



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

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DAVID Y. IGE
GOVERNOR

LUIS P. SALAVERIA
DIRECTOR

MARY ALICE EVANS
DEPUTY DIRECTOR

Statement of

LUIS P. SALAVERIA
Director

Department of Business, Economic Development & Tourism

before the

**SENATE COMMITTEES ON HIGHER EDUCATION
AND
PUBLIC SAFETY, INTERGOVERNMENTAL AND MILITARY AFFAIRS**

Tuesday, February 14, 2017

2:45 p.m.

State Capitol, Conference Room 414

in consideration of

**SB 1247
RELATING TO ECONOMIC DEVELOPMENT.**

Chairs Kahele and Nishihara, Vice Chairs Kidani and Wakai, and Members of the Committees. The Department of Business, Economic Development and Tourism (DBEDT) **strongly supports** SB1247 to make an appropriation, subject to the availability of matching funds, to the University of Hawaii (UH) to conduct studies to ascertain the feasibility and benefits of establishing a small satellite (SmallSat) launch and processing facility in Hawaii, as well as any related public outreach programs.

A major revolution in the space sector is taking place, as more than 3,600 SmallSats are expected to be launched over the next ten years. A surge in demand for Earth observation, telecommunications, space observation, and technology demonstrations is driving rapid expansion of the global small satellite market. The total market value of these satellites is anticipated to be \$22 billion (including both manufacture and launch) over the next decade – a 76% increase over that of 2006-2015. This rate of growth is unprecedented for the space sector, and will bring about fundamental changes as both new and established industry players attempt to increase their SmallSat capabilities to gain market share.

Hawaii's mid-Pacific, near-equatorial location makes it an ideal location to launch small satellites to equatorial orbit, and a partnership with the Alaska Aerospace Corporation will enable the development and operation of a Pan Pacific Space Launch Complex (PPSLC), with the ability to launch payloads into both equatorial and polar orbits. This combination of launch options will make the PPSLC a preferred location from which to conduct SmallSat launch operations. A small satellite launch and processing facility in Hawaii will significantly expand and diversify our State's aerospace industry.

DBEDT strongly urges the House Committees on Higher Education and on Public Safety, Intergovernmental and Military Affairs to pass this measure.

Thank you for the opportunity to testify on this bill.

Written Statement of:
Rodrigo Romo
Program Manager, PISCES.

Before the:
**Committee on Higher Education & Committee on Public Safety, Intergovernmental, and Military
Affairs.**

February 14th, 2017

14:45

State Capitol, Conference Room 414

In Support of

SB1247 Relating to Economic Development.

To: Chair Kaiali'i Kahele, Vice-Chair Michelle N. Kidani; Chair Clarence K. Nishihara, Vice-Chair Glenn Wakai and members of the committees.

Thank you for the opportunity to submit testimony in **support of SB1247.**

There is an existing growing demand for Small Satellite Launch Vehicles and Small Satellite Launch Facilities from the Small Satellite industry. Currently there are up to 2,400 satellites weighing between 1 and 50kg seeking to launch in 2017. There are over 50 small launch vehicles under development with several companies planning to launch starting in 2017. While the small satellite launch vehicle supply is building up, there continues to be a shortage of suitable launch facilities.

Hawai'i is ideally located for equatorial launches. Given the geographic location of the State, it is possible to launch heavier payloads for the same amount of fuel, or, to launch payloads into higher orbits.

Having a small satellite launch facility in Hawai'i would have a significant economic benefit for the state. While it would create high paying jobs at the launch facility, the derivative benefits would be far superior. Manufacturing jobs could be created if some of the small launch vehicles decided to manufacture components close to the launch site. New education career tracks would be generated for the local universities and community colleges. Payload testing and validation would also have to be done close to the launch facility.

Opportunities like this are rare, and now is the time for the State of Hawai'i to utilize its strategic location and resources to take advantage of this in-demand, emerging 21st century industry. If we wait to seize this opportunity, other states and/or countries may reap the rewards that could've surely benefited the Aloha State.

We strongly urge you to support SB1247.

A handwritten signature in black ink that reads "R. Romo".

Rodrigo Romo
Program Manager
PISCES

Testimony Presented Before the
Senate Committee on Higher Education
and
Senate Committee on Public Safety, Intergovernmental, and Military Affairs
February 14, 2017 at 2:45pm
by
Donald O. Straney
Chancellor, University of Hawai`i at Hilo

SB 1247 - Relating to Economic Development

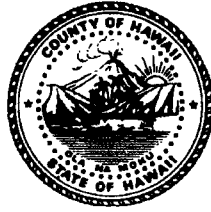
Chairs Kahele and Nishihara, Vice Chairs Kidani and Wakai and Members
of the Committees:

My name is Donald Straney, Chancellor of the University of Hawai`i at Hilo. I am testifying as a member of the Hawai`i Island community and I support the intent of SB 1247 to study the feasibility and benefits of establishing a small satellite launch and processing facility in the State and related public outreach programs.

There is sufficient local interest in East Hawai`i for a satellite processing and launch facility and this proposal provides an opportunity to further investigate the benefits of having a facility within the State.

Thank you for the opportunity to testify on SB 1247. Aloha.

