



UNIVERSITY OF HAWAI'I SYSTEM

Legislative Testimony

Written Testimony Presented Before the
House Committee on Finance
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by

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and

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SB 2402 SD1 HD1 Relating to Light Pollution

Chair Oshiro, and members of the Committee. My name is Richard Wainscoat and I am here today to submit this testimony on behalf of the University of Hawai'i. The University of Hawai'i strongly supports this bill that is an important first step in reducing light pollution in Hawai'i.

Mauna Kea on the island of Hawai'i, and Haleakala on the island of Maui, are two of the best astronomy sites in the world. Dark night skies are essential for these observatories to continue to operate. However, increasing urban lighting is threatening the dark night skies over these observatories. Light pollution extends well beyond county boundaries; lights from O'ahu have a major and growing impact on Haleakala, and also affect Mauna Kea. Statewide legislation is needed to protect the observatories.

Astronomy in Hawai'i has a major economic impact. The present economic impact of astronomy is estimated to be \$150 to \$200 million per year.

The primary focus of this bill is proper shielding of outdoor lighting. Full shielding of lights is one of the most important techniques for protecting astronomical observatories from light pollution. Light emitted from poorly shielded fixtures at small angles above the horizontal travels enormous distances through the atmosphere, and is a major contributor to light pollution — it increases sky glow at remote locations, making it difficult or impossible to see faint objects. Fully shielded light fixtures emit no light above the horizontal, and therefore have much less impact on remote locations.

Full shielding also reduces glare, which is a very important safety factor, particularly for older drivers, and greatly reduces the impact of nighttime lighting on species that are affected by light at night, including endangered birds and turtles. Poorly designed and improperly shielded lights continue to be installed by government agencies, and a quick inventory of nighttime lighting shows that some of the most poorly shielded lighting is county and state lighting.

We note that SB 2402 SD1 HD1 affects only lighting by the state and state agencies. Careful use of **all** nighttime lighting in the state of Hawai‘i — not just state lighting — including proper shielding, is required to protect the observatories.

We recommend that some of the changes introduced in HD1 be reversed. Specifically:

1. The exclusion for counties with populations under 100,000 (i.e., Kauai) is unwise. Kauai has endangered birds that are strongly affected by poor nighttime lighting. Poor lighting on Kauai has resulted in criminal prosecutions under the Federal Endangered Species Act. SB 2402 codifies good lighting practices, will minimize impact on birds, and therefore will help to protect the State from possible future expense in retrofitting or replacing poorly designed lighting that might otherwise be installed.
2. The change of effective date to July 1, 2014 (section 5) appears to have been an error. We recommend restoring the original effective date for this act to July 1, 2012.
3. SD1 made the changes become effective beginning on July 1, 2013. The delay by one year to July 1, 2014 produces an unnecessary delay in halting further damage to astronomy and the environment caused by poorly designed lighting. The state agencies that participated in the Starlight Reserve Committee were comfortable with July 1, 2013, and we recommend restoring July 1, 2013 as the date on which the changes are required (Sections 2(a), 2(b), 2(g)(7), 2(g)(9)).
4. The change of maximum Correlated Color Temperature to 4,000 Kelvin will result in additional blue light that is harmful to both astronomy and to endangered species. We recommend restoring the maximum Correlated Color Temperature to a value of 3,800 Kelvin. This number is a compromise between the value of 3,500 Kelvin utilized in Pima County (Arizona), which was specifically chosen to protect astronomy, and a need to accommodate a slightly higher value for filtered LEDs that have no blue light, such as those already being used on the island of Hawai‘i.