
A BILL FOR AN ACT

RELATING TO DARK SKIES PROTECTION.

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

1 SECTION 1. The legislature finds that dark night skies
2 hold important cultural, scientific, astronomical, natural,
3 landscape, and tourism-related value. The legislature also
4 finds that light pollution, caused by the excessive,
5 misdirected, or obtrusive use of artificial light, has become a
6 worldwide problem, and is now posing significant challenges for
7 the State of Hawaii.

8 Inappropriate use of lighting at night includes over-
9 illumination, excessive use of artificial light, use of fixtures
10 that direct light upwards causing glare and sky glow, and use of
11 fixtures that have excessive amounts of blue light, which is
12 scattered by the atmosphere to cause sky glow.

13 Light pollution can be avoided by a careful selection of
14 light fixtures, with particular regard to the spectrum of the
15 light these fixtures emit, and by specifying the amount of light
16 that should be used so that areas are not over lit.

17 The legislature also finds that light can travel long
18 distances, and that reduction of light pollution is a statewide



1 issue. For example, the western part of Molokai has a much
2 brighter night sky than the eastern part due to the sky glow
3 from Oahu, and the sky glow from Oahu is easily visible from
4 Haleakala and interferes with astronomical observations in the
5 western part of the sky.

6 In addition, the legislature finds that light at night
7 interferes with various species of animals, including threatened
8 and endangered birds and turtles. Historical use of poorly
9 designed light fixtures has required very costly retrofits to
10 reduce the impact on these species.

11 The legislature further finds that light at night,
12 particularly blue light, interferes with circadian rhythms,
13 including those in humans. The World Health Organization has
14 listed "shift work" that involves circadian disruption as a
15 probable carcinogen. According to Professor Steven Lockley of
16 Harvard Medical School, light intrusion, even if dim, is likely
17 to have measurable effects on sleep disruption and melatonin
18 suppression. Even if these effects are relatively small from
19 night to night, continuous chronic circadian sleep, and hormonal
20 disruption may have long-term health risks.



1 Finally, the legislature additionally finds that nighttime
2 illumination of state highways, harbors, airports, and other
3 facilities is costly and consumes large amounts of energy, and
4 that application of new lighting technologies could produce
5 substantial energy and cost savings.

6 The purpose of this Act is to establish a dark skies
7 protection advisory committee to assist the department of
8 business, economic development, and tourism in developing a dark
9 skies protection strategy.

10 SECTION 2. Chapter 201, Hawaii Revised Statutes, is
11 amended by adding a new section to be appropriately designated
12 and to read as follows:

13 "§201- Dark skies protection strategy; advisory
14 committee. (a) The department of business, economic
15 development, and tourism shall develop a statewide dark skies
16 protection strategy. There is established a dark skies
17 protection advisory committee, to be placed within the
18 department for administrative purposes. The advisory committee
19 shall assist the department in developing a statewide dark skies
20 protection strategy. The members of this advisory committee
21 shall include:



- 1 (1) The director of business, economic development, and
2 tourism, or the director's designee;
- 3 (2) The comptroller, or the comptroller's designee;
- 4 (3) The director of the institute for astronomy, or the
5 director's designee;
- 6 (4) The director of health, or the director's designee;
- 7 (5) The director of transportation, or the director's
8 designee;
- 9 (6) The chairperson of the board of land and natural
10 resources, or the chairperson's designee;
- 11 (7) A representative from each of the mayoral offices of
12 the counties of Kauai, Maui, Hawaii, and the city and
13 county of Honolulu;
- 14 (8) The administrator of the office of Hawaiian affairs,
15 or the administrator's designee;
- 16 (9) A member of the Hawaiian Astronomical Society, as
17 selected by its board of directors; and
- 18 (10) A lighting engineer selected by the director of
19 business, economic development, and tourism.



1 (b) The director of business, economic development, and
2 tourism shall designate a chairperson of the advisory committee
3 from among the members of the advisory committee.