Harry Kim
Mayor



Wil Okabe
Managing Director

Barbara J. Kossow
Deputy Managing Director

County of Hawai'i
Office of the Mayor

25 Aupuni Street, Suite 2603 • Hilo, Hawai'i 96720 • (808) 961-8211 • Fax (808) 961-6553
KONA: 74-5044 Ane Keohokalole Hwy., Bldg. C • Kailua-Kona, Hawai'i 96740
(808) 323-4444 • Fax (808) 323-4440

February 13, 2017

Senator Kaiali'i Kahele
Higher Education Committee
Senator Clarence Nishihara
Public Safety, Intergovernmental and
Military Affairs Committee
Hawai'i State Capitol
Honolulu, HI 96813

Dear Chairs Kahele, Nishihara, and Members:

RE: **SB 1247**

Thank you for this opportunity to testify in support of SB 1247.

While the County would not be in a position to assist financially, the idea of ascertaining the feasibility and benefits of establishing a small satellite launch and processing facility in the State is a positive one. As a former Civil Defense administrator, I simply would want to assure that such a study take into account the geologic and seismic conditions that could impact such a facility in our islands.

Respectfully submitted,

Harry Kim
Mayor



Written Statement of
DR. PATRICK K. SULLIVAN
PRESIDENT/CEO OCEANIT

Before the
HOUSE COMMITTEE ON HIGHER EDUCATION and
HOUSE COMMITTEE ON PUBLIC SAFETY, INTERGOVERNMENTAL AND
MILITARY AFFAIRS

February 14, 2017

2:45 p.m.

State Capitol, Conference Room 414

In Support of

SB1247 RELATING TO ECONOMIC DEVELOPMENT

To: Chair Kaiali'i Kahele and Chair Clarence Nishihara, Vice Chair Michelle Kidani and Vice Chair Glenn Wakai and Members of the Committees

From: Dr. Patrick K. Sullivan, President/CEO

Re: Testimony in Support of SB1247

Honorable Chairs, Vice-Chairs and Committee Members:

Thank you for the opportunity to submit testimony **in support of SB1247.**

The State of Hawaii has a genuine need to broaden its economic base. We now have a major opportunity to support and fulfill that necessity. The small satellite industry is one that is experiencing rapid growth, and so the demand for small vehicle to launch them as well as locations from where to launch is increasing rapidly.

Hawai'i has many privileges over other potential sites, not only does it have an ideal geographical location for equatorial launches, but being a U.S State offers many advantages from logistics and politics that other potential locations cannot offer.

The economy of the state is highly dependent of a handful of industries, opportunities like this, which could have a strong benefit for the local economy do not come often. It is critical for the state's economy that this opportunity is seen through.

I would greatly appreciate your affirmative consideration of SB1247.



February 3, 2017

The Honorable Kaili'I Kahele, Chair
Senate Higher Education Committee
The Honorable Clarence K. Nishihara, Chair
Senate Public Safety, Intergovernmental, and Military Affairs Committee
Hawaii State Legislature

Dear Senators Kahele and Nishihara:

This letter is submitted in support of Senate Bill 1247 which would provide \$250,000 in State general matching funds to the University of Hawaii (UH) to conduct appropriate studies required to ascertain the feasibility and benefits of establishing a small satellite launch and processing facility in the State, as well as to conduct any related public outreach programs.

The Alaska Aerospace Corporation (AAC) is a state-owned company that owns and operates the Pacific Spaceport Complex – Alaska (PSCA). As the nation's only high latitude full service spaceport, PSCA provides optimal support for space launches to low earth orbit, sun synchronous orbit, polar orbit, and highly elliptical orbits such as Molniya and Tundra orbits. PSCA offers unrestricted down range launch azimuths ranging from 110° to 220°. PSCA is not able to launch satellites in equatorial orbit.

Recognizing that the majority of commercial communication and imaging satellites require equatorial orbits, the AAC Board of Directors passed a resolution at their December 1, 2016 authorizing AAC to spend up to \$250,000 to enter into contracts to conduct a site selection process that includes preliminary survey, site design, site engineering, and environmental and permitting processes for development of a potential future commercial equatorial launch site. AAC has conducted a comprehensive evaluation of potential sites in the Pacific region and considers Hawaii a top contender for future development this facility.

Passage of Senate Bill 1247 would provide UH with the financial ability to proceed with the necessary processes to ascertain the ideal location for development of this launch site in Hawaii. With the December 2016 AAC Board action, our company stands ready to partner with UH to jointly conduct the studies to determine whether a small commercial launch facility could be established in the state. We ask for your Committee's favorable consideration of this appropriation.

Respectfully submitted

A handwritten signature in black ink, appearing to read "Craig E. Campbell", is written over the typed name.

Craig E. Campbell
President and Chief Executive Officer

Jason P. Hundley
X-Bow Launch Systems Inc.
1300 Meridian Street, Ste 3001
Huntsville, AL 35801

TESTIMONY IN SUPPORT OF:

SB1247 – RELATING TO ECONOMIC DEVELOPMENT

Dear Members of the 29th Hawai'i State Legislature,

I am writing in support of the passage of SB1247.

The small satellite industry is experiencing rapid growth, and so the demand for small vehicles to launch is increasing dramatically. Geographically, Hawai'i's position as the closest state to the Equator that is surrounded by thousands of miles of nearly open ocean makes the State an ideal launch point for small rocket launches. Launching rockets in an easterly direction from Hawai'i offers the greatest payload capacity to orbit for any US site.

