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CHAPTER

**Massachusetts Sierra Club**  
10 Milk Street, Suite 632  
Boston MA 02103-4621  
www.sierraclubmass.org  
office@sierraclubmass.org  
(617) 423-5775

July 29, 2013

Chairman John Keenan  
Joint Committee on Telecommunications, Utilities and Energy  
State House, Boston, MA 02133

Chairman Ben Downing  
Joint Committee on Telecommunications, Utilities and Energy  
State House, Boston, MA 02133

**Re: Testimony in Support of H.2941/S.1573  
An Act Improving Outdoor Lighting and Increasing Dark-Sky Visibility**

Dear Chairman Keenan, Chairman Downing, and Honorable Members of the Committee,

Thank you for providing this opportunity to offer our comments on H.2941/S.1573, which would promote the use of outdoor lighting that would minimize its environmental impact. The Sierra Club would like to express our strong support for this bill.

The Sierra Club is the oldest and largest non-profit, non-partisan environmental organization in the country. With over a forty year history in this chapter, the Massachusetts Sierra Club represents about 22,000 members throughout the state and over 1 million members and supporters nationwide. We fight for clean air, clean water, the preservation of the Commonwealth's most precious natural spaces, and healthy, vibrant communities.

Unlike most other forms of environmental pollution, light pollution is very easy to stop. We need only use outdoor light fixtures that direct the light downwards. Currently, regulations and laws are in place in many cities and states in the United States, as well as countries around the world, including Arizona<sup>1</sup>, Arkansas<sup>2</sup>, California<sup>3</sup>, Colorado<sup>4</sup>, Connecticut<sup>5</sup>, Delaware<sup>6</sup>, Maine<sup>7</sup>, Michigan<sup>8</sup>, Minnesota<sup>9</sup>, Montana<sup>10</sup>, Rhode Island<sup>11</sup>, Texas<sup>12</sup>, Vermont<sup>13</sup>, Virginia<sup>14</sup>, Wisconsin<sup>15</sup>, Wyoming<sup>16</sup>, Czech Republic<sup>17</sup>, Italy<sup>18</sup>, Slovenia<sup>19</sup>, England<sup>20</sup> and many others. These leaders have proven the feasibility and effectiveness of this low-tech solution. Lights with a more focused output will protect our environment, provide better illumination, and save energy.

Light pollution poses a greater danger than is commonly known. By inadvertent interference with the circadian rhythms of land and marine plants and animals, reproductive and growth cycles have been altered. In some cases, the alteration causes deterrence and threatens the survival of endangered species; in other cases it creates excessive plant growth and ecosystem destruction.

U.S. Fish and Wildlife Service reports that light pollution has further strained the potential of survival for many endangered species of birds and turtles.<sup>21</sup> Studies in states such as Florida have documented the adverse effects that light pollution has caused.<sup>22</sup> In Massachusetts, species such as the Great Blue Heron are at risk due to the adverse affects of light pollution.

Long artificial days can alter bird migration behavior causing birds to depart too early (fat-ready due to longer feeding days) or too late (fooled by longer days) and therefore be out of sync with biological systems (insect prey life cycles, plant food items, nesting habitat, etc.). Additionally, insects attracted to streetlights are changing the feeding behaviors of predator

species, such as bats...on our porches. Other nocturnal animals change their behavior to avoid being exposed to predators in the unnatural light. Adult sea turtles search for dark beaches, while hatchlings navigate to the brightness that should be the ocean's horizon, but can often be the fatal attraction of artificially lighted areas behind the dunes.<sup>23</sup>

Light pollution-induced water quality effects are high for ponds, lakes, and low flushing coastal watershed stream and river environments. Light Pollution impacts water quality by promoting unnatural algal growth in surface waters. Algae feeding zooplankton use natural light to migrate to deeper water for food. At night, they migrate to the surface. Artificial light causes zooplankton to stay in deeper water when they should be feeding on the surface at night. The disruption of zooplankton behavior and feeding cycles leads to algal blooms in the surface water which are associated with declining water quality conditions.

