



NEIL ABERCROMBIE  
GOVERNOR

RICHARD C. LIM  
DIRECTOR

## DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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Statement of

**RICHARD C. LIM**  
Director

Department of Business, Economic Development & Tourism  
before the

**HOUSE COMMITTEE ON ECONOMIC REVITALIZATION & BUSINESS**

Tuesday, March 22, 2011

8:00 a.m.

State Capitol, Conference Room 312

in consideration of

**SB 1496 SD1**

RELATING TO ENTERPRISE ZONES.

Chair McKelvey, Vice Chair Choy, and members of the Committee. The department supports the intent of SB 1496 SD1 to amend the definition of “eligible business activities” for “enterprise zones” in Section 209E-2, Hawaii Revised Statutes, to include “development and operation of space exploration and lunar research related activities”.

As noted in SB 165 in the current session, as well as in HCR 123 from the 2010 Session, aerospace is a strategic and timely growth industry for Hawaii. Our department is now working to build public-private partnerships and attract substantial international business investments to Hawaii that can help expand and diversify aerospace activities statewide.

One such initiative is an ongoing effort by the Pacific International Space Center for Exploration Systems (PISCES) at the University of Hawaii at Hilo to develop a prototype lunar

outpost on the Big Island that can support research and development of new space technologies, train both students and aerospace professionals to engage in future space missions, and ultimately help establish a sustainable multinational research park on the lunar surface. This program will bring multiple scientific, educational and commercial benefits to residents statewide, as well as establish Hawaii as a global leader in space exploration.

SB1496 SD1 would help catalyze the multinational partnerships and international investments required to enable this outstanding program to succeed. As such, I would strongly encourage your support for this measure.

Thank you for the opportunity to testify on this bill.

NEIL ABERCROMBIE  
GOVERNOR

BRIAN SCHATZ  
LT. GOVERNOR



FREDERICK D. PABLO  
DIRECTOR OF TAXATION

RANDOLF L. M. BALDEMOR  
DEPUTY DIRECTOR

STATE OF HAWAII  
DEPARTMENT OF TAXATION  
P.O. BOX 259  
HONOLULU, HAWAII 96809  
PHONE NO: (808) 587-1530  
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## HOUSE COMMITTEE ON ECONOMIC REVITALIZATION & BUSINESS

### TESTIMONY OF THE DEPARTMENT OF TAXATION REGARDING SB 1496, SD 1 RELATING TO ENTERPRISE ZONES

**TESTIFIER:** FREDERICK D. PABLO, DIRECTOR OF TAXATION (OR  
DESIGNEE)  
**COMMITTEE:** ERB  
**DATE:** MARCH 22, 2011  
**TIME:** 8:00AM  
**POSITION:** NO POSITION

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This bill would include within the definition of "eligible business activity," the development and operation of certain space exploration activities.

The Department of Taxation (Department) takes **no position** on this measure.

The revenue loss is estimated to be approximately \$450,000 per year when the project becomes operational. Qualified companies in the State's enterprise zones received about \$1.5 million in tax credits in 2006. It is assumed that this proposal would expand enterprise zone activities by 30% (\$1.5 million \* 30% = \$450,000).

**Carole Hagihara**

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**From:** Tina Desuacido [tina500@juno.com]  
**Sent:** Monday, March 21, 2011 9:35 AM  
**To:** ERBtestimony  
**Subject:** Tax Foundation Testimony  
**Attachments:** s1496d11.pdf

**TRANSMISSION OF TESTIMONY**

**DATE:** Monday, March 21, 2011

**TO:** House Committee on Economic Revitalization & Business

**FROM:** Tax Foundation of Hawaii

**Total Pages 1**

**FOR:** Rep. Angus McKelvey, Chair

**Testifier:** Lowell L. Kalapa, President - Tax Foundation of Hawaii

**(Mr. Kalapa will not appear in person at the hearing.)**

**Date of Hearing - Tuesday, March 22, 2011**

**Position: Comments**

**Time of Hearing - 8:00 am**

**SB 1496, SD-1 - Relating to Enterprise Zones (1 page)**

**Number of copies - 4**

**Thank you.**

# TAXBILLSERVICE

126 Queen Street, Suite 304

TAX FOUNDATION OF HAWAII

Honolulu, Hawaii 96813 Tel. 536-4587

**SUBJECT:** MISCELLANEOUS, Expand enterprise zone eligibility

**BILL NUMBER:** SB 1496, SD-1

**INTRODUCED BY:** Senate Committee on Ways and Means

**BRIEF SUMMARY:** Amends HRS section 209E-2 to amend the definition of “eligible business activity” in an enterprise zone to include the development of space exploration and lunar research related activities.

**EFFECTIVE DATE:** July 1, 2050

**STAFF COMMENTS:** This measure proposes to expand enterprise zone laws to include the development of space exploration and lunar research related activities. In an enterprise zone, businesses are attracted and encouraged to relocate to the zone through tax incentives, bonds, and other appropriate measures. Businesses located in an enterprise zone may claim a credit against taxes paid for a period of seven years and also allows the sale of items sold by such businesses to be exempt from the general excise tax.