A Hawai'i launch facility would be an ideal home base of operations for the X-Bow commercial launch vehicle, a rocket technology based on the LEONIDAS program conceived and managed by the Hawai'i Space Flight Laboratory at the University of Hawai'i. A commercial launch complex on the eastern shore of the Island of Hawai'i would combine with the existing launch capability on Kaua'i to support all envisioned X-Bow launches from the state of Hawai'i.

X-Bow Launch Systems is currently working towards a small satellite launch from the Pacific Missile Range Facility on Kaua'i in 2018, followed by a low-inclination second launch in 2019, ideally from Hawai'i. Passage of SB1247 would be a meaningful step towards establishing a launch facility on the Island of Hawai'i capable of supporting space exploration and development with commercial launches in 2019. We are eager to collaborate with the people and state of Hawai'i to achieve this goal.

My genuine belief is that the effort to maintain and expand this homegrown space launch capability in Hawai'i will be of great benefit to your state. Opportunities like this, which could have a strong benefit for the local economy, do not come often. A commercial small launch facility in Hawai'i will attract small launch vehicle and satellite companies, and spur new high-paying, high-tech job opportunities for the State. It is critical that this opportunity not be missed.

I would greatly appreciate your affirmative consideration of this bill.

Mahalo,



Jason P. Hundley
CEO, X-Bow Launch Systems Inc.



February 13, 2017

RE: SB1247– RELATING TO ECONOMIC DEVELOPMENT

Dear Members of the 29th Hawaii State Legislature:

A primary concern of businesses and residents of Hawaii island is an economy that creates too few jobs for our young men and women – and too few of those being of a nature to support more than a basic living standard here (on the least expensive island to live on). The situation is deteriorating with our major industries: agriculture, tourism and government showing either very slow growth or even for most - decline. If we do not pull in new industry sectors that are expanding, the situation will worsen at an increasing pace.

The small satellite industry provides this island and this state and excellent opportunity to increase our base. This industry is experiencing rapid growth. The demand for small vehicles to launch them as well as locations from which to launch is increasing rapidly. Our technological world requires a steadily growing number of satellites to provide GPS, cell phone and other modern conveniences. As the size of satellites decreases to units often no bigger than microwave ovens, the demand for new and replacement units is growing rapidly.

The Island of Hawaii has unique characteristics that give us an advantage over many other locations: we are near the equator in a politically stable environment with the possibility of launches to the east over the ocean. A number of organizations have already approached the State looking for locations for such launches. It is important to note that this industry is clean, technologically strong and (as noted) growing. Further, many of the electronics and even the small engines for these launches will be built close to the launch site using 3D printers and such equipment – so that those who launch may also build in that location. We have the opportunity to see a critical mass of such organizations come to the Island to support the industry. Alaska Aerospace, a public-private organization of the State of Alaska is so convinced that our sites are exceptional that it has committed to spending \$250,000 itself IF the State of Hawaii will match those funds.

The economy of the state is highly dependent on a handful of industries, opportunities like this, which could have a strong benefit for the local economy do not come often. It is critical for the state's economy that this opportunity is not missed. Please vote for our future by supporting this bill.

Sincerely,

Bill Walter
President

16-523 Keaau-Pahoa Road Keaau, HI 96749
tel.: 808.966.9325 • fax: 808.966.8522

www.whshipman.com

From: mailinglist@capitol.hawaii.gov
Sent: Monday, February 13, 2017 2:24 PM
To: HRE Testimony
Cc: admin@hicc.biz
Subject: *Submitted testimony for SB1247 on Feb 14, 2017 14:45PM*

SB1247

Submitted on: 2/13/2017

Testimony for HRE/PSM on Feb 14, 2017 14:45PM in Conference Room 414

Submitted By	Organization	Testifier Position	Present at Hearing
Miles Yoshioka	Hawaii Island Chamber of Commerce	Support	No

Comments:

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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From: mailinglist@capitol.hawaii.gov
Sent: Monday, February 13, 2017 1:54 PM
To: HRE Testimony
Cc: djr@teamedeluz.com
Subject: Submitted testimony for SB1247 on Feb 14, 2017 14:45PM

SB1247

Submitted on: 2/13/2017

Testimony for HRE/PSM on Feb 14, 2017 14:45PM in Conference Room 414

Submitted By	Organization	Testifier Position	Present at Hearing
David S. De Luz, Jr.	David S. De Luz, Sr. Enterprises, Inc.	Support	No