Because this proposed legislation would have a significant positive impact on marine and land plants and animals in Massachusetts, the Sierra Club fully endorses H.2941/S.1573 and hopes this bill is reported favorably by the committee and is supported by all members of the Senate and House of Representatives.

Respectfully,



Ryan Black  
Director  
Massachusetts Sierra Club

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<sup>1</sup> AZ House Bill Title 49 (See Chapter 7)

<sup>2</sup> The Shielded Outdoor Lighting Act Title 8, Chapter 14, Shielded Outdoor Lighting Act

<sup>3</sup> California Energy Commission (CEC) Title 24: Energy Efficiency Standards for Residential and Nonresidential Buildings Outdoor Lighting Zones - 2005 Building Energy Efficiency Standards, CEC 2005 Building Energy Efficiency Standards, Section 132-Outdoor Lighting Controls and Equipment (pg 75), CEC 2008 Building Energy Efficiency Standards, Section 132-Outdoor Lighting Controls and Equipment (pg 116).

<sup>4</sup> Title 24, Article 82, Part 9 (24-82-902)

<sup>5</sup> Public Act 01-134: An Act Requiring Energy Efficient Roadway Lights, Public Act 06-86: An Act Concerning Luminaires at State Agencies, Substitute House Bill No. 5686 - Public Act No. 03-210 (Reduction of Hazardous Road Glare and Light Pollution from Private Area Floodlighting), Connecticut State Building Code – 505.6.3 – Light Pollution Controls (pp 6-7)

<sup>6</sup> Title 7: Conservation & Natural Resources, Chapter 71A. Regulation of Outdoor Lighting

<sup>7</sup> 5 M.R.S. § 1769. Outdoor lighting

<sup>8</sup> Natural Resources and Environmental Protection Act (Excerpt) 324.75101

<sup>9</sup> 16B.328 Outdoor Lighting Fixtures Model Ordinance (2008), Chapter 296 --S.F. No. 3337 An act relating to utilities; providing for standards for state-funded outdoor lighting fixtures. (2008)

<sup>10</sup> Montana Code, Title 23: Parks, Recreation, Sports, and Gambling; Chapter 1: Parks; State Parks; Good neighbor policy -- public recreational lands

<sup>11</sup> Chapter 420 2002-S 2399A Enacted 28 JUL 2002. An Act Relating to State Affairs and Government - Outdoor Lighting Control Bill H7990 - Night Outdoor Public Lighting - Introduced: 07 Mar 2000

<sup>12</sup> Texas Statutes Health & Safety Code, Chapter 425: Regulation of Certain Outdoor Lighting

<sup>13</sup> Vermont Statutes, Title 10, Chapter 24: Outdoor Lighting

<sup>14</sup> Virginia Public Procurement Act 2.2 Administration of Government, Section 1111 Department of General Services: purchase of light fixtures.

<sup>15</sup> Town of Perry, Dane County, Wisconsin: Dark Sky Lighting Ordinance

<sup>16</sup> SF0048 - Outdoor lighting tariffs as Enrolled- signed 17 feb 2003, 2003 General Session 57th Legislature Senate Files

<sup>17</sup> Protection of the Atmosphere Act, June 2002

<sup>18</sup> Visual Lombardy Law no. 17/2000 Veneto Region Light Pollution Law (passed 08/2009)

<sup>19</sup> Sporo ilo za javnost o sklepkih, ki jih je Vlada RS sprejela na 133. seji, 30. Aug 2007

<sup>20</sup> Clean Neighbourhoods and Environment Act 2005 under the Office of Public Sector Information, Part 9: Miscellaneous; Section 102: Statutory nuisance: lighting

<sup>21</sup> 2008 Federal Register, 73 FR 28080; Centralized Library: U.S. Fish and Wildlife Service - FR Doc E8-10790. Ashy Storm-Petrel (*Oceanodroma homochroa*).

<sup>22</sup> Florida Fish and Wildlife Conservation Commission, Florida Marine Research Institute Technical Reports, *Understanding, Assessing, and Resolving Light-Pollution Problems on Sea Turtle Nesting Beaches*, Blair E. Witherington and R. Erik Martin. 2003

<sup>23</sup> Audubon Society, *SC Chapter Report*, December 2008