

---

---

## A BILL FOR AN ACT

RELATING TO LIGHT POLLUTION.

**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. Light pollution caused by  
4 the excessive, misdirected, or obtrusive use of artificial light  
5 has become a worldwide problem, and is now posing significant  
6 challenges for the State. The inappropriate use of lighting at  
7 night includes over-illumination, with excessive use of  
8 artificial light, use of fixtures that direct light upwards  
9 causing glare and sky glow, and use of fixtures that have  
10 excessive amounts of blue light.

11           Light pollution is truly a statewide issue as light travels  
12 far distances. For example, the western part of Molokai has a  
13 much brighter night sky than the eastern part due to the sky  
14 glow from Oahu; and the sky glow from Oahu is easily visible  
15 from Haleakala and interferes with astronomical observations in  
16 the western part of the sky.



1 Light at night interferes with various species of animals,  
2 including threatened and endangered birds and turtles.  
3 Historical use of poorly designed light fixtures has required  
4 very costly retrofits to reduce the impact on these species.  
5 Light at night, particularly blue light, also interferes with  
6 circadian rhythms, including those in humans. The World Health  
7 Organization has listed "shift work" that involves circadian  
8 disruption as a probable carcinogen. According to Professor  
9 Steven Lockley of Harvard Medical School, light intrusion, even  
10 if dim, is likely to have measurable effects on sleep disruption  
11 and melatonin suppression. Even if these effects are relatively  
12 small from night to night, continuous chronic circadian sleep,  
13 and hormonal disruption may have longer-term health risks.

14 Another consideration concerning night light is the cost  
15 involved. Nighttime illumination of state highways, harbors,  
16 airports, and other facilities is costly and consumes large  
17 amounts of energy. Application of new lighting technologies may  
18 produce substantial energy and cost savings.

19 The legislature finds that the preservation of the State's  
20 dark night skies is essential to the State's well-being and that



1 the State needs a statewide coordinated strategy to address this  
2 issue.

3 The purpose of this Act is to address the preservation of  
4 dark night skies in Hawaii.

5 SECTION 2. (a) The department of business, economic  
6 development, and tourism shall develop a statewide dark night  
7 skies protection strategy.

8 (b) There is established a dark night skies protection  
9 advisory committee, to be placed within the department of  
10 business, economic development, and tourism for administrative  
11 purposes. The advisory committee shall assist the department of  
12 business, economic development, and tourism in developing a  
13 statewide dark night skies protection strategy. The members of  
14 the advisory committee shall include the following persons or  
15 their designees:

- 16 (1) The director of business, economic development, and  
17 tourism;
- 18 (2) The comptroller;
- 19 (3) The director of the University of Hawaii institute for  
20 astronomy;
- 21 (4) The director of health;



- 1           (5) The director of transportation;
- 2           (6) The chairperson of the board of land and natural
- 3                 resources;
- 4           (7) The mayor of each county;
- 5           (8) The administrator of the Office of Hawaiian Affairs;
- 6                 and
- 7           (9) Any invited members that choose to join the advisory
- 8                 committee pursuant to subsection (c).

9 The director of business, economic development, and tourism  
10 shall designate a chairperson from among the members of the  
11 advisory committee.

12           (c) The chairperson of the advisory committee shall invite  
13 interested parties to serve on the advisory committee,  
14 including:

- 15           (1) A representative from the United States Fish and
- 16                 Wildlife Service;
- 17           (2) A member of the Hawaiian astronomical society; and
- 18           (3) A lighting engineer.

19           (d) In developing the dark night skies protection  
20 strategy, the department of business, economic development, and



1 tourism and the advisory committee shall consider and evaluate  
2 issues that include but are not limited to:

- 3 (1) Reduction of light pollution in the State;
- 4 (2) Methods to conserve energy;
- 5 (3) Cultural, scientific, astronomical, natural, tourism,  
6 and landscape related values associated with dark  
7 night skies;
- 8 (4) Protection of threatened and endangered species that  
9 are affected by artificial light;
- 10 (5) Impacts of light pollution on astronomical  
11 observations from Mauna Kea and Haleakala;
- 12 (6) Educational uses of the dark night sky by K-12 and  
13 higher education students;
- 14 (7) Establishment of dark night sky parks, which are  
15 designated locations that have special protections for  
16 the night sky, and are locations where residents and  
17 visitors can view the night sky with minimal  
18 interference from artificial light;
- 19 (8) Statewide monitoring of light pollution to monitor  
20 light pollution levels and long-term trends; and



1           (9) Any additional considerations that the advisory  
2                   committee believes will help to protect dark night  
3                   skies in the State.