4 (c) The department of business, economic development, and
5 tourism, assisted by the advisory committee, shall develop a
6 statewide dark skies protection strategy to reduce light
7 pollution, save energy, preserve the quality of the night sky,
8 and restore the dark night sky and its associated cultural,
9 scientific, astronomical, natural, tourism, and landscape-
10 related values. The department shall develop proposed
11 legislation as needed to implement the light pollution reduction
12 strategies, including laws to eliminate lighting that uses
13 unnecessary or excessive light, or poorly designed luminaries,
14 including use of excessive amounts of blue light.

15 (d) The statewide dark skies protection strategy shall be
16 based on principles that include:

- 17 (1) The cultural heritage of the night sky, including its
18 place in Hawaiian culture;
19 (2) Protection of threatened and endangered species that
20 are affected by artificial light at night;



1 (3) Protection of the dark night sky for astronomical
2 observations from Mauna Kea and Haleakala, including
3 measures to prevent degradation of the dark night sky
4 from artificial light;

5 (4) Protection of the dark night sky for educational
6 purposes, especially for elementary, middle, and
7 secondary school and university students;

8 (5) Establishing dark sky parks, which are designated
9 locations that have special protections for the night
10 sky, and are locations where residents and visitors
11 can view the night sky with minimal interference from
12 artificial light; and

13 (6) Preserving and recovering the dark night sky to reveal
14 nocturnal landscapes that have traditionally been part
15 of the natural and cultural landscape.

16 (e) The light pollution reduction strategy shall have the
17 following components:

18 (1) Intelligent lighting systems that include reduction
19 and prevention of light pollution, reduction and
20 prevention of glare and sky glow, and conservation of
21 energy;



1 (2) A tourism component that involves innovative and
2 educational ecotourism related to the dark night sky
3 in Hawaii, recognizing that many visitors to Hawaii
4 come from cities that have severe light pollution;

5 (3) An educational component to educate Hawaii's students,
6 residents, and visitors about the importance of a dark
7 night sky and how to reduce light pollution; and

8 (4) Statewide monitoring of light pollution to monitor
9 light pollution levels and long-term trends.

10 The advisory committee shall consult frequently with the United
11 States Fish and Wildlife Service.

12 (f) The department of business, economic development, and
13 tourism, with the assistance of the advisory committee, shall
14 develop proposed legislation to implement statewide protective
15 lighting and light pollution reduction strategies.

16 Considerations shall include:

17 (1) Outdoor lighting requirements consistent with section
18 201-8.5, including the spectrum of the lights, or
19 amendments thereto, to protect the dark night sky;

20 (2) Measures to conserve energy;



- 1 (3) Standards for dark night skies protective lighting
2 design;
- 3 (4) Strengthening statewide commitment to preserving the
4 dark night sky by adopting protective lighting in the
5 public sector consistent with section 205A-71;
- 6 (5) Labeling that recognizes protective lighting in the
7 public sector;
- 8 (6) Developing alliances with public and private entities
9 responsible for outdoor lighting;
- 10 (7) Developing measures to avoid obtrusive light sources,
11 eliminate light trespass, and improve the quality of
12 life of the local population; and
- 13 (8) Educating local residents about lighting solutions, as
14 well as the environmental, personal, and energy-
15 savings benefits that intelligent lighting produces.
- 16 (g) The department of business, economic development, and
17 tourism shall submit an annual report to the legislature no
18 later than twenty days prior to the convening of each regular
19 session. The report shall include findings, recommendations,
20 and proposed legislation to reduce and control light pollution."

21 SECTION 3. New statutory material is underscored.



1 SECTION 4. This Act shall take effect upon its approval
2 and shall be repealed on June 30, 2021.



Report Title:

Dark Skies Protection Strategy; Department of Business, Economic Development, and Tourism; Advisory Committee

Description:

Establishes an advisory committee to assist the Department of Business, Economic Development, and Tourism in developing and implementing a statewide dark skies protection strategy.
Sunsets 6/30/2021. (SD1)

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.