While it appears that it is the intent of the legislature to encourage new and existing businesses to expand their employment bases and increase their marketing territories, enterprise zones merely exacerbate what is already considered a poor climate in which to do business. Singling out businesses for preferential treatment merely confers preferences for those businesses at the expense of all other taxpayers.

Concurrent efforts must be made to improve Hawaii’s business climate to enhance the economic prospects for all businesses. Enterprise zones are merely an abdication of government’s responsibility to create a nurturing and supportive business climate so that all businesses can thrive in Hawaii and provide the jobs the people of Hawaii need.

Instead of expanding the enterprise zone program, the program should be repealed in favor of across-the-board tax relief for all businesses in Hawaii. Indeed, has there been a comprehensive evaluation of the program and do lawmakers know exactly how much enterprise zone businesses have benefitted and whether or not they have created the jobs promised when the program was first established? When and until an evaluation of the enterprise zone program is made, lawmakers should refrain from further expansion of such zones and activities.

It should be remembered that the underlying philosophy of enterprise zones is to encourage businesses to locate in economically depressed areas and while some may think the entire state is economically depressed, the enterprise zone mechanism should not be used merely to hand out tax breaks to friends and family.

Digested 3/21/11



March 21, 2011

Hawai'i State Legislature  
State Capital  
Honolulu, Hawaii 96813

**COMMITTEE ON ECONOMIC REVITALIZATION & BUSINESS**

Rep. Angus L.K. McKelvey, Chair  
Rep. Isaac W. Choy, Vice Chair

Tuesday, March 22, 2011  
8:00 AM  
Conference Room 312  
State Capitol  
415 South Beretania Street

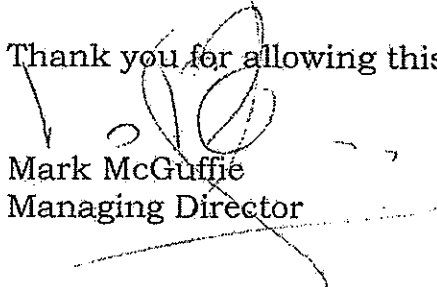
**SUPPORTING TESTIMONY RELATING TO ENTERPRISE ZONES**  
**SB 1496 – SD1 RELATING TO ENTERPRISE ZONES; LUNAR RESEARCH**

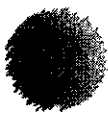
Aloha Chair McKelvey, Vice Chair Choy and Members of the Committee:

Enterprise Honolulu, the O'ahu Economic Development Board, **strongly supports the passage of SB 1496-SD1** that adds businesses engaged in the research and development of space exploration related activities to the definition of "eligible business activity" under the state enterprise zone law.

This will create an incentive for the private sector to invest in the development of the International Lunar Research Park (ILRP) prototype facilities on Hawai'i Island, through the Pacific International Space Center for Exploration Systems (PISCES).

Thank you for allowing this testimony to be included at this hearing.

  
Mark McGuffie  
Managing Director



**ENTERPRISE  
HONOLULU**

THE BUSINESS CLIMATE OF PARADISE

735 Bishop Street, Suite 412, Honolulu, Hawaii 96813 • 808-521-3611  
Fax: 808-536-2281 • [www.enterprisehonolulu.com](http://www.enterprisehonolulu.com)

February 8, 2011

Hawaii State Legislature  
Hawaii State Capitol  
415 S. Beretania Street  
Honolulu, HI 96813

Re: Support for Senate Bills 112, 165 and 1496

Members of the Twenty-Sixth State Legislature:

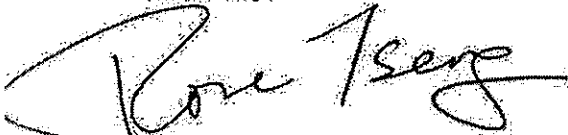
As a member of the Hawaii State Aerospace Advisory Committee, I am pleased to provide testimony in strong support of Senate bills 112, 165 and 1496, which, respectively, appropriate funds for a spaceport license from the Federal Aviation Administration, provide the Office of Aerospace Development with funding and staff support, and establish "development and operation of space exploration and lunar research related activities" as "eligible business activities" for enterprise zones in Hawaii.

I firmly believe that a strong aerospace industry in Hawaii is critical to developing an innovative and progressive "knowledge economy" for our state. Just as aviation was the industry of the future at the beginning of the 20th century, aerospace today represents the hopes and dreams of the young scientists, entrepreneurs and innovators being educated right now for the brightest jobs of the future.

Moreover, the state of Hawaii possesses attributes and resources found nowhere else on Earth which, if appropriately developed and used, will establish an important niche for the state in the aerospace industry.

This is an industry that can help sustain and keep our talented, well educated youth at home, help stabilize and diversify our state's economy, and help improve the quality of life in our state. Support for an aerospace industry today will provide a substantial return of investment for many years to come.