4           (e) In conjunction with assisting the department of  
5 business, economic development, and tourism develop the  
6 statewide dark night skies protection strategy, the advisory  
7 committee shall consult frequently with the United States Fish  
8 and Wildlife Service.

9           (f) Members of the advisory committee shall not be  
10 compensated but shall be reimbursed for necessary expenses  
11 incurred, including travel expenses, in carrying out their  
12 duties. The department of business, economic development, and  
13 tourism shall provide all necessary administrative,  
14 professional, technical, and clerical support required by the  
15 advisory committee.

16           (g) The advisory committee shall be dissolved on June 30,  
17 2021.

18           SECTION 3. The department of business, economic  
19 development, and tourism shall report its initial findings and  
20 recommendations, including any proposed legislation, to the  
21 legislature no later than twenty days prior to the convening of



1 the 2017 regular session. The department of business, economic  
2 development, and tourism shall report its updated findings and  
3 recommendations, including any proposed legislation, to the  
4 legislature no later than twenty days prior to the convening of  
5 the:

- 6 (1) 2019 regular session; and
- 7 (2) 2021 regular session.

8 SECTION 4. This Act shall take effect upon its approval.

9

INTRODUCED BY:



JAN 22 2016



# H.B. NO. 2160

**Report Title:**

Dark Night Skies; Light Pollution; DBEDT

**Description:**

Establishes a dark night skies protection advisory committee to assist DBEDT in the development of a statewide dark night skies protection strategy to preserve dark night skies and reduce light pollution.

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







**DEPARTMENT OF BUSINESS,  
ECONOMIC DEVELOPMENT & TOURISM**

No. 1 Capitol District Building, 250 South Hotel Street, 5th Floor, Honolulu, Hawaii 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804  
Web site: [www.hawaii.gov/dbedt](http://www.hawaii.gov/dbedt)

Telephone: (808) 586-2355  
Fax: (808) 586-2377

**DAVID Y. IGE**  
GOVERNOR

**LUIS P. SALAVERIA**  
DIRECTOR

**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**

Friday, February 12, 2016  
10:30 a.m.

State Capitol, Conference Room 312

in consideration of

**HB 2160**  
**RELATING TO LIGHT POLLUTION.**

**LATE**

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  
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

Testimony of  
SUZANNE D. CASE  
Chairperson

**LATE**

Before the House Committee on  
ECONOMIC DEVELOPMENT & BUSINESS

Friday, February 12, 2016  
10:30 AM  
State Capitol, Conference Room 312

In consideration of  
HOUSE BILL 2160  
RELATING TO LIGHT POLLUTION

House Bill 2160 proposes to establish a dark skies protection advisory 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

**LATE**

Testimony Presented Before the  
House Committee on Economic Development & Business  
Friday, February 12, 2016 at 10:30 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

HB 2160 – Relating to Light Pollution

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

The University of Hawai'i strongly supports HB 2160 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. Kaua'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.

**LATE**

**Testimony Related to**

**House Bill 2160**

**RELATING TO LIGHT POLLUTION**

**Presented before the**

**House Committee on Economic Development and Business**

**The Twenty-Eighth Legislature**

**February 12, 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 committee to address light pollution problems in Hawaii.

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 light pollution advisory committee enabled by this bill meets and provides advice during this transition period. LED lights have

**Testimony Related to House Bill 2160**  
**House Committee on Economic Development and Business**  
**February 12, 2016**  
**Page 2**

higher amounts 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.

TO: Members of the Committee on Economic Development & Business

FROM: Natalie Iwasa  
Honolulu, HI 96825  
808-395-3233

**LATE**

HEARING: 10:30 a.m. Friday, February 12, 2016

SUBJECT: HB 2160 Relating to Light Pollution - **SUPPORT**

Aloha Chair and Committee Members,

Thank you for allowing me the opportunity to provide testimony on HB 2160, which would establish a dark night skies advisory committee. I fully support this and ask you to vote “yes.”

Many people in Hawaii live in areas where the night sky is no longer visible, because there is so much light. Even places like Sandy Beach, which used to provide good viewings of stars, are washed out by city lights.

My son, Orion, was named after the constellation, and I would like him to be able to see his namesake for many generations.

I like the idea of “dark night sky parks.” Please also consider:

- removing lights in places like the H1 and H2 freeways;
- dimming lights later at night; and
- participating in Earth Hour, which will take place 8:30 – 9:30 p.m. March 19. (See <https://www.earthhour.org/>.)

Please pass this bill.