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ECONOMIC DEVELOPMENT & TOURISM**

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LUIS P. SALAVERIA
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MARY ALICE EVANS
DEPUTY DIRECTOR

Statement of

LUIS P. SALAVERIA

Director

Department of Business, Economic Development & Tourism

before the

HOUSE COMMITTEE ON ECONOMIC DEVELOPMENT & BUSINESS

Thursday, March 17, 2016

10:00 a.m.

State Capitol, Conference Room 312

in consideration of

SB 2302, SD1

RELATING TO DARK SKIES PROTECTION.

Chair Kawakami, Vice Chair Kong, and Members of the Committee. The Department of Business, Economic Development and Tourism supports the intent of this bill to establish an advisory committee to assist DBEDT in developing and implementing a statewide dark skies protection strategy.

A Starlight Reserve Committee was originally established (through Act 161, SLH 2009) to develop and help implement a statewide strategy to reduce nighttime light pollution which, in turn, will help preserve Hawaii's dark skies for astronomy, protect endangered species, improve human health, and reduce nighttime energy consumption.

Although this Committee (which terminated on June 30, 2015) was successful in developing and promoting legislation (Act 287, SLH 2012) that addresses appropriate temperature and shielding for State light fixtures, a more comprehensive strategy coordinating State laws with county, federal, military, and private sector lighting practices and regulations is needed to help preserve Hawaii's dark nighttime skies. We believe the proposed Dark Skies Advisory Committee could play a strategic role in achieving this goal.

We support this bill provided that its passage does not replace or adversely impact priorities indicated in our Executive Budget.

Thank you for the opportunity to testify on this measure.

DAVID Y. IGE
GOVERNOR OF
HAWAII



SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

KEKOA KALUHIWA
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Testimony of
SUZANNE D. CASE
Chairperson

Before the House Committee on
ECONOMIC DEVELOPMENT & BUSINESS

Thursday, March 17, 2016
10:00 AM
State Capitol, Conference Room 312

In consideration of
SENATE BILL 2302, SENATE DRAFT 1
RELATING TO DARK SKIES PROTECTION

Senate Bill 2302, Senate Draft 1 proposes to establish a Dark Skies Protection Advisory Committee (Committee) to assist the Department of Business, Economic Development, and Tourism in developing a dark skies protection strategy. **The Department of Land and Natural Resources (Department) supports this bill.**

Artificial lighting reduces dark skies and directly impacts biological resources of the islands by altering wildlife behavior. Marine birds and sea turtles in Hawaii, some of which are endangered or threatened, are particularly sensitive to artificial light, attracting fledglings and newly hatched turtles, which then become disoriented and lost, impacting their populations. There are many documented cases of night lighting in Hawaii attracting and killing coastal and pelagic birds and turtles every year.

Additionally, dark night skies hold important cultural, astronomical, and tourism-related values, which are all negatively impacted as a result of artificial lighting. Not to mention energy consumption associated with excessive use of artificial lights, which contributes to wasted resources and exacerbates global climate change.

The Committee would, among other things, examine issues related to artificial lighting and recommend workable solutions to reduce the negative impacts of lighting on natural and cultural resources and related activities.

The Department appreciates the opportunity to provide these comments.



UNIVERSITY OF HAWAII SYSTEM

Legislative Testimony

Written Testimony Presented Before the
House Committee on Economic Development and Business
Thursday, March 17, 2016 at 10:00 a.m.

