
A BILL FOR AN ACT

RELATING TO ECONOMIC DEVELOPMENT.

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

1 SECTION 1. Hawaii has long been recognized as an ideal
2 location for the launching of spacecraft due to its geographic
3 location. This is especially true of Hawaii island, which is
4 unrivaled in the United States for equatorial launches of
5 spacecraft, particularly small satellites, due to its global
6 position. The development of a small satellite launch and
7 processing facility on Hawaii island has tremendous economic
8 potential for both Hawaii island and the State of Hawaii.

9 The legislature finds that there is private-sector interest
10 in locating small satellite launch and processing facilities in
11 Hawaii. As a potential emerging economic sector, the
12 legislature finds that there is a need for an economic
13 assessment study of the development of small satellite launch
14 and processing facilities on the island of Hawaii to determine
15 the economic viability of such an endeavor.



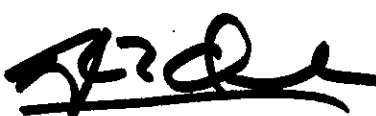
1 The purpose of this Act is to appropriate moneys to conduct
2 an economic assessment of the establishment of a small satellite
3 launch and processing facility on the island of Hawaii.

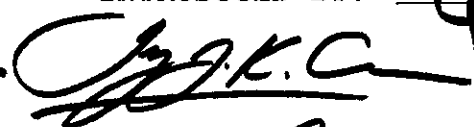
4 SECTION 2. There is appropriated out of the general
5 revenues of the State of Hawaii the sum of \$100,000 or so much
6 thereof as may be necessary for fiscal year 2016-2017 for the
7 purpose of conducting an economic assessment study on the
8 development and economic viability of a small satellite launch
9 and processing facility on the island of Hawaii. The study
10 shall be conducted by the department of business, economic
11 development, and tourism, in conjunction with the Pacific
12 international space center for exploration systems and Hawaii
13 Island Economic Development Board, Inc.

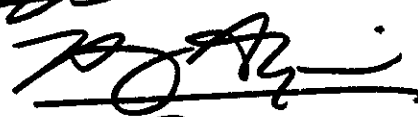
14 The sum appropriated shall be expended by the department of
15 business, economic development, and tourism for the purposes of
16 this Act.

17 SECTION 3. This Act shall take effect on July 1, 2016.
18

INTRODUCED BY: _____

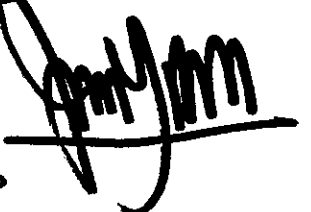
















H.B. NO. 2263

Report Title:

Small Satellites; Launch and Processing Facility; Appropriation

Description:

Appropriates funds for the department of business, economic development, and tourism to conduct an economic assessment study on the development and economic viability of a small satellite launch and processing facility on the island of 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

LUIS P. SALAVERIA
DIRECTOR

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Statement of

LUIS P. SALAVERIA

Director

Department of Business, Economic Development, and Tourism

before the

HOUSE COMMITTEE ON ECONOMIC DEVELOPMENT & BUSINESS

Tuesday, February 2, 2016

9:00 a.m.

State Capitol, Conference Room 312

in consideration of

HB 2263

RELATING TO ECONOMIC DEVELOPMENT.

Chair Kawakami, Vice-Chair Kong, and Members of the Committee. The Department of Business, Economic Development, and Tourism (DBEDT) supports the intent to conduct an economic assessment study on the development and viability of a small satellite processing and launch facility on the island of Hawaii.

Recent advances in the miniaturization of satellite components, standardization of many satellite parts, and related factors have made the building, launch, and operation of small satellites (“smallsats”) technologically feasible and increasingly economical, which in turn is fueling a broad range of innovative applications utilizing smallsats related to space science, in-orbit technology testing and demonstration, and earth observation.

As noted in this legislation, Hawaii’s unique mid-Pacific, near-equatorial location provides a cost-effective site from which to launch payloads into orbit. The proposed economic assessment study would provide an analysis of the opportunities this industry holds for Hawaii, as well as a roadmap for leveraging Hawaii’s competitive advantages in commercial space launch.

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 measure.



