
A BILL FOR AN ACT

RELATING TO BROADBAND COMMUNICATIONS TECHNOLOGY.

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

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

15 The legislature also finds that this technology aligns with
16 the State's interests in broadband communication technologies.
17 In today's global economy, high speed Internet is no longer a



1 luxury. Instead, it is a utility as essential to the community
2 as water or electricity. This broadband infrastructure project
3 will vastly improve Hawaii's dismal connectivity by offering the
4 fastest and highest capacity broadband service in the world,
5 with the potential to lower consumer costs and improve coverage
6 as well.

7 The legislature additionally finds that the National
8 Aeronautics and Space Administration plans to introduce laser
9 communications with its spacecraft at the beginning of the next
10 decade. In order to implement this laser communications
11 network, the National Aeronautics and Space Administration has
12 begun planning for a global network of laser communication
13 ground systems. Because clouds present a major obstacle for
14 laser communications in space, the National Aeronautics and
15 Space Administration recently conducted a detailed statistical
16 analysis of weather patterns that resulted in a set of potential
17 locations in the United States for their anchor ground station.
18 This analysis indicated that of all possible sites, Hawaii would
19 be the best location for their first operational laser
20 communications station.



1 The National Aeronautics and Space Administration's first
2 operational laser communication ground station is scheduled to
3 be established in approximately 2020. This new technology will
4 require a base of technical experts that will not only support
5 the laser communications station, but also serve as a technical
6 resource for the entire network of laser communication ground
7 stations worldwide. As such, the laser communications ground
8 station initiative will provide multiple opportunities for high-
9 technology jobs in the State, as well as provide substantial
10 improvements in broadband and optical fiber infrastructure.
11 The University of Hawaii will provide the needed technical
12 expertise, beginning with support for an atmospheric
13 characterization effort in 2014 and maturing to a center of
14 excellence in ground-to-space laser communications in the
15 future. Additionally, a space-borne high bandwidth link would
16 provide the State a back-up link, thus providing Hawaii
17 protection if a natural disaster occurs that disrupts the fiber
18 trunk line at the bottom of the ocean.

19 The legislature also finds that transmitting data with
20 laser, rather than radio frequencies, has the potential to
21 revolutionize the way the military communicates. The military



1 considered free-space optical communications for decades because
2 laser communications do not use the finite radio spectrum and
3 laser communications are inherently protected. For example, to
4 disrupt a laser transmission, an enemy would have to be able to
5 detect the narrow beam and find a way to place an object in
6 front of it. To actually intercept the data carried by the
7 laser beam, they would have to place a receiver in its path.
8 The security dimension of laser communication is paramount for
9 the United States military, and the military's demand for laser
10 communications will increase due to its need for tremendous
11 bandwidth that will allow it to transmit intelligence,
12 reconnaissance, and surveillance information in a timely manner.

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

17 SECTION 2. There is appropriated out of the general
18 revenues of the State of Hawaii the sum of \$ or so
19 much thereof as may be necessary for fiscal year 2015-2016 and
20 the same sum or so much thereof as may be necessary for the
21 fiscal year 2016-2017 for the purpose of supporting an



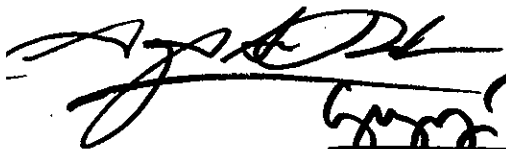
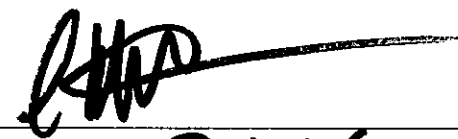



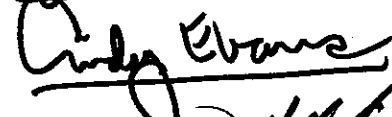

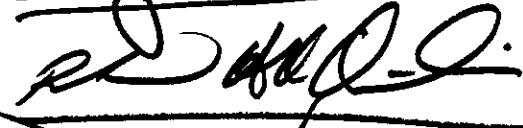
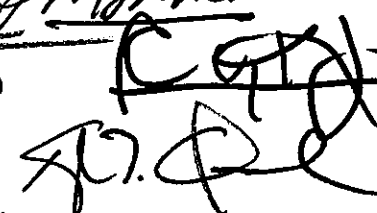



1 engineering assessment and study for a laser optical
 2 communication ground station, to be conducted jointly by the
 3 National Aeronautics and Space Administration and the Pacific
 4 international space center for exploration systems, and leading
 5 to infrastructure construction in the State beginning in 2016.