Sincerely,



Rose Y. Tseng  
Professor and Chancellor Emerita  
University of Hawaii at Hilo



UNIVERSITY  
OF HAWAII  
HILO

TESTIMONY

February 7, 2011

Re: Testimony in support of SB 165 and SB 1496 relating to  
Aerospace Development and Enterprise Zones

Dear Members of the Twenty-Sixth Legislature:

I am grateful for the opportunity to present testimony in strong support of two vital bills being presented before the Twenty-Sixth Legislature. These two measures, SB 165 and SB 1496, offer an extraordinary opportunity for our State to take a proactive and positive step in promoting innovation in science, education and business development through aerospace. The benefits to our students, residents and community at large will truly be extraordinary, and as such I am respectfully asking for your support in approving this most timely legislation.

As the Administrative Director of the University of Hawaii at Hilo's Conference Center, our office has a long-standing involvement with the global scientific community. Over the past twenty years, I have witnessed an incredible growth of interest in Hawai'i as a site for meetings, conferences, professional development and business. In particular, over the past five years the interest in STEM (Science, Technology, Engineering & Math) activities has escalated enormously, as evidenced by the significant increase in requests for both scientific meetings and opportunities for collaborative research.

The overriding message articulated by both academia and the visitor industry is that "Hawaii is an outstanding destination for high-level scientific meetings, research, exploration, discovery and science-related business." Given our strategic East-West location in the Pacific, our diverse, multi-cultural environment, interdisciplinary scientific research community and Moon/Mars-like terrain, Hawai'i presents itself like no other resource in the world! So, the question is... ***How can we capitalize on this phenomenal opportunity and realize the substantial benefits afforded by this momentum?***

*Conference Center*

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200 W. KAWILI STREET  
HILO, HAWAII 96720-4091  
PHONE: (808) 974-7555  
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In my work with the Office of Aerospace Development (OAD) at the Dept. of Business, Economic Development and Tourism over the past few years, it has become very evident that this office has played a *major role* in both facilitating and coordinating aerospace activities statewide, including major international conferences and workshops, multinational space agreements and coalitions, STEM education and public outreach programs, and the development and implementation of space exploration centers.

OAD can become the *piko* of this momentum, but we need to empower this office to execute its initiatives. OAD's extensive networks with state, national and international aerospace institutions and organizations well position the office to leverage Hawaii's strategic advantages in this industry to expand and diversify Hawaii's leadership on the space frontier. But it cannot achieve this mission without adequate funding (and staffing!) support.

One of President Obama's new objectives for the National Aeronautics and Space Administration (NASA) is to **"Stimulate renewed interest in science and space for this next generation."** I believe we can support the President's challenge in Hawaii by providing much needed support for OAD and the multiple programs it works to advance in space science, education and commerce.

Last year our office hosted the "International Underwater Robotics" competition, with participation from Russia, Iran, China, Korea and many of the economies that will be represented at the APEC conference this coming November. We need to continue these scientific conferences and programs, as well as train the next generation of scientists, engineers and entrepreneurs that will implement future scientific missions to the Moon, Mars and beyond. OAD has, and can continue to take the lead in these initiatives, but only if we, as a State, agree to provide adequate and sustained support for its mission.

NASA has demonstrated its confidence in Hawaii's potential in aerospace by contracting with OAD to develop a *multinational model for a sustainable settlement beyond low-Earth orbit* in collaboration with the Pacific International Space Center for Exploration Systems, or PISCES, which is housed at University of Hawaii at Hilo.

As a member of the Steering Committee for the Japan-U.S. Science, Technology & Space Applications Program (JUSTSAP – the international body that worked with OAD to develop the PISCES concept for the State of Hawaii – I have been privileged to watch this bi-lateral collaboration grow and mature into the Pacific International Space Alliance (or "PISA").

*Conference Center*

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Following the APEC conference this November, PISA will convene an international symposium bringing together leading representatives from both the scientific and business communities to inaugurate a collaborative effort to return humankind to space through development of a multinational research park on the Moon. Prototyped through "analog" facilities at PISCES on the Island of Hawaii, this outstanding initiative will provide multiple scientific, educational and commercial development opportunities for residents statewide, as well as secure Hawaii's role as a major leader in global space enterprise. What a remarkable opportunity for the Aloha State – and PISA is the perfect vehicle through which government, industry and university representatives will collaborate to realize this vision!

But to secure and sustain Hawaii's leadership role in the exploration and settlement of space, we must support efforts like PISCES, PISA and the Office of Aerospace Development not only "in principle", but also with the resources they need to "win the race" – which is why I urgently request your support for SB165.

In addition, by establishing the development and operation of space exploration and lunar research related activities as eligible business activities for enterprise zones in Hawaii (through SB 1496), we will be able to encourage private sector investments that will complement those of our State in expanding aerospace-related research and development programs at the University of Hawaii at Hilo and elsewhere across Hawaii.

