

**Department of Legislative Services**  
Maryland General Assembly  
2010 Session

**FISCAL AND POLICY NOTE**

House Bill 169 (Delegate Carr, *et al.*)  
Environmental Matters

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**Marilyn J. Praisner Safe and Earth-Friendly Roadway Act**

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This bill authorizes the State Highway Administration (SHA), Maryland Transportation Authority (MDTA), or a political subdivision to install or replace permanent outdoor highway light fixtures only (1) if other means of passive or reflective lighting do not address safety concerns; and (2) with lights designed to minimize light pollution, veiling luminance ratio, and light trespass. The bill establishes a waiver process and specifies duties for electric companies when installing or replacing highway lighting.

The bill takes effect June 1, 2010.

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**Fiscal Summary**

**State Effect:** Nonbudgeted expenditures increase by \$50,000 in FY 2011 for contractual costs associated with completing a study on maintaining current MDTA lighting systems with restricted uplight luminaires. Nonbudgeted expenditures may also increase in FY 2011 and future years to the extent MDTA is required to use restricted uplight luminaires when replacing existing lighting or installing new lighting. There is a potential for reduced expenditures; however, any cost savings cannot be reliably estimated at this time. Operational delays at SHA and MDTA may result due to waiver requirements. Revenues are not affected.

(in dollars)	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Revenues	\$0	\$0	\$0	\$0	\$0
NonBud Exp.	50,000	-	-	-	-
Net Effect	(\$50,000)	\$0	\$0	\$0	\$0

*Note:() = decrease; GF = general funds; FF = federal funds; SF = special funds; - = indeterminate effect*

**Local Effect:** To the extent local jurisdictions are required to install or replace existing lighting with restricted uplight, expenditures may increase. There is a potential for

reduced expenditures; however, any cost savings cannot be reliably estimated at this time. Operational delays may result due to waiver requirements.

**Small Business Effect:** Minimal or none.

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## Analysis

**Bill Summary:** A “restricted upright luminaire” is a lighting fixture that (1) allows no direct light emission above a horizontal plane through the fixture’s lowest light-emitting part, except for a 0.5% maximum incidental upright from reflection off mounting hardware; and (2) emits no more than 10% of the total direct light emission at or above a vertical angle of 80 degrees.

SHA, MDTA, political subdivisions, and electric companies must use new or replacement highway and county road lighting fixtures that are restricted upright luminaires, unless a waiver is necessary due to specified reasons or other reasons not related to cost.

For each waiver granted, SHA, MDTA, and political subdivisions are required to document in writing their efforts to comply with lighting requirements and the reasons for the waiver. Cost cannot be a reason for granting a waiver. To obtain a waiver, electric companies must provide written notice, describing efforts made to comply with lighting requirements and stating the reasons the waiver is necessary, to the State agency or local government that pays the cost of operating the light at least 30 days before installing or replacing specified highway lights.

Additional requirements apply to electric companies when they initiate a project to remove and replace a group of 10 or more working luminaires with new luminaires that use a different lighting technology. Electric companies must give SHA, MDTA, and local governments the opportunity to install replacement luminaires themselves on fixtures they own and maintain. If electric companies install the replacement lights, the lumen output cannot exceed 10% of the output of the light being replaced, unless specified written consent is obtained. Moreover, the governmental entity that pays to operate the lights has to be given an opportunity to choose such lights, if they are commercially available.

**Current Law/Background:** SHA is responsible for more than 5,200 miles or approximately 16,800 lane miles of road, 2,500 bridges, 3,500 small stream crossing structures, and 80 miles of sound barriers. It also has responsibility for planning, designing, constructing, and maintaining these roads and bridges to safety and performance standards while considering sociological, ecological, and economic concerns.

Established in 1971 as an independent, nonbudgeted State agency, MDTA manages, operates, and maintains the State's seven toll facilities (four bridges, two tunnels, and one highway) and provides law enforcement for these facilities, as well as for Baltimore/Washington International Thurgood Marshall Airport and the Port of Baltimore. Toll revenues and bonds are used to finance these projects.

A primary purpose of lighting a roadway at night is to increase the visibility of the roadway and its immediate environment to help drivers maneuver more efficiently and safely. Visibility or the ability to detect an object depends on several factors, such as the contrast between the object and the background, the adaptation of the eye, glare, and the visual acuity of the driver. Many factors must be taken into account when selecting road lighting fittings, such as shape, distribution of luminous intensity in relation to the surroundings, type of fitting, and the height of the fitting.