Comments: Aloha Chair's Kahele and Nishihara and fellow committee members: I/we STRONGLY SUPPORTS the passage of SB1247. Recent studies by UHERO and others show that the economy on the Island of Hawaii is in serious need of expanding its economic base. For too many generations now an increasing number of our young men and women have found it necessary to move to the mainland and even to other countries in order to find challenging, steady and meaningful employment. Solving this problem and keeping our families and communities together can only happen if we are able to expand our economic base. The small satellite industry provides this island and this state and excellent opportunity to do just this. This industry is experiencing rapid growth. The demand for small vehicles to launch them as well as locations from which to launch is increasing rapidly. Our increasingly technological world requires a steadily growing number of satellites to provide GPS, cell phone and other modern conveniences. The Island of Hawaii has unique characteristics that give us an advantage over many other locations: we are near the equator in a politically stable environment with the possibility of launches to the east over the ocean. A number of organizations have already approached the State looking for locations for such launches. It is important to note that this industry is clean, technologically strong and (as noted) growing. Further, many of the electronics and even the small engines for these launches will be built close to the launch site using 3D printers and such equipment. We have the opportunity to see a critical mass of such organizations come to the Island to support the industry. Alaska Aerospace, a public-private organization of the State of Alaska is so convinced that our sites are exceptional that it has committed to spending \$250,000 itself IF the State of Hawaii will match those funds. The economy of the state is highly dependent on a handful of industries, opportunities like this, which could have a strong benefit for the local economy do not come often. It is critical for the state's economy that this opportunity is not missed and I/we STRONGLY recommend passing of SB1247. Mahalo, David S. De Luz, Jr. VP 808-895-4284

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

Dr. Trevor C. Sorensen
91-1036 Wai'ilikahi St.
Ewa Beach, HI 96706

Dear Members of the 29th Hawaii State Legislature:

I am writing to express my strong **SUPPORT** for **SB1247 - Relating to Economic Development and Small Satellite Launch.**

I moved to Hawai'i in 2007 to join the faculty of the University of Hawai'i at Manoa. I have three grown children who completed high school here and attended community colleges. Two of them are currently undergraduates of the University of Hawaii at Manoa. I was hired as a full Specialist Professor in the Hawaii Space Flight Laboratory (HSFL) to lead the development of Hawaii's first satellite. This effort resulted in the launch of HSFL's 55-kg satellite HiakaSat on the ill-fated launch of the Super Strypi on the ORS-4 mission in November, 2015. We are currently working on our next satellite as well as developing the future of space in the State of Hawai'i.

The objective of HSFL is to design, build, test, launch, and operate small spacecraft from the Hawaiian Islands. Although HSFL's first launch from the Pacific Missile Range Facility did not achieve orbit, there were a lot of successes. The rail launch system developed by HSFL worked perfectly. The world took notice that Hawaii can become a space-faring State, and the world took notice that our local students built a satellite that passed all tests for space flight.

Hawai'i has a golden opportunity to become a site for launch commercial as well as government satellites into space, and the chosen site on the Big Island provides many more launch opportunities, especially for commercial companies, than PMRF or any launch sites on the mainland (including Florida). With each launch costing several millions of dollars, the economic benefit to the state is obvious, as well as the opportunity to educate many, many students and provide employment for young engineers, many of whom would otherwise move to the mainland for such employment opportunities.

The economy of Hawai'i is highly dependent of a handful of industries. Opportunities like this, which could have a strong benefit for the local economy, do not come often. A commercial small launch facility in Hawai'i will attract small launch vehicle companies and small satellite companies which will spur new high-paying, high-tech job opportunities for the State. It is critical for the state's economy that this opportunity is not missed.

Thank you for your time and consideration,



Dr. Trevor C. Sorensen

Dr. Jung Won Park
15 Kulanihakoi St. 9H
Kihei, HI 96753

**TESTIMONY IN SUPPORT OF:
SB1247– RELATING TO ECONOMIC DEVELOPMENT**

Dear Members of the 29th Hawai'i State Legislature,

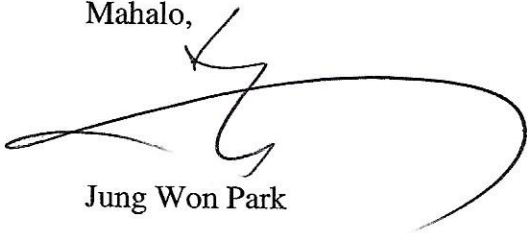
I am writing in support of the passage of **SB1247**.

The State of Hawai'i has a genuine need to broaden its economic base. This is a major opportunity to support and fulfill that necessity. The small satellite industry is one that is experiencing rapid growth, and so the demand for small vehicles to launch is increasing rapidly. Geographically, Hawai'i's position as the closest state to the Equator that is surrounded by thousands of miles of nearly open ocean makes the State an ideal launch point for small rocket launches. Launching rockets in an easterly direction from Hawai'i offers the greatest payload capacity to orbit for any US site.

The economy of Hawai'i is highly dependent of a handful of industries. Opportunities like this, which could have a strong benefit for the local economy, do not come often. A commercial small launch facility in Hawai'i will attract small launch vehicle companies and small satellite companies which will spur new high-paying, high-tech job opportunities for the State. It is critical for the state's economy that this opportunity is not missed.

I would greatly appreciate your affirmative consideration of this bill.

Mahalo,



Jung Won Park

Eric Pilger
91-1079 Kumulipo Street
Kapolei, HI 96707

TESTIMONY IN SUPPORT OF:
SB1247– RELATING TO ECONOMIC DEVELOPMENT

Dear Members of the 29th Hawai'i State Legislature,

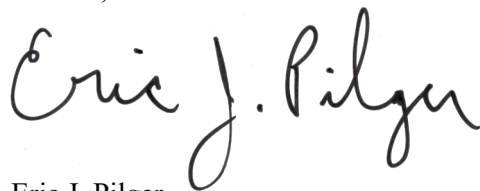
I am writing in to express my strong support for the passage of SB1247.

