

**SENATE . . . . . No. 2453**

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The Commonwealth of Massachusetts

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**In the One Hundred and Eighty-Ninth General Court**  
**(2015-2016)**  
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SENATE, Thursday, July 21, 2016

The committee on Ways and Means, to whom was referred the Senate Bill improving outdoor lighting and increasing dark-sky visibility (Senate, No. 2159),-- reports, recommending that the same ought to pass with an amendment substituting a new draft with the same title (Senate, No. 2453).

For the committee,  
Karen E. Spilka

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## The Commonwealth of Massachusetts

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**In the One Hundred and Eighty-Ninth General Court  
(2015-2016)**  
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An Act improving outdoor lighting and increasing dark-sky visibility.

*Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:*

1           SECTION 1. Chapter 85 of the General Laws is hereby amended by adding the following  
2 section:-

3           Section 38. (a) As used in this section, the following words shall have the following  
4 meanings unless the context clearly requires otherwise:

5           “Correlated color temperature”, the apparent hue of the light emitted by a fixture,  
6 expressed in kelvins.

7           “Direct light”, light emitted by a fixture, whether from the light source or a reflector or  
8 through a refractor.

9           “Façade lighting”, a permanent outdoor fixture that is specifically intended to illuminate  
10 the exterior surface of a building or structure.

11           “Fixture”, a complete lighting unit, including a light source together with the parts  
12 designed to distribute the light, to position and protect the light source and connect the light  
13 source to the power supply.

14 “Fixture lumens”, total lumens emitted by a fixture.

15 “Fully shielded fixture”, a fixture that emits no direct light above a horizontal plane  
16 through the fixture’s lowest light-emitting part, in its mounted position.

17 “Glare”, light emitted by a fixture that causes visual discomfort or reduced visibility.

18 “Illuminance”, the luminous power incident per unit area of a surface.

19 “Light trespass”, light that falls beyond the property it is intended to illuminate.

20 “Lumen”, a standard unit of measurement of the quantity of light emitted from a source  
21 of light.

22 “Ornamental roadway lighting”, a roadway-lighting fixture that serves a decorative  
23 function in addition to a roadway-lighting function and that has a historical period appearance or  
24 decorative appearance.

25 “Parking-lot lighting”, a permanent outdoor fixture specifically intended to illuminate an  
26 uncovered vehicle-parking area.

27 “Part-night service”, a rate charged by a utility company to provide unmetered electricity  
28 for permanent outdoor fixtures that operate for only a portion of each night’s dusk-to-dawn  
29 cycle.

30 “Permanent outdoor fixture”, a fixture for use in an exterior environment installed with  
31 mounting not intended for relocation.

32 “Roadway lighting”, a permanent outdoor fixture specifically intended to illuminate a  
33 public roadway.

34 “Sky glow”, scattered light in the atmosphere that is caused by light directed upward or  
35 sideways from fixtures, reducing an individual’s ability to view the natural night sky.

36 “State funds”, bond revenues or money appropriated or allocated by the general court.

37 (b) State funds shall not be used to install a new permanent outdoor fixture or to pay for  
38 the cost of operating a new permanent outdoor fixture unless:

39 (i) for roadway lighting or parking-lot lighting, whether mounted to poles,  
40 buildings or other structures and the fixture is fully shielded.

41 (ii) for a building-mounted fixture not specifically intended for roadway lighting,  
42 parking-lot lighting or façade lighting and the fixture is fully shielded when its initial fixture  
43 lumens is greater than 3000 lumens;

44 (iii) for façade lighting and the fixture is shielded to reduce glare, sky glow and  
45 light trespass to the greatest extent possible;

46 (iv) for an ornamental roadway lighting fixture and the fixture emits not more  
47 than 700 lumens above a horizontal plane through the fixture’s lowest light-emitting part;

48 (v) the light emitted by the fixture has a correlated color temperature that is not  
49 greater than 4000 kelvins; and

50 (vi) for roadway lighting unassociated with intersections of 2 or more streets or  
51 highways, the Massachusetts Department of Transportation has determined that the purpose of  
52 the fixture installation cannot be achieved by installation of a reflectorized roadway marker, line,  
53 warning or informational sign or other passive means.

54 (c) This section shall not apply: (i) if it is preempted by federal law; (ii) if the outdoor  
55 lighting fixture is used temporarily for an emergency procedure or road repair; (iii) to  
56 navigational and other lighting systems necessary for aviation and nautical safety; (iv) to lighting  
57 for an athletic playing area; provided, however, that a fixture used therefor shall be selected and  
58 installed so as to minimize glare, light trespass and sky glow outside the athletic playing area; (v)  
59 if a compelling and bona fide safety or security need exists that cannot be addressed by another  
60 reasonable method; (vi) to the replacement of a previously installed permanent outdoor fixture  
61 that is destroyed, damaged or inoperative, has experienced electrical failure due to failed  
62 components, or requires standard maintenance; (vii) to lighting intended for a tunnel or roadway  
63 underpass; or (viii) to a special event or situation that might require additional illumination  
64 including, but not limited to, the illumination of a historic structure, monument or flag; provided,  
65 however, that the illumination shall be selected and installed to minimize glare, light trespass and  
66 sky glow to the greatest extent possible.

67 (d) The department of energy resources, in consultation with the Massachusetts  
68 Department of Transportation, shall develop and promulgate regulations to implement and  
69 enforce this section. The regulations shall include system to ensure that the use of state funds,  
70 including, but not limited to, operating costs for new permanent outdoor fixtures for roadway  
71 lighting or parking lot lighting installed by electric distribution companies and municipal  
72 aggregators, comply with this section

73 SECTION 2. The department of energy resources shall promulgate guidelines for  
74 illumination by new permanent outdoor fixtures for applications under section 38 of chapter 85  
75 such that the illuminance levels required for the intended purpose as defined in the most recent  
76 edition of The Lighting Handbook published by the Illuminating Engineering Society may be

77 used; provided, however, that if a municipal or county ordinance or regulation specifies a  
78 different illuminance level, the illuminance level required for the intended purpose by the  
79 ordinance or regulation may be used.

80           SECTION 3. The Massachusetts Department of Transportation shall review and issue a  
81 report on roadway lighting and lighting operational costs. The report shall include a review of  
82 warranting and other criteria for roadway lighting and an analysis of lighting operational costs,  
83 actions taken by the department to comply with current standards, procedures and accepted best  
84 practices relative to roadway lighting and a plan to reduce lighting operational costs through the  
85 replacement of existing lower-wattage, fully shielded fixtures and the replacement of  
86 unnecessary roadway lighting with the installation of passive safety measures. The department  
87 shall issue its report to the department of energy resources and the clerks of senate and the house  
88 of representatives not later than April 1, 2017.

89           SECTION 4. The department of public utilities shall, subject to its ratemaking authority,  
90 develop a rate for part-night service, dimming and controls-operated for unmetered roadway or  
91 parking-lot lighting to apply to each new electric utility rate case submitted after January 1,  
92 2017.

93           SECTION 5. Sections 1 and 2 shall take effect on June 1, 2017.