If we truly wish to realize a brighter future for Hawaii's economy and our keikis, we need to invest in that future by supporting visionary legislation such as SB 165 and SB 1496. By supporting our next generation's efforts in fields such as aerospace, we can help ensure that Hawaii will be a leader, not a follower, in this enterprise.

Thank you for the opportunity to testify on these measures.

Respectfully submitted

*Judith Fox-Goldstein*

Judith Fox-Goldstein, Administrative Director  
University of Hawaii at Hilo Conference Center

*Conference Center*

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200 W. KAWILI STREET  
HILO, HAWAII 96720-4091  
PHONE: (808) 974-7555  
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**Testimony in Support of SB 112, SB 165, SB 1496**

Date: 10 February 2011

Submitted by: Joseph E. Ciotti, PhD  
Director, Center for Aerospace Education  
Hawai'i Teacher-in-Space/NASA Ambassador  
Windward Community College

Dear Members of the Twenty-Sixth Legislature:

I am pleased to provide testimony in strong support of SB 112, SB 165 and SB 1496—all three of which address the strategic and timely growth of aerospace industry in the State of Hawai'i.

I've been intimately involved with space education in Hawai'i for over 40 years and can personally testify to the significant impact that past and recent commitments to this endeavor have had on our youth and the welfare of our State. I've witnessed this through my decades of teaching astronomy and space science at both the secondary and college level, through my extensive K-12 and community outreach efforts at Windward Community College's Center for Aerospace Education which has reached over 300,000 people, through the rocketry projects my Hawai'i Space Grant students continue to undertake, and through over forty years of experience I enjoyed at all three planetariums in Hawai'i—including designing and constructing two of them.

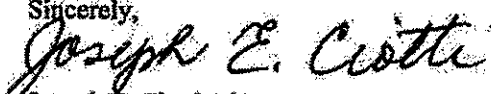
Following in the wake of its rich seafaring heritage, Hawai'i has already undertaken bold spacefaring ventures. From world-class astronomical observatories ... to NASA-sponsored *in situ* rehearsals of manned and robotic space missions ... to its role in international airline transportation and potential future space tourism, Hawai'i is uniquely poised for significant economic growth through the leadership choices it makes regarding the aerospace industry.

Hawai'i is currently perched to assume a prominent role in aerospace research and technology. The decisions made today by the Twenty-Sixth Legislature will determine the flight path our State will follow in a field that has potential for major positive impact on its economy. By committing to the development of a spaceplane launch/landing facilities in Hawai'i (SB 112), operation of space exploration and lunar research related activities as eligible local business (SR 1496), and support for the Office of Aerospace Development to carry out this bold and far-reaching vision (SR 165), Hawai'i will have laid its claim as the crossroads along this major space highway.

By recognizing aerospace as a strategic industry in Hawai'i, passage of these Senate Bills will provide the urgently needed support and boost to DBEDT's Office of Aerospace Development in fulfilling its responsibility to oversee the economic growth of this fast-paced and strategically important industry in Hawai'i.

I strongly support SB 112, SB 165 and SB 1496.

Sincerely,



Joseph E. Ciotti, PhD

Professor, Physics, Astronomy & Mathematics  
Director, Center for Aerospace Education  
Hawai'i Teacher-in-Space/NASA Space Ambassador  
Windward Community College  
45-720 Kea'ahala Road  
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808-236-9111 (w)  
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<http://aerospace.wcc.hawaii.edu>

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# HAWAI‘I ACADEMY OF SCIENCE

## Educational Programs Office

c/o College of Education, UHM • 1776 University Avenue • Honolulu, HI 96822  
Phone: (808) 956-7930 • Fax: (808) 956-5183 • E-mail: acadsci@hawaii.edu  
Website: www.hawaii.edu/acadsci

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February 9, 2011

**Testimony in Support of SB112, SB165, SB1496**  
**Hawai‘i State Legislature – 2011 Session**

Aloha,

On behalf of the Hawai‘i Academy of Science, we are providing testimony in strong support of bills **SB112, SB165 and SB1496**, which offers our state viable avenues for employment, growth and sustainability.

As sponsors and coordinators for the annual State Science and Engineering Fairs since 1957, the Academy has witnessed the potential of thousands of Hawaii’s top students in the science and engineering fields, and has seen many of these students go on to excellent universities and careers. However, many of those high-level technical and research jobs remain on the mainland, leaving our young professionals to make the decision to live and work away from home, or come back to compete for a smaller pool of desired careers.

Hawai‘i needs sources of industry not only for the sake of our future generations, but for the sustainability of our islands as well. The aerospace industry is a tremendous opportunity for our children and a “high-tech” bridge between east and west that also secures Hawai‘i as an integral part of the U.S. economy. Please join with us in our effort to build Hawaii’s future.