Road lighting contributes to light pollution and energy demand. Light pollution is excessive and inappropriate artificial light. Some studies link growing light pollution to negative impacts on human health and immune function, adverse behavioral changes in insect and animal populations, and a decrease of both ambient quality and safety at night. A significant amount of energy is dedicated to lighting along roads. To promote energy efficiency and reduce light pollution, road lighting is often adjusted to reduce the level of illumination.

House Joint Resolution 14 of 2001 created the Task Force to Study Lighting Efficiency and Light Pollution in Maryland. The purpose of the task force was to study the cost, extent, and consequences of inefficient public lighting and light pollution in the State, and the benefits of alternative improvements. The task force released a report in March 2002 that made numerous recommendations and provided the following general guidelines for State agencies:

- choose luminaires that distribute the light only where it is needed, minimizing light pollution and unnecessary energy consumption;
- choose appropriate lamp source color, efficient ballasts, and lamps with longer life ratings;
- choose lamp types to maximize visibility per lumen output, as well as maximizing lumen output per input watt of energy;
- design to appropriate lighting levels based on Illuminating Engineering Society of North America recommendations and to avoid over lighting; and
- locate lights to avoid spillover onto adjacent property and choose appropriate pole heights.

Several states, including California, Colorado, Maryland, New Mexico, and Texas, have adopted roadway lighting design laws and/or policies that require installation of lights that minimize light pollution. In Maryland, SHA advises that its highway lighting practices strive to minimize light pollution, trespass, and glare; maximize lighting efficiency; and enhance the safety of the traveling public. In addition, Montgomery County is installing only full cutoff lighting fixtures, that direct light down and out, for all noncentral business district roadway lighting.

**State Fiscal Effect:** Since SHA advises that it already abides by the lighting guidelines presented in the bill when installing or replacing highway light fixtures, the bill is expected to have a minimal impact on SHA finances. However, Legislative Services was not able to independently verify whether SHA's lighting policies and procedures are consistent with those in the bill.

MDTA advises that its highway lighting fixtures have a long life and are only replaced when they are destroyed (*e.g.*, when a pole is hit by a car) or as part of a major capital project that requires reengineering lighting systems. There are approximately 14,700 luminaires on MDTA facilities. MDTA notes that replacing its existing lighting fixtures with restricted uplight luminaires may not always allow the authority to continue to meet designed and/or recommended lighting levels. Therefore, limiting lighting options to restricted uplight luminaires may, in some cases, increase the total number of light fixtures required to light an area.

MDTA nonbudgeted expenditures increase by at least \$50,000 in fiscal 2011 for contractual costs associated with completing a study on maintaining current MDTA lighting systems with restricted uplight luminaires. This assumes the contractor surveys existing roadway lighting systems to identify common layouts, and then models them with various types of dark-sky compliant roadway lights to determine what fixtures, with what options, work best and meet lighting requirements.

While cost cannot be a reason for granting a waiver, the bill provides significant authority to SHA, MDTA, and local jurisdictions to identify other reasons for granting a waiver from the bill's requirements. Nevertheless, nonbudgeted expenditures may increase to the extent MDTA must use restricted uplight luminaires when replacing existing lighting or installing new lighting, to the extent restricted uplight luminaires cost more or require installation of additional light fixtures. However, to the extent restricted uplight luminaires cost less and are more energy efficient, the bill may result in lower costs. In addition, to the extent the bill results in less costly passive and reflective lighting systems, costs may decrease. Also, because SHA and MDTA are required to document in writing all waivers, the bill may result in operational delays.

**Local Fiscal Effect:** To the extent local jurisdictions are required to install and replace restricted uplight luminaire units, expenditures may increase to the extent the individual units or lighting systems are more expensive, or decrease to the extent the units are less expensive and/or more energy efficient. Also, the bill requires local jurisdictions to document in writing all waivers, which may result in operational delays.

Montgomery County's Department of Transportation advises the bill's fiscal 2011 impact includes \$10,000 in additional capital costs to purchase compliant lighting, and an estimated \$55,000 in additional personnel costs to implement site walks necessary to assess lighting safety, conduct streetlight lighting evaluations, and process waivers. The bill impacts lighting in Montgomery County's central business districts.

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### **Additional Information**

**Prior Introductions:** SB 891 of 2009, which had similar provisions, received an unfavorable report from the Senate Finance Committee. Its nonidentical cross file, HB 816, received a hearing in the House Environmental Matters Committee, but no further action was taken.

**Cross File:** SB 464 (Senator Forehand, *et al.*) – Finance.

**Information Source(s):** Garrett and Montgomery counties, International Dark-Sky Association, Maryland Energy Administration, Public Service Commission, Maryland Department of Transportation, Maryland Transportation Authority, Department of Legislative Services

**Fiscal Note History:** First Reader - February 5, 2010  
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