
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 to 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 as
2 an imminent threat to the environment, as well as that
3 climate change poses a threat to the outstanding
4 universal values of world heritage sites;
- 5 (3) Recognizing that the preservation of dark skies is an
6 important and necessary part in the process of the
7 protection and safeguarding of natural and cultural
8 properties 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 accordingly 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 to be
15 enforced, protecting night sky quality from harmful factors such
16 as air 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 that are targeted to preserve the quality of
20 astronomical observations and wildlife conservation, while
21 maintaining the integrity of nighttime landscapes and cultural
22 heritage scenarios. The declaration of a starlight reserve is

1 to be accompanied by a participative action plan and an ensemble
2 of recommendations aimed at preserving and recovering night sky
3 quality up to feasible limits and that also preserve related
4 cultural, educational, scientific, and environmental benefits.

5 (d) The legislature also finds that light pollution has
6 become a worldwide problem and is gradually diminishing the
7 human capacity to observe the stars. The International
8 Commission on Illumination defines light pollution as the sum of
9 all adverse effects of artificial light in as much as they have
10 an impact on the environment, including the direct impact of
11 outdoor lighting and the brightening of the night sky that
12 results from the reflection of radiation, also known as glare or
13 sky glow. Avoidable light pollution refers to light flow
14 emitted at night by artificial light sources that are
15 inappropriate in intensity, direction, or spectral range and
16 that are unnecessary to carry out their intended function or
17 when artificial lighting is used in particular sites, such as
18 observatories, natural areas, or sensitive landscapes.

19 Irresponsible lighting includes over-illumination, which makes an
20 excessive and unnecessary use of artificial light, as well as
21 poorly designed luminaires that cause glare or sky glow. (A
22 luminaire is an apparatus that controls the distribution of

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

5 The legislature further finds that light pollution causes
6 the greatest amount of harm to the quality of the night sky even
7 though viable solutions are available to reduce light pollution.
8 The purpose of this Act is to reduce the amount of light
9 pollution so that the quality of the night sky is preserved in
10 the State.

11 **Part II**

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

20 (1) Department of business, economic development, and
21 tourism;

22 (2) Office of aerospace development;

- 1 (3) Hawaii tourism authority;
- 2 (4) University of Hawaii;
- 3 (5) Department of health;
- 4 (6) Department of transportation;
- 5 (7) Department of land and natural resources;
- 6 (8) Offices of the mayors of the counties of Kauai, Maui,
- 7 Hawaii, and the city and county of Honolulu;
- 8 (9) Office of Hawaiian affairs;
- 9 (10) Hawaiian astronomical society;
- 10 (11) A lighting engineer; and
- 11 (12) Counties of Oahu, Maui, Kauai, and Hawaii, who shall
- 12 be residents of the respective counties.
- 13 (b) The director of business, economic development, and
- 14 tourism shall designate the chairperson of the advisory
- 15 committee. The advisory committee shall convene its initial
- 16 meeting no later than July 30, 2009.
- 17 (c) It shall be the duty of the department of business,
- 18 economic development, and tourism, assisted by the advisory
- 19 committee, to develop a statewide starlight reserve strategy to
- 20 preserve the quality of the night sky and its associated
- 21 cultural, scientific, astronomical, natural, and landscape-
- 22 related values. The department shall develop necessary proposed
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1 legislation to implement the statewide starlight reserve
2 including a light pollution law to eliminate irresponsible
3 lighting, such as over-illumination that makes use of excessive
4 or unnecessary use of artificial light, and poorly designed
5 luminaires that cause glare of sky glow at night.