Mahalo,



Carolyn Kaichi  
Director  
Hawai‘i State Science and Engineering Fair



Dr. Gareth Wynn-Williams  
Past-President  
Hawai‘i Academy of Science  
University of Hawai‘i Institute for Astronomy



# PACIFIC INTERNATIONAL SPACE ALLIANCE

*"To promote and facilitate multinational space enterprise"*

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*JAMSS America, Inc.*  
*Vice Chairman – United States*

Susumu Yoshitomi  
*Japan Space Forum*  
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*NASA Space Portal*

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Frank Schowengerdt  
*Vice-Chairman Emeritus, JUSTSAP*  
*Director, PISCES*

## SECRETARIAT:

Jim Crisafulli  
*Office of Aerospace Development*  
*State of Hawaii*

## TESTIMONY

Hawaii State Legislature

February 8, 2011

Re: Testimony in support of SB 165 and SB 1496 relating to  
Aerospace Development and Enterprise Zones

Dear Members of the Twenty-Sixth Legislature:

I am writing this testimonial in strong support of two very important and related measures this Session – SB 165 and SB 1496 – which together will help both expand and diversify Hawaii's aerospace industry, as well as promote substantial opportunities for multinational collaboration in the exploration and settlement of space.

Hawaii's unique mid-Pacific location, Moon and Mars-like terrain, substantial resident expertise in a broad range of scientific and engineering disciplines, and both academic and business partnerships with nations throughout Asia and the Pacific, clearly afford multiple assets and capabilities that can be leveraged to advance both robotic and human space missions, and in so doing engage Hawaii as both a major contributor to and beneficiary of global space enterprise.

Over the years, the Japan-US Science, Technology and Space Applications Program (JUSTSAP) has provided an excellent forum for dialogue and exchange on multinational space research and policy. It also has facilitated several collaborative ventures between Japan and the United States, including the development and demonstration of the first trans-Pacific high data rate (155 mbps) seamless satellite-fiber optic communications bridge; microgravity experiments aboard the U.S. Space Shuttle to test the efficiency of manufacturing new products in a zero-G environment; innovative data-base networking to support collaborative disaster management protocols throughout the Asia-Pacific Region; and the establishment of an annual University Space Systems Symposium to provide innovative mentorship opportunities for the next generation of space scientists and entrepreneurs.

JUSTSAP members have convened in Hawaii each November to report on individual team projects and plan for future year activities. The United States Secretariat for JUSTSAP coordinates this annual symposium and is housed within the Office of Aerospace Development (OAD) at the Department of Business, Economic Development & Tourism for the State of Hawaii. The main goal of JUSTSAP has been to network government, private sector and university-based capabilities and resources in both Japan and the United States to facilitate innovative and cost-effective earth orbiting missions and both robotic and manned exploration of the moon and Mars.

From the perspective of the Japan Space Exploration Agency (JAXA), the strategic objectives of lunar exploration include opportunities to promote international collaboration, to support Japan's national growth and development, to facilitate innovation in science and technology, and to educate the next generation of space scientists, engineers and entrepreneurs. JAXA will help realize these goals by developing a technology demonstration, science observation, and robotic exploration program (the SELENE-2 and SELENE.X missions). JAXA will also support the development of human exploration related technologies in preparation for a Japanese astronaut to participate in an international human lunar exploration program, which could support the International Lunar Research Park proposed by the State of Hawaii.

At the 20<sup>th</sup> anniversary symposium of JUSTSAP, held November 14-18, 2010 on the Big Island of Hawaii, a decision was made to broaden this organization from a bilateral to multinational organization to include other space-faring nations from around the world. Consistent with this expansion, the committee decided to change the name of the organization to the Pacific International Space Alliance (PISA). Comprised of leading scientists, engineers, industry professionals and government leaders from space-faring nations around the world, this unique forum will promote multinational dialogue and public-private partnerships, leading toward the establishment of an International Lunar Research Park on the Moon that would be prototyped through analog facilities at the Pacific International Space Center for Exploration Systems (PISCES) at the University of Hawaii at Hilo. This prototype facility would eventually pave the way for a permanent settlement on the lunar surface within the next decade.

In addition to preparing for an eventual habitat on the Moon, the prototype facilities in Hawaii would also allow international research groups to study how space exploration can contribute to the betterment of humankind and life on Earth from both a national and global perspective, including improvements to the environment, education, health care and medical science, communications and information networks, security, disaster alert and recovery, economic growth, and scientific knowledge.

Funding appropriate through SB 165 will allow OAD to support the development of ILRP prototype facilities at PISCES over the coming year, as well as launch the Pacific International Space Alliance (for which it serves as Secretariat) through a multinational symposium on the island of Hawaii this November. It also will enable OAD to represent global space exploration activities at strategic aerospace planning meetings at NASA Headquarters and regional space centers, develop strategic partnerships with major aerospace corporations nationwide, and provide community outreach programs that can inspire Hawaii's youth to pursue both STEM-related educational programs and associated career opportunities.

