A BILL FOR AN ACT

RELATING TO BROADBAND COMMUNICATIONS TECHNOLOGY.

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

SECTION 1. The legislature finds that, since the beginning of the space age, the National Aeronautics and Space Administration has communicated with their spacecraft through use of radio frequency ground antennas. However, the increasing data requirements of more sophisticated instruments on spacecraft will soon surpass the National Aeronautics and Space Administration's ability to support its spacecraft with radio frequency communications. As such, the National Aeronautics and Space Administration has embarked on the development of innovative technology to support laser optical communications between spacecraft and earth. Space laser communications technology has the potential to provide data rates that are ten to one hundred times higher than traditional radio frequency systems with the same mass and power.

The legislature also finds that this technology aligns with the State's interests in broadband communication technologies. In today's global economy, high speed internet is no longer a luxury. Instead, it is a utility as essential to the community
as water or electricity. This broadband infrastructure project will vastly improve Hawaii's dismal connectivity by offering the fastest and highest capacity broadband service in the world, with the potential to lower consumer costs and improve coverage as well.

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 systems. Because 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. The analysis indicated that of all possible sites, Hawaii is the best location for the first operational laser communications station.

The National Aeronautics and Space Administration's first operational laser communication ground station is scheduled to
be established in approximately 2020. This new technology will require a base of technical experts that will not only support the laser communications station, but also serve as a technical resource for the entire network of laser communication ground stations worldwide. As such, the laser communications ground station initiative will provide multiple opportunities for high-technology jobs in the State, as well as provide substantial improvements in broadband and optical fiber infrastructure. 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. Additionally, a space-borne high bandwidth link would provide the State with a back-up link, thus providing Hawaii with protection if a natural disaster occurs that disrupts the fiber trunk line at the bottom of the ocean.

The legislature also finds that transmitting data with laser, rather than radio frequencies, has the potential to revolutionize the way the military communicates. The military considered free-space optical communications for decades because laser communications do not use the finite radio spectrum and
laser communications are inherently protected. For example, to
disrupt a laser transmission, an enemy would have to be able to
detect the narrow beam and find a way to place an object in
front of it. To actually intercept the data carried by the
laser beam, they would have to place a receiver in its path.
The security dimension of laser communication is paramount for
the United States military, and the military's demand for laser
communications will increase due to its need for tremendous
bandwidth to allow the transmission of intelligence,
reconnaissance, and surveillance information in a timely manner.

The purpose of this Act is to appropriate moneys to
establish a laser optical communications ground station in the
State in partnership with the National Aeronautics and Space
Administration.

SECTION 2. There is appropriated out of the general
revenues of the State of Hawaii the sum of $ or so
much thereof as may be necessary for fiscal year 2015-2016 and
the same sum or so much thereof as may be necessary for the
fiscal year 2016-2017 for the purpose of supporting an
engineering assessment and study for a laser optical
communication ground station, to be conducted jointly by the
National Aeronautics and Space Administration and the Pacific international space center for exploration systems, that will lead to infrastructure construction in the State beginning in 2016.

The sums appropriated shall be expended by the department of business, economic development, and tourism for the purposes of this Act; provided that the department of business, economic development, and tourism shall consult with the Pacific international space center for exploration systems prior to expending any of the sums appropriated by this Act; provided further that no moneys shall be expended under this Act unless matched dollar-for-dollar by the National Aeronautics and Space Administration.

SECTION 3. This Act shall take effect on February 19, 2025.
Report Title:
Pacific International Space Center for Exploration Systems; National Aeronautics and Space Administration; Laser Communications Ground Station Initiative; Appropriation

Description:
Appropriates moneys for an engineering assessment and study for establishing a laser optical communications ground station in Hawaii. Takes effect on 2/19/2025. (SD1)

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