I have lived in Hawai'i for over 35 years. Initially graduating from the University of Hawai'i at Manoa, with an MS in Astronomy in 1986, I went on to work as a Software Engineer for the NASA Infrared Telescope Facility, and then the Hawai'i Institute of Geophysics and Planetology. In recent years, I have worked intensively with the Hawai'i Space Flight Laboratory, as co-investigator on a 3 year NASA EPSCoR project developing a new flight software environment, as lead software engineer for their various satellite efforts, and as co-investigator on an ongoing NASA MUREP project. I was also one of the first cohort of the XLR8UH startup accelerator, seeking to turn some of our software development into a marketable product. During this time, I married and raised 3 children, and have worked extensively with the many educational outreach efforts offered through the Hawai'i Space Grant Consortium. Education, at all levels, has long been a major interest of mine.

In my time with HSFL, I have experienced firsthand the power of space technology to engage students in Science and Technology, and to lead them to satisfying careers. We are on the verge of an explosive growth in the utilization of space from small satellites. Hawai'i, for a change, stands to benefit significantly from its isolation in the middle of the Pacific, as a staging ground for all these operations. In addition to launch and ground communications, for which Hawai'i is uniquely suited, advances in modern manufacturing will allow for the creation and assembly of most of the components of future satellites and launch vehicles in direct proximity to launch sites. This would allow many of our students to not only train in Hawai'i, but to stay in Hawai'i.

I would greatly appreciate your affirmative consideration of this bill.

Mahalo,

A handwritten signature in black ink that reads "Eric J. Pilger". The signature is written in a cursive, flowing style.

Eric J. Pilger

John Hamilton
PO Box 615 Pepeekeo
Hilo, Hawaii 96783

TESTIMONY IN SUPPORT OF:

SB1247– RELATING TO ECONOMIC DEVELOPMENT

Dear Members of the 29th Hawaii State Legislature,

I support SB1247 regarding Small Satellites.

Although writing as a private citizen, I am provided a somewhat different perspective than the average. My position on faculty in the Department of Physics and Astronomy at the University of Hawai'i at Hilo allows me to see the large future potential for such a launch capability and industry. High-tech jobs as well as abundant educational opportunities for our students. Our state seems to prize (and take pride) over the numerous robotics programs in the K-12 classes. We are happy that our keiki are learning and hopefully mastering STEM basics in order to compete in the future job markets. Well, **THIS** is one of those markets!

Small satellite industry is experiencing rapid growth globally. It is commercial from many nations and companies. As in real estate, "location, location, location" is a prime consideration. The timing is now, and we possess one of the best locations.

Hawai'i island has a great combination of geographic advantages for small sat launch. Due to the island's shape, orbital insertions into polar north, polar south and also prograde equatorial orbits are all possible. This multiplies the customer launch base.

I feel that this could be the breakout seed for an expanding industry that can turn our rural island into a diversified economy. It is up to you, the legislature, to make sure that this opportunity is not missed.

I would greatly appreciate your positive consideration of this bill.

Mahalo nui loa,
John Hamilton

A handwritten signature in black ink that reads "John Hamilton". The signature is written in a cursive style with a large, looping initial "J".

*Dr. Joseph E. Ciotti
3577-4 Pinao Street
Honolulu, HI 96822*

TESTIMONY IN SUPPORT OF:
SB1247– RELATING TO ECONOMIC DEVELOPMENT

Dear Members of the 29th Hawai'i State Legislature:

I am writing to express my strong support for the passage of SB1247, which relates to the development of small satellite launch in Hawai'i.

The establishment of a small satellite launch industry would greatly benefit the economy of Hawai'i and provide high tech/STEM based career opportunities for our students. As the Director of the Center for Aerospace Education at Windward Community College and the Project Manager for the University of Hawai'i Community College's Project Imua, I have been intimately involved in the educational needs and preparations of our young in STEM and particularly aerospace careers. For the past three years, our UHCC students have been involved in the design, fabrication, assembly, and testing of small space payloads such as those that would be carried on this type of launch system. We are currently preparing our third payload for space flight. Lacking a launch system in Hawai'i, we are required to use mainland facilities such as the NASA Wallops Flight Facility in Virginia. The experience our pre-engineering students are gaining from such project-based activities is already paying great dividends as it prepares them for employment in the aerospace field. The prospects of installing a small satellite launch facility in our islands would be a major boost to encouraging other students to consider pursuing high tech jobs locally, and greatly impact our State's our economy.

I would greatly appreciate your affirmative consideration of and action on this bill.

Mahalo nui loa,

Joseph E. Ciotti

Dr. Luke Flynn
94-1115 Hahana Street
Waipahu, HI 96797

Dear Members of the 29th Hawaii State Legislature:

I am writing to express my strong **SUPPORT** for **SB1247 – Relating to Economic Development and Small Satellite Launch**.