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

- 11 (1) To value, protect, and promote the tangible and
12 intangible worldwide cultural heritages associated
13 with the night sky;
- 14 (2) To defend the quality of the night sky for
15 astronomical observation, including establishing
16 measures and regulations to prevent its deterioration
17 through light and atmospheric pollution;
- 18 (3) To establish new bases, especially in natural areas,
19 to safeguard the equilibrium of the biosphere and to
20 protect the earth's biological diversity whose
21 nocturnal and diurnal habitats are threatened by light
22 and atmospheric pollution; and

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

5 (b) The statewide starlight reserve strategy shall have
6 the following components:

7 (1) An intelligent lighting system that includes:

8 (A) Reduction and prevention of light pollution
9 created by:

10 (i) The unnecessary use at night of artificial
11 light sources that are inappropriate in
12 intensity, direction, or spectral range; and

13 (ii) The use of artificial lighting in certain
14 areas such as observatories, natural areas,
15 or sensitive landscapes;

16 (B) Reduction and prevention of glare or sky glow
17 caused by over-illumination and poorly designed
18 luminaires; and

19 (C) Minimizing the use of artificial lighting only
20 for essential purposes and thereby also
21 conserving energy;

1 (2) A tourism component that preserves the quality of the
2 night sky through the use of innovative promotional
3 and educational ecotourism products related to
4 astronomical observation, natural nightscapes, and
5 associated native Hawaiian cultural values and
6 heritage;

7 (3) An educational component to educate both Hawaii
8 residents and visitors to the State about the
9 importance of preserving the night sky; and

10 (4) A statewide monitoring component to measure and
11 monitor the quality of the night sky.

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

16 (1) Starlight heritage site: archaeological and cultural
17 sites or monuments created as an expression of
18 humanity's relationship with the firmament, which
19 reflect the development of astronomy and its
20 manifestation in the arts and traditions, and that may
21 include:

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

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

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

18 (C) Protected natural areas with a special relevance
19 for the development of night-time environment
20 research and management and the study of the
21 natural patterns of light and dark;

- 1 (D) World heritage properties, biosphere reserves,
- 2 Ramsar Convention wetland sites, and marine or
- 3 terrestrial protected areas of international
- 4 importance; and
- 5 (E) All protected nature areas in general, since all
- 6 species and ecosystems depend on natural cycles
- 7 of day and night;
- 8 (4) Starlight landscape: places where aesthetic and
- 9 cultural manifestations of the night sky can be
- 10 observed, and that may include:
 - 11 (A) Areas where the starry sky, as well as
 - 12 exceptional manifestations of light-related
 - 13 phenomena, can be observed;
 - 14 (B) Expressions of nature and geological monuments
 - 15 that create night landscapes of acknowledged
 - 16 value;
 - 17 (C) Cultural landscapes or expressions of natural and
 - 18 artificial works of nature and where the
 - 19 astronomical dimension prevails; and
 - 20 (D) Natural heritage properties and biosphere
 - 21 reserves;

- 1 (5) Starlight oasis-human habitat: populated areas free
2 from negative effects that impede star viewing and
3 decrease night sky quality and that may include:
- 4 (A) Rural areas of outstanding singularity where the
5 starry sky view is part of their recognized
6 identity;
- 7 (B) Small villages that maintain the night sky
8 reasonably free from atmospheric and light
9 pollution; and
- 10 (C) Tourist destinations that consider the night sky
11 an important resource and that offer activities
12 based on or related to astronomy and the
13 enjoyment of the night sky; and
- 14 (6) Mixed starlight site: sites that combine two or more
15 categories under paragraphs (1) through (5).

16 SECTION 5. **Statewide lighting law; considerations;**
17 **lighting in zones.** The department of business, economic
18 development, and tourism, with the assistance of the advisory
19 group, shall develop necessary proposed legislation to implement
20 a statewide intelligent lighting and light pollution law taking
21 into consideration the following:

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

1 SECTION 6. **Report; advisory committee terminated.** (a)
2 The department of business, economic development, and tourism
3 shall submit a final report to the legislature no later than
4 twenty days prior to the convening of the regular session of
5 2010. The report shall include findings, recommendations, and
6 necessary proposed legislation to implement this part.

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

9 **Part III**

10 SECTION 7. This Act shall take effect upon its approval.

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. (SD1)