

SENATE No. 2147

The Commonwealth of Massachusetts

PRESENTED BY:

Cynthia Stone Creem

To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts in General Court assembled:

The undersigned legislators and/or citizens respectfully petition for the adoption of the accompanying bill:

An Act to improve outdoor lighting, conserve energy, and increase dark-sky visibility.

PETITION OF:

NAME:	DISTRICT/ADDRESS:	
<i>Cynthia Stone Creem</i>	<i>First Middlesex and Norfolk</i>	
<i>Edward J. Kennedy</i>	<i>First Middlesex</i>	<i>2/10/2021</i>
<i>Joanne M. Comerford</i>	<i>Hampshire, Franklin and Worcester</i>	<i>2/11/2021</i>
<i>Walter F. Timilty</i>	<i>Norfolk, Bristol and Plymouth</i>	<i>2/23/2021</i>
<i>James B. Eldridge</i>	<i>Middlesex and Worcester</i>	<i>2/23/2021</i>
<i>Sheila C. Harrington</i>	<i>1st Middlesex</i>	<i>2/25/2021</i>
<i>Marc R. Pacheco</i>	<i>First Plymouth and Bristol</i>	<i>3/19/2021</i>
<i>Bruce E. Tarr</i>	<i>First Essex and Middlesex</i>	<i>3/24/2021</i>
<i>Adam G. Hinds</i>	<i>Berkshire, Hampshire, Franklin and Hampden</i>	<i>4/26/2021</i>
<i>John F. Keenan</i>	<i>Norfolk and Plymouth</i>	<i>8/31/2021</i>
<i>Sal N. DiDomenico</i>	<i>Middlesex and Suffolk</i>	<i>9/30/2021</i>

SENATE No. 2147

By Ms. Creem, a petition (accompanied by bill, Senate, No. 2147) of Cynthia Stone Creem, Edward J. Kennedy, Joanne M. Comerford, Walter F. Timilty and other members of the General Court for legislation to promote energy efficient lighting, conserve energy, regulate outdoor night lighting, and reduce light pollution. Telecommunications, Utilities and Energy.

[SIMILAR MATTER FILED IN PREVIOUS SESSION
SEE SENATE, NO. 1937 OF 2019-2020.]

The Commonwealth of Massachusetts

—————
**In the One Hundred and Ninety-Second General Court
(2021-2022)**
—————

An Act to improve outdoor lighting, conserve energy, and increase 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” or “CCT”, the apparent hue of the light emitted by a
6 fixture, expressed in kelvin (K).

7 “Façade lighting”, illumination of exterior surfaces of buildings for the enhancement of
8 their nighttime appearance, achieved by shining light onto building surfaces, or by internal or

9 external illumination of translucent building surfaces, or with ornamental fixtures solely for
10 decorative function.

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 “Fully shielded fixture”, a fixture that in its mounted position has an uplight value of U0
15 as defined by the Illuminating Engineering Society’s standards publication TM-15-20
16 (Luminaire Classification System for Outdoor Luminaires).

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 “Municipal funds”, bond revenues or money appropriated or allocated by the governing
23 body of a town or city within the Commonwealth.

24 “Ornamental lighting”, a lighting fixture that has a historical or decorative appearance
25 and that serves a decorative function in addition to serving to light a roadway, parking lot,
26 walkway, plaza, or other area.

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

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

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

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

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

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

39 “Uplight,” direct light emitted above a horizontal plane through the fixture’s lowest light-
40 emitting part in its mounted position

41 (b) State or municipal funds must not be used to install or cause to be installed a new
42 permanent outdoor fixture or to pay for the cost of operating a new permanent outdoor fixture,
43 for the specific purposes listed below, unless the following conditions are met:

44 (i) Fixtures used for roadway lighting or parking-lot lighting, whether mounted to poles,
45 buildings or other structures, must be fully shielded unless they are Ornamental lighting fixtures,
46 or are fixtures used to light tunnels or roadway underpasses;

47 (ii) Ornamental lighting fixtures must emit fewer than 500 lumens of Uplight;