Pacific International
Space Center for
Exploration Systems

LATE

February 1, 2016

Robert M. Kelso
Executive Director, PISCES
99 Aupuni St.
Suite 212-213
Hilo, HI 96720

TESTIMONY IN SUPPORT OF:

HB2263– RELATING TO ECONOMIC DEVELOPMENT OF A SMALL SATELLITE
LAUNCH AND PROCESSING FACILITY FOR HAWAII

Dear Members of the 28th Hawaii State Legislature,

As Executive Director for PISCES, I am writing in support of the passage of HB2263, which provides operating expenses to conduct an economic assessment of the establishment of a small satellite launch and processing facility on the island of Hawaii.

Over the last few years, there has been an increase in the production and market for small satellites supporting emerging companies and low-earth-orbit (LEO) market niches.

BlackSky, OneWeb, and UrtheCast join a number of other companies actively developing constellations of smallsats, weighing from a few hundred kilograms down to a few kilograms. Those satellites are intended for applications ranging from communications to imagery to GPS radio occultation, a technique to sample the atmosphere that can provide data for meteorology.

In the past, dedicated small satellite launch vehicles were either too expensive, rarely flew or both. Today, there is an emerging fleet of commercial, dedicated smallsat launchers.



Pacific International
Space Center for
Exploration Systems

Several commercial/private companies developing smallsat launchers have begun to approach Hawaii about possible launch sites on east Hawaii for due-east equatorial launches of small satellites.

Hawaii, given its close proximity to the equator, has a geographic advantage over many other traditional launch sites.

This bill will provide the monies for the State of Hawaii to independently assess the economic potential of this market for the State, and send a message from the State of Hawaii that the state is interested in such high-technology, workforce-development initiatives.

The study would:

- Assess the market and interest for establishing a customer base in Hawaii
- Assess challenges/ barriers to entry
- Assess organizational models for implementation

Your affirmative consideration of this bill will be deeply appreciated.

Mahalo,

Robert M. Kelso

Executive Director, PISCES



University of Hawai'i at Mānoa

Hawai'i Space Grant Consortium

Hawai'i Institute of Geophysics and Planetology
School of Ocean and Earth Science and Technology
1680 East-West Road POST 501, Honolulu, HI 96822

Voice: (808) 956-3138 Fax: (808) 956-6322 e-mail: hsgc@higp.hawaii.edu



January 31, 2016

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Dr. Luke Flynn

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Ms. Marcia Rei Sistoso Nii

**Future Flight Hawai'i
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University of Hawai'i Maui College
Dr. Jung Park

Hawai'i Community College
Dr. Joseph Wilcox

Honolulu Community College
Dr. Michael Ferguson
Dr. William Smith (Liaison)

Kapi'olani Community College
Dr. Herve Collin
Dr. Aaron Hanai

Kaua'i Community College
Dr. Georgeanne Purvinis

Leeward Community College
Dr. Bryson Padasdao

Windward Community College
Dr. Joseph Ciotti

University of Guam
Dr. John Peterson

INDUSTRY AFFILIATES:

Ms. Dora Nakafuji
Hawaiian Electric Company

Mr. Stewart Burley
Strategic Theories Unlimited LLC/
Kauai Liaison

Testimony for House Bill 2263

To Whom It May Concern,

I have been the Director of the Hawai'i Space Grant Program (HSGC) since 2002, and Director of the Hawai'i Space Flight Laboratory (HSFL) since 2007. The NASA Space Grant program is a Federal education program with representatives in all 50 States plus Puerto Rico and the District of Columbia. I am an elected member of the NASA Space Grant Executive Committee that oversees Space Grant activities. As part of the National Space Grant program, I direct the NASA Small Satellite Student Program along with the Directors from Colorado and Montana. In 2007, the University of Hawai'i College of Engineering and the School of Ocean and Earth Science and Technology formed HSFL with the purpose to design, build, launch, test, and operate small spacecraft having masses of up to 200 kg from the Hawaiian Islands. On November 3, 2015, the ORS-4 Mission launched unsuccessfully from the Pacific Missile Range Facility. However, HSFL not only built the largest rail launcher system in the world and successfully launched the largest rocket (28000 kg) off of the rail, we also built the 55-kg HiakaSat small spacecraft according to NASA and Air Force acceptance standards, and trained 120 students in the process.