6 The sums appropriated shall be expended by the department
 7 of commerce and consumer affairs for the purposes of this Act;
 8 provided that the department of commerce and consumer affairs
 9 shall consult with the Pacific international space center for
 10 exploration systems prior to expending any of the sums
 11 appropriated by this Act; provided further that no moneys shall
 12 be expended under this Act unless matched dollar-for-dollar by
 13 the National Aeronautics and Space Administration.

14 SECTION 3. This Act shall take effect on July 1, 2015.

15

INTRODUCED BY:

H.B. NO. 1282

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 for
establishing a laser optical communications ground station in
Hawaii.

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.





**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

DAVID Y. IGE
GOVERNOR

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Statement of

LUIS P. SALAVERIA
Director

Department of Business, Economic Development & Tourism
before the

**HOUSE COMMITTEE ON
ECONOMIC DEVELOPMENT & BUSINESS**

Friday, February 6, 2015

9:20 a.m.

State Capitol, Conference Room 312

in consideration of

HB 1282

RELATING TO BROADBAND COMMUNICATIONS TECHNOLOGY.

Chair Kawakami, Vice Chair Kong, and members of the Committee. The Department of Business, Economic Development and Tourism supports the intent of this bill to provide matching state funding to support an engineering assessment for a proposal to establish a laser optical communications ground station in Hawaii.

This study will be conducted in partnership with NASA and will include 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 the transportation of communications equipment. Hawaii has been identified by NASA as the best site in the nation to establish this terminal, which will be the first in a global network of interconnected stations to communicate with orbiting and interplanetary spacecraft.

We support this bill provided that its passage does not replace or adversely impact priorities indicated in our Executive Budget.

Thank you for the opportunity to testify on this bill.



DAVID Y. IGE
GOVERNOR
SHAN S. TSUTSUI
LT. GOVERNOR

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CATHERINE P. AWAKUNI COLÓN
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JI SOOK KIM
ACTING CABLE TELEVISION
ADMINISTRATOR

TO THE HOUSE COMMITTEE ON
ECONOMIC DEVELOPMENT & BUSINESS

TWENTY-EIGHTH LEGISLATURE
Regular Session of 2015

Date: Friday, February 6, 2015
Time: 9:20 a.m.

TESTIMONY ON H.B. NO. 1282 – RELATING TO BROADBAND COMMUNICATIONS
TECHNOLOGY.

TO THE HONORABLE DEREK S.K. KAWAKAMI, CHAIR, AND MEMBERS OF THE
COMMITTEE:

My name is Ji Sook “Lisa” Kim, and I am the Acting Cable Television Administrator at the Department of Commerce and Consumer Affairs (the “Department”). The Department appreciates the opportunity to express **support of the intent** of H.B. No. 1282, which appropriates moneys to establish a laser optical communications ground station in the State in partnership with the National Aeronautics and Space Administration (NASA) and designates the Department as the administering agency to expend the moneys for this purpose in consultation with the Pacific International Space Center for Exploration Systems (“PISCES”).

The establishment of the NASA ground station can provide a tremendous opportunity to improve and expand broadband and optical fiber infrastructure statewide, which would increase high-speed broadband access for other state, county and private uses and assist in extending broadband service to unserved and underserved rural areas of our State.

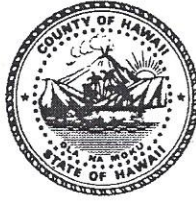
The Department recognizes, however, that the PISCES is within the Department of Business, Economic Development, and Tourism pursuant to Sections 201-76 to 201-80, Hawaii Revised Statutes. As such, it is unclear whether the Department has the necessary capabilities and expertise to administer the engineering assessment and study that this measure proposes. Nor is it clear what impact placing this function within

the Department at this time would have on the continuity of PISCES planning and work that has been done to this point.

Again, the Department does support the intent of this project and would appreciate the opportunity to offer advisory assistance on communications infrastructure-related PISCES matters going forward.

Thank you for the opportunity to provide support for this measure.

DENNIS "FRESH" ONISHI
Council Member
District 3



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HAWAI'I COUNTY COUNCIL
25 Aupuni Street, Hilo, Hawai'i 96720

February 4, 2015

The Honorable Representative Derek S. K. Kawakami, Chair
and Members of the Committee on
Economic Development and Business

Dear Chair Kawakami and Committee Members,

Thank you for the opportunity to provide testimony in support House Bill No. 1282, which will fund studies for a ground station for NASA's goal of establishing a global laser communication network from the Earth to spacecraft and to human outposts in deep space.

The laser communications ground station will also provide high-tech jobs for people in Hawai'i while allowing for the testing and development of technology that could revolutionize communication here on Earth in ways that are unimaginable today.

Thank you also for your continuing support of the Pacific International Space Center for Exploration Systems.

