



# UNIVERSITY OF HAWAII SYSTEM

## ‘ŌNAEHANA KULANUI O HAWAII

### Legislative Testimony

### Hō'ike Mana'o I Mua O Ka 'Aha'ōlelo

Testimony Presented Before the  
House Committee on Energy & Environmental Protection  
Thursday, February 8, 2024 at 9:30 a.m.

By

Doug Simons, Director  
Institute for Astronomy

And

Michael Bruno, PhD  
Provost

University of Hawai'i at Mānoa

#### HB 2027 – RELATING TO LIGHT POLLUTION

Chair Lowen, Vice Chair Cochran, and members of the Committee:

Thank you for the opportunity to provide testimony in support of HB 2027 relating to light pollution. The University of Hawai'i Institute for Astronomy (IfA) conducts research in astronomy using telescopes located on Haleakalā, Maunakea and Mauna Loa that are operated by IfA and our partner institutions. These sites are among the best in the world for astronomical research because of their elevation, clear skies, favorable atmospheric conditions, and low levels of light pollution. Hawai'i-based observatories have played major roles in the advancement of astronomy and astrophysics for over 50 years and are well positioned to remain at the forefront of astronomical research for decades to come.

Because of the outstanding quality and productivity of these facilities, IfA is acutely concerned about negative impacts on astronomy from increased light pollution. Our work to address light pollution has also brought us into contact with others concerned about light pollution for various reasons, including impacts on wildlife (particularly seabirds) and on human health. While IfA's comments focus on the impacts of light pollution on astronomy, appropriate mitigation measures also help to reduce non-astronomy impacts.

Any new or additional artificial light at night has an adverse effect on astronomical observations by increasing the night sky brightness. Nearly all observations performed by the telescopes on Maunakea are sky-background limited. This means that there is a natural sky brightness coming from airglow and zodiacal light. Artificial light increases the sky brightness, thereby decreasing the sensitivity of the telescopes. Honolulu is close enough to Haleakala for its lights to make the northwestern sky artificially bright, limiting our ability to study faint objects. Light does not obey county boundaries, making this a statewide problem.

The University of Hawai'i at Mānoa teaches astronomy to undergraduate and graduate students, including an introductory laboratory class that uses small portable telescopes. The high level of light pollution on Oahu hinders our teaching efforts by making only the brightest objects in the night sky accessible to students and eliminates our view of the Milky Way. The University of Hawai'i at Hilo also teaches astronomy to undergraduates via on-sky techniques that are threatened by light pollution.

Nearly all lights are being replaced by Light Emitting Diodes (LEDs). Much of this replacement is being done to save energy without appropriate regard for its environmental impact. LEDs typically have more blue light than the lights they replace, and blue light is harmful to endangered and threatened species such as seabirds and turtles, is harmful to astronomy, and limits the ability of casual stargazers to see stars in the night sky. With careful selection of LEDs, energy can be saved and their impact to the environment minimized.

With that as background, IfA welcomes the opportunity to participate on a new dark night skies protection advisory committee, to be placed within the Department of Land and Natural Resources for administrative purposes and to develop a comprehensive statewide dark night skies protection strategy. The potential benefits of such a strategy include energy reduction, cultural, scientific, and ecological improvements, as well as helping protected species, public safety, etc.

Thank you for the opportunity to provide comments on this bill.