With respect to House Bill 2263, HSFL has already answered many of these questions. With UH support, HSFL has test facilities at the University of Hawaii at Manoa for small spacecraft up to 200 kg. We also have a \$750K spin balance machine that is necessary to spin-test payloads to make sure that they are balanced properly before launch. Finally, HSFL installed the launch pad and launcher at PMRF. Our engineers have experience with all aspects of small launcher development, installation, and payload processing. As Director of HSFL, I also managed the Environmental Analysis necessary for the ORS-4 launch, worked with NAVFAC to insure that the installation met NAVY standards, and also worked with Kauai PDC, Department of Land and Natural Resources, and the Kauai Mayor's Office to create a safe environment for the ORS-4 launch.

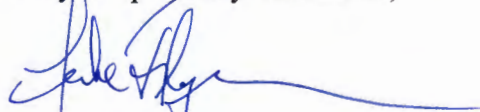
While I wholeheartedly support the spirit of House Bill 2263, I have to question why funds are being spent on something that HSFL already does (in terms of setting up small spacecraft launch facilities). Furthermore, this committee needs to realize that just as the number of small satellite developers has exploded almost exponentially in recent years, so have the commercial companies that handle “payload processing”. Companies like Spaceflight Industries are one of many US companies that make profit from packaging spacecraft for launch to particular orbits. The “payload stack” includes a number of satellites packaged together for launch, and this is a complex non-trivial process that includes support structures to keep multi-million dollar spacecraft safe during launch, and also electrical systems designed to deploy spacecraft in a particular order to avoid collisions with other spacecraft in the stack. HSFL currently has a contract offer for a second launch. The “payload stack” company has a 250-kg payload made up of spacecraft from around the world. The company agrees to provide all testing for the payload stack, while HSFL will provide the spin balance testing. As we found with the ORS-4 Mission, the payload stack needs to be kept in a clean environment. Mobile cleanrooms, like you find in the movies, are now a reality and can be set up in any large room for a few tens of thousands of dollars each, and can be disassembled and moved rather rapidly.

HSFL currently maintains close ties with two commercial small launch companies that would want to field launch vehicles from the Big Island. As we have been through the Environmental procedures prior to the Kauai launch, we provide counsel to companies that are interested in launch. Our objective is to provide regular commercial launch opportunities for small satellites from Hawai‘i, and to encourage the growth of a high-tech satellite industry here in Hawai‘i.

As Director of HSGC and HSFL, I am especially proud to say that our focus is not only at Manoa, but at the Community Colleges as well. The IMUA Program consists of Kauai CC, Kapiolani CC, Windward CC, and Honolulu CC, but will expand to include UH-Maui College as well. The IMUA Program has successfully launched a suborbital payload from NASA Wallops Flight Facility in August 2015, and will launch another suborbital payload in August 2016. The IMUA Program wants to build small satellites called CubeSats. CubeSats have masses of only 3-5 kg and are 10 cm x 10 cm x 30 cm. My wish is that the \$100,000 designated in this House Bill would be re-allocated to buy a small vibration table, small thermal-vacuum chamber, and mobile clean room that would enable the UH Community Colleges to build their own small satellites. Hawaii already has the only Community College group in our country that is working towards building satellites. In our long term aerospace objectives for our State, these students will be either highly paid technicians, or if they choose to pursue an advanced degree, highly capable aerospace engineers.

Thank you for allowing me to provide this testimony. I received my degree from the University of Hawaii at Manoa in 1986. I can say that I have the best job in the world. It is truly an honor and a privilege to work with our State students who have shown the country and the world that they are highly intelligent, innovative, and capable of designing, building, testing, and delivering highly complex small satellites. Please do not hesitate to contact me directly at the Hawai‘i Space Grant Office (808-956-3138) should you need any assistance with aerospace questions.

Very Respectfully Submitted,



Dr. Luke Flynn

Dear Hawaii State Legislature:

I am writing to express my **OPPOSITION to HB No. 2263** (Small Satellites).

Having served as a member of the Hawaii State Aerospace Advisory Committee for more than the past eight years, and held numerous positions (including that of former Director) of the Hawaii Institute of Geophysics and Planetology at the University of Hawaii for more than 33 years, I feel well apprised of the State's current capabilities in developing small satellites and space launch capabilities.

