



# **UNIVERSITY OF HAWAI'I SYSTEM**

## **Legislative Testimony**

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**Testimony Related to**

**Senate Bill 1042**

**RELATING TO TRANSPORTATION**

**Presented before the**

**Senate Committee on Transportation and International Affairs  
and  
Senate Committee on Intergovernmental and Military Affairs**

**The Twenty-Fourth Legislature**

**February 5, 2007**

**by**

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Institute for Astronomy  
University of Hawai'i at Mānoa**

**and**

**President  
Commission 50, International Astronomical Union  
Protection of existing and potential observatory sites**

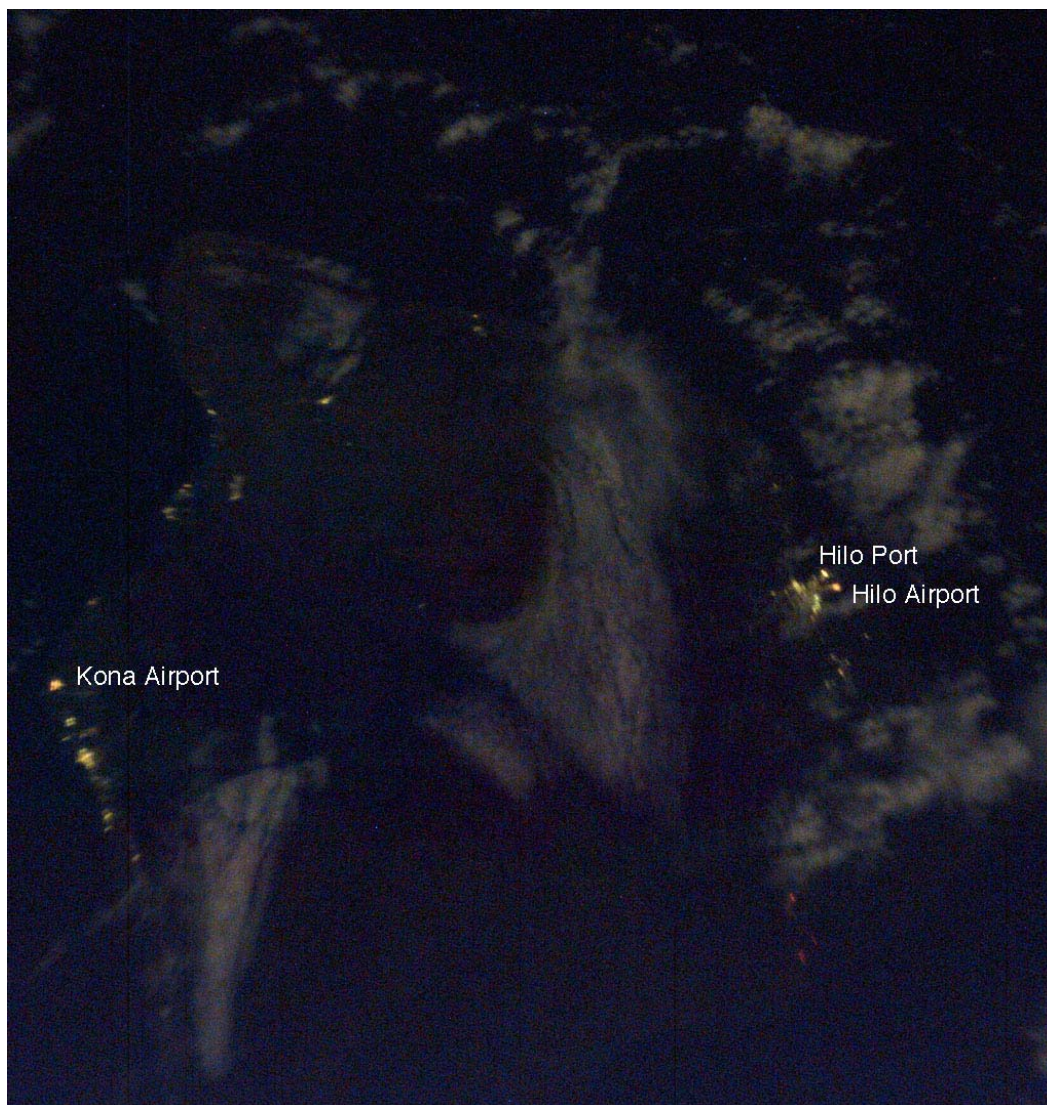
Chairs English and Inouye, and members of the Committees. My name is Richard Wainscoat and I am here today to submit this testimony in my capacity as an Astronomer at the University of Hawaii Institute for Astronomy, and as President of Commission 50 of the International Astronomical Union, for the protection of existing and potential observatory sites.

Over the last decade, artificial lighting on the Islands of Hawaii and Maui has slowly increased, and is now threatening the ability of the telescopes on Mauna Kea and Haleakala to study faint objects in the night sky. A dark night sky is essential to the continued success of the Mauna Kea and Haleakala observatories. Every 1% of artificial brightening of the night sky results in an effective loss of telescope aperture by 1%.

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This bill will help to preserve the dark skies over the observatories by requiring new lighting at airports, harbors, and on state highways to conform to the lighting ordinances already enacted by the counties of Hawaii and Maui to protect the dark skies over the observatories. The University of Hawaii strongly supports this bill.

At the request of the Institute for Astronomy, NASA astronaut Dr. Ed Lu, a former University of Hawaii researcher, obtained two nighttime images of Hawaii from the International Space Station. These images show that some of the major sources of light at night on the islands of Hawaii and Maui are the airports, harbors, and roadways. The nighttime photograph of the Island of Hawaii is shown below, with the Kona and Hilo airports and Hilo harbor marked.



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The Kawaihae harbor and Waimea-Kohala airport are also visible in the photograph.

Lighting has been installed at the airports and harbors on the Island of Hawaii that does not conform to the county lighting ordinance. For example, bright, unshielded lamps have recently been installed at the federal inspection area at Kona airport. These are among the most damaging lights at Kona airport for astronomy. This bill will require that new lighting installed at the airports, harbors, and on state highways will be more carefully selected so as to minimize its impact on astronomy at our observatories.

The University of Hawaii recommends that the reference to runway lights in this bill be removed. The University recognizes the need for navigational lighting, believes that national standards for navigational lights should be followed, and believes that the impact on astronomy from navigational lights at the airports and harbors is negligible.

This bill will have no cost impact to the state, because it only affects new lighting. The more efficient shielded light fixtures required by the Hawaii and Maui county ordinances will likely save the state money in terms of energy costs, by directing the light only where it is needed, and eliminating wastage of energy from light sent directly into space.

The University of Hawaii also believes that adoption of this bill will result in safety improvements at our airports, harbors, and highways by reducing glare from poor lighting.

A dark night sky has tremendous value to all citizens—not just astronomers. The residents of Honolulu have lost their ability to see the Milky Way, and only about the 20 brightest stars can be seen in the sky from central Honolulu. From a dark location, you can see 2,000 stars. Poor lighting that is directly lighting the night sky is wasting a tremendous amount of energy and money. Human health problems have recently been linked to light at night. Endangered species such as turtles and birds are confused by lights at night—well-designed lighting mitigates this problem.

Thank you for your support of our program and for the opportunity to present this testimony.