In 1992, I graduated from the University of Hawaii at Manoa with a PhD in Geology & Geophysics. I have lived in Hawaii for 30 years and raised two children here who also graduated from UH. I am now a professor in the Hawaii Institute of Geophysics and Planetology (HIGP). Throughout my research career, I have managed 26 external grants and contracts worth approximately \$50M or an average of \$1.9M/year since graduation. A very high proportion of these funds are used to support faculty co-Investigators, staff, and students that have all supported the State economy. Since 2002, I have been the Director of the NASA Hawaii Space Grant Consortium (HSGC) and the NASA Hawaii EPSCoR Programs. The function of HSGC is to provide STEM education and NASA workforce development opportunities in Hawaii. The function of NASA Hawaii EPSCoR is to expand aerospace research infrastructure within the State. Finally, since 2007, I have been the Director of the Hawaii Space Flight Laboratory (HSFL). HSFL's objective is to design, build, test, launch, and operate small spacecraft from the Hawaiian Islands. On November 3, 2015, HSFL's first launch from the Pacific Missile Range Facility did not achieve orbit. However, there were a lot of successes. The rail launch system worked perfectly. The world took notice that Hawaii can become a space-faring State, and the world took notice that our local students built a satellite that passed all tests for space flight.

In nearly 60 years of space exploration, approximately 6500 satellites have been launched into orbit, of which about 1000 are still operating. Most of these satellites belong to the US or foreign governments. While "Big Space" will continue to be dominated by government agencies, small satellites have allowed exponential growth in the commercial sector. The need for small launchers is rapidly increasing as indicated in an August 26, 2016 *Economist* article that references 5 US companies needing to get 4700 small satellites to space in the next 5 years. Four US small launch companies have expressed interest to use a potential easterly launch site in Hawaii because rocket science dictates that rockets launched from Hawaii lift more payload to orbit than any other US site (because we can launch due east and are closest to the Equator). Small launch is a large niche market that Hawaii can fill. Small satellite companies will follow, and the need for highly-paid skilled engineers and electronics/mechanical technicians will grow rapidly. Small satellites and their derived data now represent tens of billions of dollars per year; yet, Hawaii must move quickly and effectively to capture this opportunity for our generation and our children.

I have had the privilege to be constantly amazed by the creativity of our students. In 2015, HSFL brought 6 sophomore engineering students to the Utah State Small Satellite conference. The sophomores explained their satellite project to a Google manager who was so impressed that he offered to hire the students on the spot!! Small launch and small satellites represent ne growth industries for Hawaii, but we must act now to capture this opportunity. Let's keep the best and brightest at home with high paying jobs. Let's help them reach for the stars!!

Thank you for your time and consideration,



Dr. Luke Flynn

From: mailinglist@capitol.hawaii.gov
Sent: Tuesday, February 7, 2017 6:56 PM
To: HRE Testimony
Cc: mendezj@hawaii.edu
Subject: *Submitted testimony for SB1247 on Feb 14, 2017 14:45PM*

SB1247

Submitted on: 2/7/2017

Testimony for HRE/PSM on Feb 14, 2017 14:45PM in Conference Room 414

Submitted By	Organization	Testifier Position	Present at Hearing
Javier Mendez-Alvarez	Individual	Support	No

Comments:

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

Pauline Roth
HC3 Box 13581
Kea'au, HI 96749

TESTIMONY IN SUPPORT OF:
SB1247– RELATING TO ECONOMIC DEVELOPMENT

Dear Members of the 29th Hawaii State Legislature,

I am writing in support of the passage of SB1247

The State of Hawaii has a genuine need to broaden its economic base. We now have a major opportunity to support and fulfill that necessity. The small satellite industry is one that is experiencing rapid growth, and so the demand for small vehicle to launch them as well as locations from where to launch is increasing rapidly.

Hawai'i has many privileges over other potential sites, not only does it have an ideal geographical location for equatorial launches, but being a U.S State offers many advantages from logistics and politics that other potential locations cannot offer.

The economy of the state is highly dependent of a handful of industries, opportunities like this, which could have a strong benefit for the local economy do not come often. It is critical for the state's economy that this opportunity is seen through.

I would greatly appreciate your affirmative consideration of this bill.

Mahalo,

A handwritten signature in black ink, appearing to read "Pauline Roth", written in a cursive style.

Pauline Roth

Dr. Miguel Nunes
1450 Young St. Apt 2409
Honolulu, HI, 96814

TESTIMONY IN SUPPORT OF:
SB1247– RELATING TO ECONOMIC DEVELOPMENT

Dear Members of the 29th Hawai'i State Legislature,

I am writing this testimony to support strongly the passage of SB1247 for the Economic Development in the Small Satellite Launch initiatives in the State.

I graduated in 2015 from the University of Hawai'i at Manoa with a PhD in Mechanical Engineering. I have lived in Hawai'i for the past 8 years with my family and I am now a Postdoctoral Research Fellow at the Hawaii Institute of Geophysics and Planetology within the Hawai'i Space Flight Laboratory. My research is focused on developing new technology for small satellites for cost effective and very capable small satellites for Earth observations. The impact of my research has been, nationally and internationally, recognized by experts in the field of space technology and I continue to focus on the design and study of future space missions, in large satellite constellation optimization, satellite test beds and space mission operations. Much of this technology can be used in future space missions designed, built and launched from Hawai'i.

Over the past 60 years of space exploration, the space industry has developed technologies that trickle down to benefit our daily lives, examples of such technologies are the GPS and Microwaves. The State of Hawai'i has now a unique opportunity to leverage its economy by investing in space technology and in particular by launching small satellites. It is important to mention that small satellites are revolutionizing space industry and there are many opportunities to be explored. Hawai'i could become part of the "active-space" States investing in small satellites such as California, Alaska, Washington and Colorado.