Even though Hawaii's first launch of its own "small" (58 kgm) satellite was not totally successful last November, we in Hawaii have already designed, built, tested, and launched a complete satellite with research-quality instruments. **All of the facilities that HB2263 seeks to develop already exist at the University of Hawaii at Manoa.** Within our small satellite community, there is no reason to have a new clean room with an integration and test facility (or any other small satellite processing facility effort) located on Hawaii Island. The cost of shipping flight-ready hardware (satellites or instruments) from Oahu to Hawaii or any other island within our State will be minimal compared to the cost of recreating a duplicate capability on the Big Island. Such a duplicate capability would ultimately cost in excess of \$10M to establish, as well as require 4 or 5 FTE positions to support. As a Hawaii taxpayer, the cost of this ultimate goal seems impossible to justify to any of our residents.

I further question the merits of including the Pacific International Space Center for Exploration Systems (PISCES) in this study. Historically, PISCES has been remarkably unsuccessful in developing research projects that have led to Federal funding, and it has focused more educational outreach to the schools on Hawaii Island. I do not expect PISCES to be any more successful if they were to become involved in small satellites. In contrast, the Hawaii Space Flight Laboratory (HSFL) at the University of Hawaii at Manoa has raised nearly \$50M in Federal funding in less than ten years. HSFL is already working on several launch opportunities for our own satellites and/or instruments, and will therefore take full advantage of the existing small satellite infrastructure on Oahu.

It therefore seems to me to be illogical, expensive, and counter-productive to appropriate the sum of \$100,000 in fiscal year 2016-2017 for any new economic assessment that is focus on a duplicate effort on Hawaii Island.

In conclusion, I therefore urge you to **REJECT HB No. 2263** in its current form.

Thank you for your time and consideration,

Dr. Peter Mouginis-Mark
2212 Round Top Drive
Honolulu, Hawaii 96822



From: mailinglist@capitol.hawaii.gov
Sent: Monday, February 01, 2016 1:25 PM
To: edbtestimony
Cc: cvancamp3@hawaii.rr.com
Subject: Submitted testimony for HB2263 on Feb 2, 2016 09:00AM

HB2263

Submitted on: 2/1/2016

Testimony for EDB on Feb 2, 2016 09:00AM in Conference Room 312

Submitted By	Organization	Testifier Position	Present at Hearing
Carol A. VanCamp	Individual	Support	No

Comments: It is critically important that our state assess the economic potential for these types of projects so that we can continue to compete with other states in our pursuit of high-technology that will not only positively impact our state's economy but also provide high-paying jobs in our island communities.

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.

Do not reply to this email. This inbox is not monitored. For assistance please email webmaster@capitol.hawaii.gov



LATE

February 1, 2016

Members of 28th Hawaii State Legislature

RE: HB2263 Relating to Economic Development of Small Satellite Facilities

Dear Legislators:

As President of a 133-year-old business on the East Side of the Island of Hawaii I have observed the diminution of many business activities here on the island over the years. Today's businesses on the Island and particularly on the East Side of the Island find themselves in a frequently precarious economic position.

- Agriculture, for decades the driving force here, struggles as world competition increases, as invasive plants and insects increase – often dramatically – and as some of our most precise tools are threatened through fear.
- Lacking large expansive beaches and enjoying steady, frequent rainfall, our tourist industry has normally seen one driver: Hawaii Volcanoes National Park.
- As is true across the nation, the retail sector of the economy continues to shrink due to pricing and variety found on the internet.

The list could go on – and I do not mean to suggest that we are without hope, vigor and a “can-do” attitude among the residents who love living here. But what we need is a continuing infusion of new businesses where we have distinct geographical, cultural and climatic advantages.

Small satellite launch may be such an industry. Our proximity to the equator, our ability to launch over the ocean with no island or land masses to the east of us, temperate weather, a strong scientific environment and availability of hard working labor committed to remaining here describe only some of our advantages.

We need to thoroughly explore this industry to determine how it might be organized here, where it might be located and to ensure that it would fit in with our island lifestyle. HB2263 provides funding to “check this out.” The need is here and the advantages appear to be also. The State needs to take the next step in conjunction with industry and other organizations. What we need now is your support. I encourage you to express that support by voting in favor of this bill.

Sincerely,

Bill Walter
President