
A BILL FOR AN ACT

RELATING TO STARLIGHT RESERVE.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

1 PART I

2 SECTION 1. (a) The legislature finds that the Declaration
3 in Defense of the Night Sky and the Right to Starlight was
4 approved at the Starlight Conference, held on the island of La
5 Palma in April 2007. The declaration constituted the general
6 and conceptual framework of the Starlight Initiative. The
7 proposal to develop a starlight reserve concept was one of the
8 additional recommendations of the starlight declaration to be
9 carried out in cooperation with the World Heritage Center.
10 Subsequently, an action plan was developed based on the
11 principles of:

12 (1) Recognizing the importance of promoting the
13 Declaration in Defense of the Night Sky and the Right
14 to Starlight through the different United Nations
15 Educational, Scientific and Cultural Organization
16 (UNESCO) programs and initiatives within the framework
17 of the UNESCO conventions;



- 1 (2) Recognizing that light pollution must be considered an
2 imminent threat to the environment and that climate
3 change poses a threat to the outstanding universal
4 values of world heritage sites;
- 5 (3) Recognizing that the preservation of dark skies is an
6 important and necessary part of the protection and
7 safeguarding of natural and cultural properties
8 worldwide; and
- 9 (4) Following the call of the UNESCO Director-General for
10 an integrated approach to issues of environmental
11 preservation and sustainable development.
- 12 (b) Specifically, the action plan proposed to:
- 13 (1) Elaborate the concept of starlight reserve;
- 14 (2) Identify the different categories of areas, reserves,
15 and properties according to this concept;
- 16 (3) Establish general technical recommendations for
17 starlight protection related to the safeguarding of
18 natural and cultural properties, light pollution, and
19 intelligent lighting;
- 20 (4) Integrate these recommendations into the different
21 world heritage programs and initiatives; and



1 (5) Evaluate the possibility of nominating the starlight
2 reserve onto the world heritage list, the biosphere
3 reserve, or both.

4 A starlight reserve is a site where a commitment to defend the
5 quality of the night sky and access to starlight has been
6 established. Its main function is to preserve the quality of
7 the night sky and its associated cultural, scientific,
8 astronomical, natural, and landscape-related values. A starlight
9 reserve is to have a core or dark zone, which is an unpolluted
10 area where natural night sky light conditions are kept intact.
11 This core zone is to be protected by a buffer or protection zone
12 to avoid the adverse effects of air and light pollution reaching
13 the core zone. Finally, there is to be an external zone where
14 intelligent and responsible lighting criteria are enforced,
15 protecting night sky quality from harmful factors such as air
16 pollution.

17 (c) The requirements for each starlight reserve are to be
18 specific to the characteristics, singularities, and functions of
19 each site and are targeted to preserve the quality of
20 astronomical observation and wildlife conservation, while
21 maintaining the integrity of nighttime landscapes and cultural
22 heritage sites. The declaration of a starlight reserve is to be



1 accompanied by a participative action plan and recommendations
2 aimed at preserving and recovering night sky quality to feasible
3 limits while preserving related cultural, educational,
4 scientific, and environmental benefits.

5 (d) The legislature also finds that light pollution has
6 become a worldwide problem and is gradually diminishing human
7 capacity to observe the stars. The International Commission on
8 Illumination defines light pollution as the sum of all adverse
9 effects of artificial light in as much as they have an impact on
10 the environment, including the direct impact of outdoor lighting
11 and the brightening of the night sky that results from the
12 reflection of radiation, also known as glare or sky glow.
13 Avoidable light pollution refers to light flow emitted at night
14 by artificial light sources that are inappropriate in intensity,
15 direction, or spectral range and are unnecessary to carry out
16 their intended function, or artificial lighting used in
17 particular sites, including observatories, natural areas, or
18 sensitive landscapes. Irresponsible lighting includes
19 over-illumination, which makes an excessive and unnecessary use
20 of artificial light, as well as poorly designed luminaires that
21 cause glare or sky glow. (A luminaire is an apparatus that
22 controls the distribution of light given by a lamp that includes



1 all the components necessary for fixing and protecting the lamp
2 and for connecting it to a power supply, colloquially known as a
3 lighting fitting or fixture.)

4 The legislature further finds that light pollution causes a
5 large amount of harm to the quality of the night sky even though
6 viable solutions for reduction are available. The purpose of
7 this Act is to reduce the amount of light pollution in Hawaii's
8 night sky so that its quality is preserved.