Establishing the development and operation of space exploration and lunar research related activities as eligible business activities for an Enterprise Zone in Hawaii (through SB 1496) is also critical to encourage aerospace companies to invest in the development and implementation of the ILRP prototype modules at PISCES, as well as to support affiliated research and development programs at the University of Hawaii at Hilo.

Thank you for the opportunity to provide these comments.

Sincerely,

Osamu Odawara  
Chairman of PISA  
Professor, Tokyo Institute of Technology



# PACIFIC INTERNATIONAL SPACE ALLIANCE

*"To promote and facilitate multinational space enterprise"*

## **STEERING COMMITTEE**

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Vice Chairman – Japan

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*The Mars Institute*

Tetsuji Yoshida  
*CSP Japan, Inc.*

Beth McKnight  
*McKnight Communications*

Junichi Yamasaki  
*NHK Engineering Services, Inc.*

## **SENIOR ADVISORS:**

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Stephen Day  
*Chairman Emeritus, JUSTSAP*

Takaji Kuroda  
*Vice-Chairman Emeritus, JUSTSAP*

Frank Schowengerdt  
*Vice-Chairman Emeritus, JUSTSAP*  
Director, PISCES

## **SECRETARIAT:**

Jim Crisafulli  
*Office of Aerospace Development*  
State of Hawaii

February 9, 2011

## **Testimony in Strong Support of SB 165 and SB 1496 Hawaii State Legislature - 2011 Session**

Dear Members of the Twenty-Sixth Legislature:

I am pleased to submit this testimony in strong support of S.B. 165 and S.B. 1496, which together will provide both critical State support as well as help attract significant private sector investment to help expand and diversify Hawaii's aerospace industry.

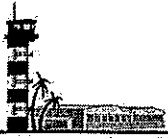
Over the past two decades, our Japan-U.S. Science, Technology & Space Applications Program (JUSTSAP), which has now been expanded into the Pacific International Space Alliance (PISA), has worked closely with the Hawaii State Government to spawn a broad range of innovative projects promoting advanced satellite communications, remote sensing for disaster management, microgravity research, the development of solar-powered alternative energy systems, and other space-related applications benefiting communities within the Asia-Pacific region. The Pacific International Space Center for Exploration Systems (PISCES), the most recent brainchild of PISA, is now being developed in Hawaii as an international center for space-related research and development, aerospace education, professional training, and the formulation of collaborative multinational space exploration missions – including a potentially “game-changing” program to establish an International Lunar Research Park (ILRP) on the Moon, prototyped through analog facilities in Hawaii! All of these programs have engaged the substantial scientific and technological expertise resident statewide to promote collaborative research and educational partnerships with University of Hawaii faculty and students, as well as with local business entrepreneurs.

Looking to the future, innovative programs like PISA, PISCES, and the ILRP will be able to leverage Hawaii's diverse natural resources, abundant scientific and technological expertise, unique geographical terrain, and strategic mid-Pacific location to support the development and implementation of pioneering global space missions, including Earth orbiting systems supporting global communications and space-based observations of our planet, as well as robotic and manned missions to the Moon, Mars, and other solar system bodies. Collectively, these efforts will provide a broad range of scientific, economic, and educational opportunities to help grow Hawaii's research and development infrastructure, expand and diversify private sector initiatives in aerospace-related technology, enhance secondary and college-level training and mentorship programs in advanced mathematics, engineering and science disciplines; and ultimately strengthen Hawaii's role as a globally-recognized leader in space exploration.

S.B. 165 and SB. 1496 will enable Hawaii to help realize this phenomenal potential in aerospace, an as such I strongly recommend their expeditious approval.

Respectfully submitted,

Chairman Emeritus



# PACIFIC AVIATION MUSEUM PEARL HARBOR

FORD ISLAND, HAWAII

March 14, 2011

Rep. Angus L.K. McKelvey  
Rep. Isaac W. Choy  
ERB Committee  
Hawaii State Capitol  
415 South Beretania Street  
Honolulu, HI 96813

Subject: Senate Bills 165 and 1496

Dear Representative McKelvey, Representative Choy, and Members of the Committee:

I am pleased to provide testimony in strong support of SB 165 and SB 1496 to appropriate funds for State Office of Aerospace Development and establish aerospace R&D as eligible business activities for Enterprise Zones in Hawaii.

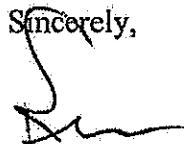
The mission of the Pacific Aviation Museum Pearl Harbor is to develop and maintain an internationally recognized aviation museum on historic Ford Island that educates young and old alike, honor aviators and their support personnel who defended freedom in the Pacific Region, and preserves Pacific aviation history. Supporting the continued funding of the states department of aerospace development outlined in this bill is certainly within our mission and vision.

The Pacific Aviation Museum supports the Hawaii Aerospace Program. This is important as it educates those future leaders if the aerospace industry. Creating jobs and a work force in the state is essential for its success. Providing the state's office for coordination is equally important. The funding in this bill is crucial.

