the project, the Division Engineer may request that the Lighting Committee reconsider adding lighting in the project. The Division Engineer should submit a formal written request along with additional support documents detailing the need for lighting in the project to the Director of Technical Services and request lighting be reconsidered for the project. The Director will review the new support documents and make a final determination.

REFERENCES

1. *Policies and Procedures for Accommodating Utilities on Highway Rights of Way*, North Carolina Department of Transportation, Revised April 1, 1993.
2. Ned E. Walton and Neilon J. Rowan, *National Cooperative Highway Research Report 152: Warrants for Highway Lighting*. NCHRP, Transportation Research Board, Washington, DC, 1974.
3. Ned E. Walton, *Engineering Economy and Energy Consideration: Warrants and Priorities for Roadway Lighting*, Texas Transportation Institute, Research Report 214-13, 1975.
4. AASHTO. *Roadway Lighting Design Guide*, Seventh Edition, American Association of State Highway and Transportation Officials, Washington, DC, 2018.

(Last updated on September 9, 2020)