9 PART II

10 SECTION 2. **Statewide starlight reserve strategy; temporary**
11 **advisory committee; duty.** (a) The department of business,
12 economic development, and tourism shall develop a statewide
13 starlight reserve strategy. The department of business,
14 economic development, and tourism shall be assisted by a
15 temporary advisory committee, to be placed within the department
16 for administrative purposes. The members of the temporary
17 advisory committee shall consist of:

- 18 (1) The director of the department of business, economic
19 development, and tourism or the director's designee;
20 (2) The comptroller or the comptroller's designee;
21 (3) The director of the institute for astronomy of the
22 University of Hawaii or the director's designee;



- 1 (4) The director of health or the director's designee;
2 (5) The director of transportation or the director's
3 designee;
4 (6) The chairperson of the board of land and natural
5 resources or the chairperson's designee;
6 (7) The offices of the mayors of the counties of Kauai,
7 Maui, Hawaii, and the city and county of Honolulu or
8 the mayors' designees;
9 (8) The chairperson of the office of Hawaiian affairs or
10 the chairperson's designee;
11 (9) A member of the Hawaiian Astronomical Society,
12 selected by its board of directors; and
13 (10) A lighting engineer selected by the director of the
14 department of business, economic development, and
15 tourism.

16 (b) The director of business, economic development, and
17 tourism shall designate the chairperson of the temporary
18 advisory committee. The temporary advisory committee shall
19 convene its initial meeting no later than July 30, 2009.

20 (c) It shall be the duty of the department of business,
21 economic development, and tourism, assisted by the temporary
22 advisory committee, to develop a statewide starlight reserve



1 strategy to preserve the quality of the night sky and its
2 associated cultural, scientific, astronomical, natural, and
3 landscape-related values. The department shall develop necessary
4 proposed legislation to implement the statewide starlight
5 reserve strategy, including a light pollution law to eliminate
6 irresponsible lighting, such as illumination that makes
7 excessive or unnecessary use of artificial light and poorly
8 designed luminaires that cause glare or sky glow.

9 SECTION 3. **Statewide starlight reserve strategy;**
10 **principles and functions; components.** (a) The statewide
11 starlight reserve strategy shall be based on the following
12 principles expressing the functions of the starlight reserve
13 concept:

14 (1) To value, protect, and promote the tangible and
15 intangible worldwide cultural heritages associated
16 with the night sky;

17 (2) To defend the quality of the night sky for
18 astronomical observation, by establishing measures and
19 regulations to prevent its deterioration through light
20 and atmospheric pollution;

21 (3) To establish new bases, especially in natural areas,
22 to safeguard the equilibrium of the biosphere and to



1 protect the earth's biological diversity and the
2 nocturnal and diurnal habitats that are threatened by
3 light and atmospheric pollution; and

4 (4) To preserve and recover the quality of starlit
5 landscapes that has traditionally been perceived by
6 people as an integral part of their natural and
7 cultural heritage.

8 (b) The statewide starlight reserve strategy shall contain
9 the following:

10 (1) An intelligent lighting system component that includes
11 the:

12 (A) Reduction and prevention of light pollution
13 created by:

- 14 (i) The unnecessary use at night of artificial
15 light sources that are inappropriate in
16 intensity, direction, or spectral range; and
17 (ii) The use of artificial lighting in certain
18 areas, including observatories, natural
19 areas, or sensitive landscapes;

20 (B) Reduction and prevention of glare or sky glow
21 caused by over-illumination and poorly designed
22 luminaires; and



- 1 (C) Use of artificial lighting solely for essential
2 purposes, thereby also conserving energy;
- 3 (2) A tourism component that preserves the quality of the
4 night sky through the use of innovative promotional
5 and educational ecotourism products related to
6 astronomical observation, natural nightscapes, and
7 associated native Hawaiian cultural values and
8 heritage;
- 9 (3) An educational component to teach both residents of
10 and visitors to Hawaii about the importance of
11 preserving the night sky; and
- 12 (4) A statewide monitoring component to measure and
13 monitor the quality of the night sky.

14 SECTION 4. **Starlight reserve areas; categories.** The
15 statewide starlight reserve strategy shall consider the
16 inclusion of the following categories of starlight reserve
17 areas:

- 18 (1) Starlight heritage site: archaeological and cultural
19 sites or monuments created as an expression of
20 humanity's relationship with the firmament, which
21 reflect the development of astronomy and its



- 1 manifestation in art and cultural tradition,
2 including:
3 (A) Monuments or groups of buildings related to
4 astronomy;
5 (B) Relevant sites and manifestations of cultural
6 heritage related to sky observation, including
7 archaeoastronomical sites;
8 (C) Areas where expressions of tangible and
9 intangible cultural heritage associated with
10 astronomy and starlight, including music,
11 traditions, legends, folk tales, and folklore
12 still survive; and
13 (D) World heritage properties and biosphere reserves;
14 (2) Starlight astronomy site: exceptional observation
15 sites for optical, infrared, and radio astronomy,
16 including potential future sites, including:
17 (A) Relevant astronomical observatories and their
18 surrounding environment;
19 (B) Potential areas for advanced astronomical
20 observation, recognized by the International
21 Astronomical Union and the international
22 scientific community; and