Hawai'i's strategic location with its position close to the Equator provides an ideal launch point for small rocket because the expended energy to space is less when compared to States with higher latitudes. The other benefit to Hawai'i's location is that a launch can be made to almost any orbit inclination because we are surrounded by the Pacific Ocean. No other state can compete with this range of launch options.

This bill is a major opportunity to invest in the future economic development the State of Hawai'i. A commercial small launch facility in Hawai'i will attract small launch vehicle companies and small satellite companies, which will in turn bring new high-paying, high-tech job opportunities for Hawai'i. It is critical for the state's economy that this opportunity is not missed.

I would greatly appreciate your affirmative consideration of this bill.

Sincerely,


Dr. Miguel Nunes

Lance Yoneshige
5275 Kimokeo Street
Honolulu, HI, 96821

Dear Members of the 29th Hawai'i State Legislature,

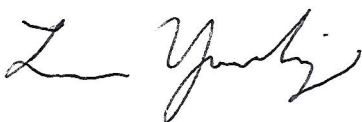
I am writing in support of the passage of SB1247 – Relating to Economic Development and Small Satellite Launch.

I was born and raised in Hawaii and graduated from the University of Hawaii at Manoa with a B.S. (2004) and M.S. (2007) in Mechanical Engineering. Since then, I have been employed at the Hawaii Space Flight Laboratory (HSFL) where I worked on the world's largest rail launcher, and HSFL's first satellite, among other projects. At HSFL, our objective is to design, build, test, launch and operate small satellites from Hawaii. In so doing, the goal is to also foster and develop the local aerospace/satellite industry.

The State of Hawai'i has a genuine need to broaden its economic base. This is a major opportunity to support and fulfill that necessity. The small satellite industry is experiencing rapid growth, and so the demand for small launchers is rapidly increasing. One estimate is that 5 US based companies desire to launch 4,700 small satellites over the next 5 years. Geographically, Hawai'i's position as the closest state to the Equator and its isolation of being surrounded by thousands of miles of nearly open ocean, make the State an ideal launch point for small rocket launches. Given identical rockets, launching in an easterly direction from Hawai'i offers the greatest payload capacity to orbit compared to any US site.

The economy of Hawai'i is highly dependent on a handful of industries. Opportunities like this, which could have a strong benefit for the local economy, do not come often. A commercial small launch facility in Hawai'i will attract small launch vehicle companies and small satellite companies which will spur new high-paying, high-tech job opportunities for the State. It is critical for the state's economy that this opportunity is not missed. Many of my peers at UH were forced to leave the islands to pursue engineering work in the aerospace or other technology industries. Some have returned to jobs outside of their primary subject of interest while others have remained elsewhere with return being unfeasible. My wife and I are raising two young children and we want them, and others of their generation, to have the opportunity to do what they love, in a place that they love.

Thank you,



Lance Yoneshige

*William R Smith
Honolulu, HI 96813*

TESTIMONY IN SUPPORT OF:

SB1247– RELATING TO ECONOMIC DEVELOPMENT

Dear Members of the 29th Hawai'i State Legislature,

I am writing in support of the passage of SB1247.

The State of Hawai'i has a genuine need to broaden its economic base. This is a major opportunity to support and fulfill that necessity. The small satellite industry is one that is experiencing rapid growth, and so the demand for small vehicles to launch is increasing rapidly. Geographically, Hawai'i's position as the closest state to the Equator that is surrounded by thousands of miles of nearly open ocean makes the State an ideal launch point for small rocket launches. Launching rockets in an easterly direction from Hawai'i offers the greatest payload capacity to orbit for any US site.

The economy of Hawai'i is highly dependent of a handful of industries. Opportunities like this, which could have a strong benefit for the local economy, do not come often. SB1247 will facilitate this potential opportunity. A commercial small launch facility in Hawai'i will attract small launch vehicle companies and small satellite companies, which will spur new high-paying, high-tech job opportunities for the State. It is critical for the state's economy that this opportunity is not missed.

I am also a lecturer in the University of Hawaii system, teaching science courses at Honolulu and Windward Community colleges. Some of my students are participating in funded projects and undergraduate experiential research opportunities in Science, Technology, Engineering and Math courses, with academic and future employment goals of working in space-related industry in the government and private sectors. SB 1247 would start a process that may help Hawaii develop future research and employment opportunities locally, so our Hawaii students do not have to leave our islands for work in the mainland.

I would greatly appreciate your affirmative consideration of this bill.

