THE SENATE
TWENTY-SEVENTH LEGISLATURE, 2014
STATE OF HAWAII

S.B. NO. 2583 S.D. 1 H.D. 1 C.D. 1

A BILL FOR AN ACT

RELATING TO THE PACIFIC INTERNATIONAL SPACE CENTER FOR EXPLORATION SYSTEMS AND NATIONAL AERONAUTICS AND SPACE ADMINISTRATION LASER COMMUNICATIONS GROUND STATION INITIATIVE.

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

SECTION 1. The legislature finds that the Pacific international space center for exploration systems stimulates economic growth for the State, promoting the establishment and growth of new sustainable and green industries, associated jobs, workforce development, internships, and science, technology, engineering, and mathematics education programs.

The legislature further finds that the National Aeronautics and Space Administration is working to develop advanced technologies involving laser optical telecommunications. Since the beginning of the space age, the National Aeronautics and Space Administration has communicated with their spacecraft through the use of radio frequency ground antennas. However, the ever increasing data rate requirements from more sophisticated instruments on spacecraft will soon surpass the National Aeronautics and Space Administration's ability to support spacecraft with radio frequency communications. As

such, the National Aeronautics and Space Administration has embarked on the development of innovative technology to support laser communications between spacecraft and earth. This new technology was successfully demonstrated in late 2013 with the lunar laser communications demonstration experiment aboard the Lunar Atmosphere and Dust Environment Explorer spacecraft, which is now orbiting the moon. Space laser communications technology has the potential to provide ten to one hundred times higher data rates than traditional radio frequency systems with the same mass and power. This technology also aligns with the State's interests in broadband communication technologies.

The legislature additionally finds that the National Aeronautics and Space Administration plans to introduce laser communications with its spacecraft at the beginning of the next decade. In order to implement this laser communications network, the National Aeronautics and Space Administration has begun planning for a global network of laser communication ground stations. Since clouds present a major obstacle for laser communications in space, the National Aeronautics and Space Administration recently conducted a detailed statistical analysis of weather patterns that resulted in a set of potential locations in the United States for their anchor ground station.

This analysis indicated that of all possible sites, Hawaii would be the best location for their first operational laser communications station.

As a result, the National Aeronautics and Space Administration and the Pacific international space center for exploration systems have begun to explore possible locations for the National Aeronautics and Space Administration's first operational laser communication ground station, to be established in approximately 2020. This new technology will require a base of technical experts that will not only support the National Aeronautics and Space Administration's first laser communications station, but also serve as a technical resource for the entire network of laser communication ground stations worldwide. It is envisioned that the University of Hawaii will provide the needed technical expertise, beginning with support for an atmospheric characterization effort in 2014 and maturing to a center of excellence in ground to space laser communications in the future. As such, the laser communications ground station initiative will provide multiple opportunities for high-tech jobs in the State, as well as substantial improvements in broadband and optical fiber infrastructure statewide.

The purpose of this Act is to provide funding for an engineering assessment of the proposal to establish a laser optical communications ground station in the State. This study will be conducted in partnership with the National Aeronautics and Space Administration. Matching funds will be appropriated by the National Aeronautics and Space Administration and used to conduct an engineering study to include completion of site surveillance and selection, an analysis of power and cooling requirements, environmental assessments and permits, an assessment of structural pads, and an analysis of roadways and clearances for transportation of communications equipment.

SECTION 2. There is appropriated out of the general revenues of the State of Hawaii the sum of $250,000 or so much thereof as may be necessary for fiscal year 2014-2015 for the purpose of supporting a joint National Aeronautics and Space Administration and Pacific international space center for exploration systems engineering assessment and study, leading to infrastructure construction beginning in 2016; provided that no funds shall be made available under this Act unless the National Aeronautics and Space Administration provides a dollar-for-dollar match of funds for the purposes for which this sum is appropriated.

The sum appropriated shall be expended by the Pacific international space center for exploration systems for the purposes of this Act.

SECTION 3. This Act shall take effect on July 1, 2014.

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Report Title:
Pacific International Space Center for Exploration Systems; National Aeronautics and Space Administration; Laser Communications Ground Station Initiative; Appropriation

Description:
Appropriates funds for an engineering assessment of a proposal to establish a laser optical communications ground station in Hawaii. (CD1)

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