Sincerely,

A handwritten signature in black ink, appearing to read "Dennis Onishi".

Dennis "Fresh" Onishi
Hawai'i County Council Member



BIG KAHUNA Meteorites

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<http://bigkahuna-meteorites.com/> <http://shop.ebay.com/fujmon/m.html>

Hawaii State Legislature

28th Legislature, 2015

State Capitol,

Honolulu, Hawaii

Aloha,

I, Gary Fujihara, support the bill HB1282, which relates to Broadband Communications Technology. 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.

This bill will benefit the state and island in many ways:

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 a back-up link, thus providing Hawaii protection if a natural disaster occurs that disrupts the fiber trunk line at the bottom of the ocean.

Sincerely,
Gary Fujihara
Big Kahuna Meteorites, Inc

HB 1282

RELATING TO BROADBAND COMMUNICATIONS TECHNOLOGY

**KEN HIRAKI
VICE PRESIDENT – GOVERNMENT & COMMUNITY AFFAIRS
HAWAIIAN TELCOM**

February 6, 2015

Chair Kawakami and members of the Committees:

I am Ken Hiraki, testifying on behalf of Hawaiian Telcom on HB 1282 - Relating to Broadband Communications Technology.

Hawaiian Telcom supports HB 1282 as a significant initiative which will help to promote the deployment of advanced broadband services, optical fiber infrastructure and multiple opportunities for high technology jobs in the State. As the late Senator Daniel K. Inouye proclaimed at a hearing on the importance of increasing Hawaii's broadband capabilities:

“Broadband matters because broadband communications have become the great economic engine of our time. Broadband deployment drives opportunities for business, education, and healthcare...Add to this hundreds of millions of dollars in savings through e-government and telemedicine initiatives and untold riches we can reap by tapping the genius of web-based entrepreneurs in every corner of this country. The case for better broadband is clear.”

Supporting measures such as HB 1282 are important if Hawaii is ever to reach its broadband goal of providing users throughout the state advanced broadband services second to none. To help expedite and properly scale this project, we recommend that the bill be amended to provide language encouraging the use of private-public partnerships whenever possible in the design and construction of the terrestrial backhaul fiber facilities necessary to support the high bandwidth requirements of the ground station.

Based on the aforementioned, Hawaiian Telcom respectfully requests that this measure be adopted. Thank you for the opportunity to testify.



Pacific International
Space Center for
Exploration Systems

February 4, 2015

To whom it may concern.

Subject: Testimony for HB1282 / LaserComm Ground Station Bill

It is with pleasure that PISCES provides supportive testimony in regard to HB1282 / LaserComm Ground Station Bill.

Laser optical communication is a new state-of-the-art technology for broadband communications with the direct support from the White House/OSTP (Office of Science and Technology Policy). Given limitations in the number of available frequency band allocations for spacecraft-to-earth communications, the U.S., Europe and Japan are actively developing space-based technologies for laser optical communications that will soon replace RF (radio frequency) used in today's wireless RF communications for cell phones, and associated communication technologies. Data rates for laser communications are many times higher than RF communications...with data speed of 3 gigabits per second.

In 2014, NASA expressed specific interest in establishing the first long-term U.S. laser optical communications ground station in the State of Hawaii; given the cloud-free environment on top some of its volcanic peaks and its mid-Pacific location. This station is planned to become operational in the 2020 timeframe.

PISCES finds that this bill aligns well with the State of Hawaii's interest in broadband communications technologies, and 21st century skills and jobs for workforce development in lasers, adaptive optics, and communications.

Further, such laser communication technologies fit well within PISCES technology roadmap of high-speed tele-robotics....using laser-based communications for command/control of robotic systems in Hawaii and on planetary surfaces like the Moon and Mars.

Thus, PISCES strongly endorses HB1282 for the LaserComm Ground Station.

With much mahalo,

Robert M. Kelso
Executive Director, PISCES

kong2 - Brenden

From: mailinglist@capitol.hawaii.gov
Sent: Wednesday, February 04, 2015 5:05 AM
To: edbtestimony
Cc: ssday1@aol.com
Subject: Submitted testimony for HB1282 on Feb 6, 2015 09:20AM

HB1282

Submitted on: 2/4/2015

Testimony for EDB on Feb 6, 2015 09:20AM in Conference Room 312

Submitted By	Organization	Testifier Position	Present at Hearing
Stephen Day	Individual	Comments Only	No

Comments: This is to confirm that personally I support enactment of HB 1282. Respectfully, Stephen Day. Chairman Hawaii Aerospace Advisory Committee. 2/4/2015

Please note that testimony submitted less than 24 hours prior to the hearing, improperly identified, or directed to the incorrect office, may not be posted online or distributed to the committee prior to the convening of the public hearing.

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