By

Robert Bley-Vroman, Chancellor

And

Richard Wainscoat, Astronomer

Roy Gal, Assistant Astronomer/Outreach Coordinator/UH NGO
University of Hawai'i at Mānoa

SB 2302 SD1 – RELATING TO DARK SKIES PROTECTION

Chair Kawakami, Vice Chair Kong, and members of the Committee:

The University of Hawai'i strongly supports SB 2302 SD1 which establishes of a dark skies advisory committee. Dark night skies are a tremendously important natural, cultural, scientific, educational, and economic resource for Hawai'i. But the dark night sky is under increased threat from urban lighting.

Maunakea observatory has one of the darkest skies in the world, thanks to over 25 years of careful lighting on the Island of Hawai'i. The sky at Haleakalā observatory is less dark, partly due to less stringent lighting rules on Maui, and also due to its proximity to Honolulu.

Dark skies are vitally important for Hawai'i's two major astronomical observatories. These are among the best astronomical sites on the planet. If the sky is allowed to become bright over these observatories, the telescopes will lose their ability to see faint objects. On Haleakalā, the University of Hawai'i is engaged in a NASA sponsored effort to search the sky for dangerous asteroids. The aim is to find any dangerous asteroid that may hit Earth early enough that it can be deflected before impact. This search relies heavily on the dark night sky, and it would be significantly weakened if the sky on Maui becomes any brighter.

The advisory committee described in this bill will bring together representatives from the state, the counties and the public, and will a valuable forum for exchanging information regarding nighttime lighting and for preservation of the dark night sky.

Light Emitting Diodes are rapidly being introduced to replace older forms of lighting. These offer some energy benefits, but their blue light is harmful to astronomy and to endangered species such as birds and turtles. The committee described in this bill will be able to provide excellent advice on limiting blue light, thereby preventing costly mistakes. Kua'i is a prime example of a location where many expensive light

replacements have had to be done because of the impact of unshielded lights on endangered birds.

Light travels great distances, and lighting is not simply a county matter. It is important to form this state committee to address lighting issues across the state, and the preservation of dark skies across all of Hawai'i.

Testimony Related to

Senate Bill 2302 SD1

RELATING TO DARK SKIES PROTECTION

Presented before the

House Committee on Economic Development and Business

The Twenty-Eighth Legislature

March 17, 2016

by

Richard J. Wainscoat

Chair Kawakami, Vice-Chair Kong and members of the Committee. My name is Richard Wainscoat and I am submitting this testimony in strong support of the establishment of a dark skies advisory committee.

Dark night skies are a tremendously important natural, cultural, scientific, educational and economic resource for Hawaii. But the dark night sky is under increased threat from urban lighting.

Dark skies are vitally important for Hawaii's two major astronomical observatories – Maunakea on the Island of Hawaii, and Haleakala on Maui. These are among the best astronomical sites on the planet. If the sky is allowed to become bright over these observatories, the telescopes will lose their ability to see faint objects.

The advisory committee described in this bill will bring together representatives from the state, the counties and the public, and is a valuable forum for exchanging information regarding nighttime lighting.

A similar committee (for which I was the Chair), called the Starlight Reserve Committee, operated until 2015. The committee dealt with issues such as energy preservation, endangered species, astronomy, public safety and quality of life. All of these are long-term issues.

Lighting is presently undergoing a major transformation. There is a widespread change from traditional forms of lighting, such as incandescent, fluorescent, and high intensity discharge lamps to solid state lighting (light emitting diodes, or LEDs). LEDs offer lower maintenance costs and energy savings. It is particularly important that the dark skies committee enabled by this bill meets and provides advice during this transition period. LED lights have higher amounts

Testimony Related to Senate Bill 2302 SD1
House Committee on Economic Development and Business
March 17, 2016
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of blue light, and this blue light is very harmful to astronomy, endangered species, and may also be harmful to human health. Therefore, careful limits on the amount of blue light from LEDs should be put in place.

Light travels tremendous distances at night. For example, Haleakala observatory is affected by lighting in Honolulu. Light does not obey county boundaries — it is important to form a state level committee to address lighting issues and preservation of dark skies across all of Hawaii.