1 (C) Exceptional astronomical observation sites whose
2 characteristics render them especially suited for
3 the development of educational and scientific
4 activities or for the promotion and spread of
5 astronomy;

6 (3) Starlight natural site: natural areas where the
7 integrity of natural conditions, including the quality
8 of the natural night sky, is preserved, including:

9 (A) Habitats of particular relevance that host
10 nocturnal wildlife species particularly sensitive
11 to the loss of night sky quality or vulnerable to
12 the effects of light pollution;

13 (B) Terrestrial and marine areas used as corridors
14 and resting sites by migratory wildlife species
15 whose habits and displacement are harmed by glare
16 or loss of natural night light;

17 (C) Protected natural areas with a special relevance
18 for the development of nocturnal environment
19 research and management, and the study of the
20 natural patterns of light and dark;

21 (D) World heritage properties, biosphere reserves,
22 Ramsar Convention wetland sites, and marine or



1 terrestrial protected areas of international
2 importance; and

3 (E) All protected nature areas in general, since all
4 species and ecosystems depend on natural cycles
5 of day and night;

6 (4) Starlight landscape: places where aesthetic and
7 cultural manifestations of the night sky can be
8 observed, including:

9 (A) Areas where the starry sky, as well as
10 exceptional manifestations of light-related
11 phenomena, can be observed;

12 (B) Expressions of nature and geological monuments
13 that create night landscapes of acknowledged
14 value;

15 (C) Cultural landscapes or expressions of natural and
16 artificial works of nature and where the
17 astronomical dimension prevails; and

18 (D) Natural heritage properties and biosphere
19 reserves;

20 (5) Starlight oasis-human habitat: populated areas free
21 from adverse effects that impede star viewing and
22 decrease night-sky quality, including:



1 (A) Rural areas of outstanding singularity where the
2 starry sky view is part of their recognized
3 identity;

4 (B) Small villages that maintain the night sky
5 reasonably free from atmospheric and light
6 pollution; and

7 (C) Tourist destinations that consider the night sky
8 an important resource and that offer activities
9 based on or related to astronomy and the
10 enjoyment of the night sky; and

11 (6) Mixed starlight site: sites that combine two or more
12 categories under paragraphs (1) through (5).

13 SECTION 5. **Statewide lighting law; considerations;**
14 **lighting in zones.** The department of business, economic
15 development, and tourism, with the assistance of the temporary
16 advisory committee, shall develop necessary proposed legislation
17 to implement a statewide intelligent lighting and light
18 pollution law that includes the:

19 (1) Development of rules regulating the requirements of
20 outdoor lighting to guarantee the protection of night
21 sky quality;



- 1 (2) Incorporation of measures to conserve energy and
2 promote responsible outdoor night lighting;
- 3 (3) Development of standards for intelligent lighting
4 design in architecture, urban planning, engineering,
5 and infrastructure development;
- 6 (4) Strengthening of statewide commitment to preserving
7 the night sky by adopting intelligent lighting in the
8 public sector;
- 9 (5) Promotion of labeling to recognize intelligent
10 lighting fixtures and products;
- 11 (6) Development of alliances with both public and private
12 entities primarily responsible for outdoor night
13 lighting;
- 14 (7) Development of measures to avoid obtrusive light and
15 improve the quality of life of local populations; and
- 16 (8) Education of local residents about existing solutions,
17 as well as the environmental, personal, and
18 energy-saving benefits that intelligent night-sky
19 lighting entails.

20 SECTION 6. **Report; temporary advisory committee**
21 **terminated.** (a) The department of business, economic
22 development, and tourism shall submit a final report to the



1 legislature no later than twenty days prior to the convening of
2 the regular session of 2010. The report shall include findings,
3 recommendations, and proposed legislation necessary to implement
4 this part.

5 (b) The advisory committee created in this part shall be
6 terminated on June 30, 2011.

7 PART III

8 SECTION 7. This Act shall take effect on June 30, 2050.



Report Title:

Starlight Reserve; Statewide Lighting Law; Light Pollution

Description:

Requires department of business, economic development, and tourism, assisted by a temporary advisory committee, to develop a statewide starlight reserve strategy, including an intelligent statewide lighting law, to preserve the quality of the night sky and its associated cultural, scientific, astronomical, natural, and landscape-related values. Takes effect June 30, 2050.

(SB536 HD1)

