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**CAN/CSA-C653-13**  
National Standard of Canada  
(approved July 2014)  
*(reaffirmed 2018)*

# Photometric performance of roadway and street lighting luminaires



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REVISED SEPTEMBER 2018

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## **C653-13, Photometric performance of roadway and street lighting luminaires**

<b>National Standard of Canada — JULY 2014</b>
Outside front cover, National Standard of Canada text, title page, and preface.

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**CAN/CSA-C653-13**  
**Photometric performance of  
roadway and street lighting  
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*Published in September 2013 by CSA Group  
A not-for-profit private sector organization  
178 Rexdale Boulevard, Toronto, Ontario, Canada M9W 1R3*

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*ICS 29.140.40  
ISBN 978-1-77139-210-5*

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# Preface

This is the fourth edition of CSA C653, *Photometric performance of roadway and street lighting luminaires*. It supersedes the previous editions published in 2008, 1994, and 1992 under the title *Performance Standard for Roadway Lighting Luminaires*.

This Standard establishes the minimum performance requirements for roadway and street lighting luminaires. The requirements of this Standard are in addition to those specified in CSA C22.2 No. 250.0 and CAN/CSA-C22.2 NO. 250.13. This new edition includes cobra head and shoe box using high pressure sodium (HPS), metal halide (MH), induction, and light emitting diodes (LED) light sources.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

CSA acknowledges that the development of this Standard was made possible, in part, by the financial support of BC Hydro, the Canadian Electricity Association, Hydro-Québec, Manitoba Hydro, Natural Resources Canada, and the Ontario Ministry of Energy.

This Standard was prepared by the Subcommittee on Roadway and Street Lighting Luminaires, under the jurisdiction of the Technical Committee on the Performance of Lighting Products and the Strategic Steering Committee on Performance, Energy Efficiency, and Renewables, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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  - d) *rationale for the change.*

# CAN/CSA-C653-13

## *Photometric performance of roadway and street lighting luminaires*

### 1 Scope

#### 1.1

This Standard specifies photometric performance requirements for luminaires that are used for roadway and street lighting applications.

#### 1.2

The following light sources are addressed in this Standard:

- a) clear HPS lamp;
- b) clear metal halide lamp;
- c) induction; and
- d) LED.

**Note:** Future editions of this Standard might include other light sources, such as plasma.

#### 1.3

This Standard is based on

- a) average luminance, luminance uniformity ratio, and veiling luminance ratio as defined in ANSI/IES RP-8;
- b) nominal input power in watts for HID sources;
- c) rated lamp lumens for HID sources;
- d) luminaire input power in watts and rated luminaire lumens for Induction and LED sources; and
- e) absolute photometry for LED sources as per IES LM 79.

#### 1.4

This Standard is not a design document, and is intended to establish luminaire photometric performance efficiency only.

Tables 4A, 4B, 5A, 5B, 6, and 7 are intended to be used to establish maximum unit power density (UPD) values for typical applications as per the parameters listed in Table 1. UPD values provided in this Standard are not intended for specification or application purposes.

**Notes:**

- 1) The UPD values for MH luminaires in Table 5A and 5B do not include ballast losses and ballast factor (BF). The UPD values for all applications include a light loss factor of 1 (LLF = 1.0).
- 2) It is the responsibility of designers to select the optimal combination of fixture type, pole height, and spacing to ensure an optically efficient design. For guidance on design, see ANSI/IES RP-8.

#### 1.5

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the Standard.