The Pacific Aviation Museum Pearl Harbor commits to providing hands-on education for students interested in aerospace, in joint programs with the state providing yet another piece of the overall program. Our unique perspective on aviation and space research gives students a front row seat to space exploration and Hawaii's role with it. Working with the state aerospace development office will lead to success.

I recommend SB 165 and SB 1496 be passed.

Sincerely,



Kenneth H. DeHoff, Jr.  
Executive Director





**Elliot Holokauahi Pulham, Chair**

March 13, 2011

Representative Angus McKelvey, Chair  
Committee on Economic Revitalization and Business  
Hawai'i State Legislature

Representative Isaac Choy, Vice Chair  
Committee on Economic Revitalization and Business  
Hawai'i State Legislature

**SUBJECT: Senate Bill No. 165 and Senate Bill No. 1496**

Dear Representative McKelvey and Representative Choy:

On behalf of the Hawai'i State Aerospace Advisory Committee, I am writing to encourage your strongest possible support for S.B. No. 165 and S.B. 1496, which collectively would significantly advance the growth and diversification of the aerospace industry in Hawai'i.

As you know, the creation of the Hawai'i Aerospace Advisory Committee was authorized by the Legislature (Act 52, 2009 Session) and approved by the Governor on May 6, 2009. Our purpose, per this Act, is to advise and assist the Legislature and State agencies in monitoring, assessing and promoting aerospace development statewide. The Committee is comprised of leading aerospace industry executives, distinguished academicians from across the state, and economic development executives from Oahu, Kauai, Maui and Hawai'i – all united with a common purpose to help the State diversify its economy and promote innovative education and employment opportunities for the people of Hawai'i.

The Hawai'i Aerospace Advisory Committee met in Honolulu on January 11, 2011 to explore these opportunities and ways to realize them. During this meeting, we discussed the merits of the proposals set forth in both S.B. 165 and S.B. 1496, and agreed that they provide a logical, sustainable and wise investment of State support toward realizing Hawaii's full potential in aerospace.

Established through Act 149, Session Laws of 2007, the Office of Aerospace Development (OAD) at DBEDT was charged with the mandate to identify and promote opportunities for expanding and diversifying aerospace-related activities statewide. In order to carry out this significant responsibility, OAD needs funding to operate – especially to network with leading aerospace institutions and organizations nationwide to develop both public-private partnerships and multinational alliances that can stimulate collaborative research programs and private sector investments for Hawaii. In addition, OAD needs the ability to promote and advance key aerospace initiatives in Hawai'i with substantial scientific, educational and commercial potential for local residents, and the programs targeted for State support through SB 165 are precisely in this category.

For example, the Pacific International Space Center for Exploration Systems (PISCES), a multinational space research and education center headquartered at the University of Hawaii at Hilo (which OAD helped establish), has already brought over \$2 million in research funding and private investments to Hawaii, established undergraduate space science curricula at the University, conducted public outreach programs on aerospace at local schools and community centers, and sponsored national aerospace design competitions enabling undergraduate students to apply their skills in STEM-related disciplines to develop prototype models for future human habitats in space.

In collaboration with PISCES, OAD is now under contract with NASA to develop a model for an International Lunar Research Park (ILRP) on the Moon that would be prototyped through analog facilities on the Big Island. This represents an enormous opportunity for Hawai'i to play a major leadership role in humankind's future exploration of space, with substantial opportunities for new federal research grants, private sector investment, and innovate space education and training programs throughout the islands.

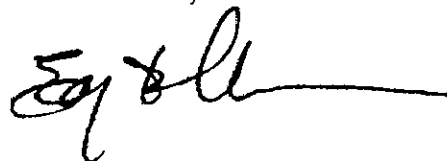
The Pacific International Space Alliance (PISA), another program coordinated through OAD, is a multinational coalition providing unique opportunities for local scientists, entrepreneurs and educators to form collaborative research and training partnerships with counterparts at leading institutions and universities throughout Asia and the Pacific. The annual PISA conference in Hawaii is expected to generate approximately \$200,000 in tourist-related revenues for the State, and this year's symposium (timed in tandem with the upcoming APEC Summit in November) will launch the ILRP initiative under Hawaii's Space Act Agreement with NASA – another aerospace milestone for the State!

Our State also has a unique opportunity to contribute toward understanding (and reducing!) the risks of long-term human space exploration by simulating space missions in analog environments. NASA's Human Research Program has identified Hawaii as an optimal site to conduct such research, and is offering to cost-share the transport and installation of its Habitat Demonstration Unit for an interdisciplinary research program in Hawaii that will provide substantial educational and training benefits to both university researchers and students. Funds requested through SB 165 will also be used as matching support for a \$750,000 NASA EPSCoR award to expand the scope of this research over the next three years.