Mahalo

William R Smith

From: mailinglist@capitol.hawaii.gov
Sent: Monday, February 13, 2017 12:26 PM
To: HRE Testimony
Cc: mkaleikini@ormat.com
Subject: Submitted testimony for SB1247 on Feb 14, 2017 14:45PM

SB1247

Submitted on: 2/13/2017

Testimony for HRE/PSM on Feb 14, 2017 14:45PM in Conference Room 414

Submitted By	Organization	Testifier Position	Present at Hearing
Mike Kaleikini	Individual	Support	No

Comments: Mahalo for this opportunity to provide testimony in Support of SB1247. As a long time resident of Hawai'i Island, I have seen first hand that the economy on the Island is in serious need of expanding its economic base. For too many generations now an increasing number of our young men and women have found it necessary to move to the mainland and even to other countries in order to find sustainable, living wages to raise their families. I'd like to see the State and private industry try to help with keeping our younger generations at home. The small satellite industry provides this island and this state an excellent opportunity to do just this. This industry is experiencing rapid growth. The demand for small vehicles to launch them as well as locations from which to launch is increasing rapidly. The Island of Hawaii has unique characteristics that give us an advantage over many other locations: we are near the equator in a politically stable environment with the possibility of launches to the east over the ocean. A number of organizations have already approached the State looking for locations for such launches. It is important to note that this industry is clean, technologically strong and (as noted) growing. Further, many of the electronics and even the small engines for these launches will be built close to the launch site using 3D printers and such equipment. We have the opportunity to see a critical mass of such organizations come to the Island to support the industry. Alaska Aerospace, a public-private organization of the State of Alaska is so convinced that our sites are exceptional that it has committed to spending \$250,000 itself IF the State of Hawaii will match those funds. I strongly recommend passing this legislation. Mahalo.

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

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

TESTIMONY IN SUPPORT OF:
SB1247– RELATING TO ECONOMIC DEVELOPMENT

Dear Members of the 29th Hawai'i State Legislature:

I am writing **to provide my strong support of the passage of SB1247.**

As a faculty member at the University of Hawai'i (UH) for the past 35 years, I have seen great opportunities arise to use space as an opportunity to enhance our State's economy and provide our students with high-paying, clean, technology careers. If the State were to have the ability to launch small (<200 kg) satellites into Earth orbit, we would take great strides in developing a new industry with great economic potential for Hawai'i. With the first launch of a UH spacecraft in November 2015, I saw a great surge in the enthusiasm of our engineering students to develop new skills and explore career options in the space industry. Through a commercial small launch facility in Hawai'i, we could establish our State as one of the very few places in the United States where launch vehicle companies could gain low-cost access to space. This would inevitably spur new high-paying, high-technology jobs for the State and keep more of our best and brightest students here in the Islands.

Accordingly, **I offer my strong support for SB1247.** I believe that it would bring significant new high-technology industries to the State at a time where our economy is too dependent on a few industries. I believe that it is critical for the State's economy that this opportunity is not missed.

Thank you for your consideration of this letter. Please support SB1247.

Sincerely,



Peter J. Mouginis-Mark, PhD

Robert Wright
47-508 Lulani Street, Kaneohe, 96744

TESTIMONY IN SUPPORT OF:
SB1247– RELATING TO ECONOMIC DEVELOPMENT

Dear Members of the 29th Hawai'i State Legislature,

I am writing in support of the passage of SB1247.

Space science and satellite technology are rapidly growing areas for the US economy, and will only continue to grow into the future (see the August 26, 2016 edition, and cover, of "The Economist" magazine). If Hawai'i can be part of this future it will result in economic diversification, increased GDP, and high-tech jobs for our young people. The above referenced bill is an important keystone on which future endeavors in this area can be built, as a commercial launch site in Hawai'i will allow spacecraft to be put into a range of operational orbits, unattainable from current mainland east and west coast launch sites.

I would greatly appreciate your affirmative consideration of this bill.

Thank you,

Robert Wright

Amber Imai-Hong
16-352 Keaau Loop
Keaau, HI 96749

TESTIMONY IN SUPPORT OF:

SB1247-- RELATING TO ECONOMIC DEVELOPMENT

Dear Members of the 29th Hawai'i State Legislature,

I am writing in support of the passage of SB1247—Relating to Economic Development and Small Satellite Launch.

I was born and raised in Kea`au on the east side of Hawai'i Island. After graduating in 2007 from Waiakea High School I pursued a degree in Electrical Engineering at the University of Hawaii at Manoa, with the hopes of becoming an instrumentation engineer at one of the observatories. Soon after I started my college education I was recruited to a small satellite team. Upon the completion of my Bachelors of Science in Electrical Engineering in 2012, I was hired to be a full time employee at the Hawaii Space Flight Laboratory (HSFL). In addition to being an avionics engineer for HSFL I also work with community college students in various Hawaii Space Grant Consortium (HSGC) projects, and undergraduates at UH. I would love to see the high tech industry grow in Hawai'i, particularly on Hawai'i Island, and create jobs for the students I work with.

The State of Hawai'i has a genuine need to broaden its economic base. This is a major opportunity to support and fulfill that necessity. The small satellite industry is one that is experiencing rapid growth, and so the demand for small vehicles to launch is increasing rapidly. Geographically, Hawai'i's position as the closest state to the Equator that is surrounded by thousands of miles of nearly open ocean makes the State an ideal launch point for small rocket launches. Launching rockets in an easterly direction from Hawai'i offers the greatest payload capacity to orbit for any US site.

The economy of Hawai'i is highly dependent of a handful of industries. Opportunities like this, which could have a strong benefit for the local economy, do not come often. A commercial small launch facility in Hawai'i will attract small launch vehicle companies and small satellite companies which will spur new high-paying, high-tech job opportunities for the State. It is critical for the state's economy that this opportunity is not missed.

I would greatly appreciate your affirmative consideration of this bill.

Mahalo,



Ms. Amber Imai-Hong