48 (iii) Fixtures must not be used for Roadway lighting that is unassociated with the
49 intersections of two or more streets or highways, unless the Massachusetts Department of
50 Transportation has determined that the installation of reflectorized roadway markers, lines,
51 warning or informational signs, or other passive means would be insufficient;

52 (iv) Building-mounted fixtures must be fully shielded unless they are Façade lighting
53 fixtures;

54 (v) Façade lighting fixtures must be selected and installed to direct the light onto the
55 intended target, and must be shielded, so that glare, sky glow, and light trespass are minimized;

56 (vi) Fixtures used to light historic structures, flags, monuments, statuary and works of art
57 must be selected and installed to direct the light onto the intended target, and must be shielded,
58 so that glare, sky glow, and light trespass are minimized;

59 (vii) Fixtures used to light athletic playing areas must be selected and installed so as to
60 minimize glare, light trespass and sky glow outside the athletic playing area;

61 (viii) Fixtures installed for any purpose must have a correlated color temperature that is
62 not greater than 3000 K unless (1) an exemption up to 4000 K is granted, in which case a public
63 safety need must be demonstrated; or (2) the fixtures are used exclusively for the decorative
64 illumination through color of certain building façade or landscape features; or (3) the fixtures are
65 used to illuminate athletic playing areas.

66 (ix) Lighting installed for any purpose should provide maintained illuminance levels
67 equal to the minimum values recommended by the Illuminating Engineering Society for the

68 intended application and may not exceed those recommended minimum values by more than
69 50% unless a demonstrated and verified need exists for higher levels to ensure safety or security.

70 (c) This section shall not apply: (i) if it is preempted by federal law; (ii) if the outdoor
71 lighting fixture is used temporarily for emergency, repair, construction or similar activities; (iii)
72 to navigational and other lighting systems necessary for aviation and nautical safety; (iv) if a
73 compelling and bona fide safety or security need exists that cannot be addressed by another
74 reasonable method; (v) to the replacement of a previously installed permanent outdoor fixture
75 that is destroyed, damaged or inoperative, has experienced electrical failure due to failed
76 components, or requires standard maintenance; (vi) to festoon lighting as defined in the NFPA 70
77 National Electrical Code, or (vii) to fixtures installed for any specific purpose that is not listed in
78 (b) above.

79 (d) The Massachusetts Department of Energy Resources, in consultation with the
80 Massachusetts Department of Transportation, shall:

81 (i) develop and promulgate regulations to implement and enforce this section; provided,
82 however, that if a municipal or county ordinance or regulation specifies a different illuminance
83 level, the illuminance level required for the intended purpose by the ordinance or regulation may
84 be used; and

85 (ii) develop and promulgate regulations to ensure that the use of state or municipal funds,
86 including, but not limited to, operating costs for new permanent outdoor fixtures for roadway
87 lighting or parking-lot lighting installed by electric distribution companies and municipal
88 aggregators, comply with this section.

89 SECTION 2. The Massachusetts Department of Transportation shall review and issue a
90 report on roadway lighting and lighting operational costs. The report shall include a review of
91 warranting and other criteria for roadway lighting and an analysis of lighting operational costs; a
92 review of roadway lighting's impact on human health, human safety, and environmental impact;
93 actions taken by the department to comply with current standards; procedures and accepted best
94 practices relative to roadway lighting; and a plan to reduce lighting operational costs through the
95 replacement of existing high-wattage, unshielded fixtures with lower-wattage, fully shielded
96 fixtures and the replacement of unnecessary roadway lighting with the installation of passive
97 safety measures. The department shall issue its report to the Department of Energy Resources
98 and the clerks of Senate and the House of Representatives not later than January 1, 2023.

99 SECTION 3. The Massachusetts Department of Public Utilities shall, subject to its
100 ratemaking authority:

101 (a) develop a rate for part-night service that applies to dimmable and controls-operated
102 fixtures used for unmetered roadway or parking-lot lighting.

103 (b) develop a rate for unmetered roadway or parking-lot lighting fixtures utilizing less
104 than 25 watts of electricity.

105 SECTION 4. Sections 1 and 2 shall take effect on January 1, 2022.