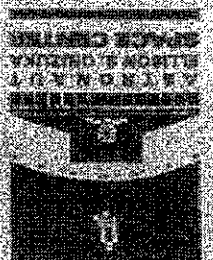
Complementing all of this is SB 1496, which extends eligibility for enterprise zone benefits to the development and operation of space exploration and lunar research activities. This designation will provide a critical, and I believe highly effective, catalyst to attract substantial and sustainable private sector investment to Hawai'i that will help establish the Aloha State as both a major contributor to and beneficiary of global space enterprise.

As such, and on behalf of the Hawai'i Aerospace Advisory Committee, I strongly encourage your support for both S.B. 165 and S.B. 1496.

Me ka ha'aha'a,



Elliot Holokauahi Pulham



ONIZUKA MEMORIAL COMMITTEE  
DEDICATED TO THE MEMORY OF ORION B. ONIZUKA



To: Hawaii Legislators

From: Nancy C. Tashima

RE: Support of SB112, SB185 & SB1498

Date: February 8, 2011

Dear Members of the Twenty-Sixth Legislature

I am pleased to provide testimony in very strong support of SB112, SB185, and SB1498 advocating support of aerospace related funding.

Considering the current financial situation of Hawaii, it is imperative and prudent that our State seek innovative and innovative methods of improving our economy for all of its citizens. We can no longer depend on the traditional tourist or agriculture industries to provide enough jobs to sustain our economy. As a science teacher for the past forty-one years in Hawaii, I envision our students being educated and trained to support aerospace related professions along with the improvement of their Science, Technology, Engineering, and Mathematics skills. Hawaii's youth need the desire to remain in our State and the possibilities afforded by the aerospace industry will allow them to have the vision and inspiration to succeed in professional careers here in Hawaii.

SB112 will expand our traditional tourism based industry by providing funds for a spacecraft license application. This Federal Aviation Administration license will afford the possibility of many new jobs and professions for Hawaii's citizenry. An international commercial spacecraft will allow the stabilization and expansion of our economic base.

SB185 will fund several aerospace related possibilities and as a science teacher, I especially support the public education and community outreach aspects of the bill. Additionally, I strongly support the funding for the Office of Aerospace Development and the NASA related programs. These programs will undoubtedly benefit our students and the general public by providing the education, skills, and support to allow them to remain in Hawaii rather than moving to other locations to secure good jobs.

I also support SB1498 since it makes possible the creation of businesses related to lunar and space research which would not only broaden our economic base, but motivate our Hawaii residents to succeed in their desires to become business entrepreneurs within their own communities. With opportunities afforded by SB1498, many new space related businesses will be created to sustain Hawaii in the future.

I strongly urge you to support SB112, SB185, and SB1498 since they expand the aerospace related industries and therefore, create jobs and careers for Hawaii's population.

Respectfully submitted,

Nancy C. Tashima  
Orizuka Space Center, Curator  
Hawaii Resource Science Teacher  
NASA Solar System Educator  
NASA Messenger Educator Fellow  
NASA New Horizons Educator Fellow

PO BOX 833, KAILUA-KONA, HI 96745 PHONE: (808) 325-3441 FACSIMILE: (808) 328-8761  
GEORGE APPELGATE, RICHARD M. ASSBACH, DENORAH L. BAKER, MICHORI FUJIMOTO, RAYMOND A. KIMOTO,  
MORRIS Y. KIMURA, CLAUDE S. ONIZUKA, DIANE OUITTOUT, NORMAN M. SAKATA, LARRY TANIMOTO,  
GLENN G. UCHIMURA, FRED YAMASHIRO, JOHN DE FRIES, ALBERT SHIOZUKA, DALE SUEZAKI, LYNN SATO



Lockheed Martin Commercial Launch Services  
12257 South Wadsworth Blvd., MS 1003  
Littleton, CO 80125, U.S.A.  
Telephone: 800.328.1665

In reply, please refer to: CLSB0-1102-0007

February 9, 2011

Members of the Twenty-Sixth State Hawai'i State Legislature

Subject: Senate Bills No. 112, 165 and 1496

Dear Representatives:

President Obama, in the State of the Union address on January 25, challenged America to win the future by creating an environment, through innovation, education, and infrastructure, that will "make America the best place on Earth to do business." By this measure, Hawai'i has been winning its future.

Hawai'i has employed its greatest assets and resources in productive, profitable and sustainable industry to make it the best place on Earth for astronomical research, as well as tourism. With its stunning beauty and idyllic location, Hawai'i is the very definition of "vacation destination." The world's astronomers have established unparalleled observatories on its 14000-foot peaks, standing tall into clean, unobstructed air. The same high, dry peaks offer unmatched opportunity to recreate conditions on other planets we will soon visit, and test our methods and machines where the consequences of failure are not so dire.

Hawai'i cannot rest on these successes if it is to continue to win its future. As the world changes, so must Hawai'i change to address and accommodate new challenges and opportunities.

A new concept in tourism – space tourism – is yet in its infancy, but is gaining momentum. Virgin Galactic, Space Exploration Technologies, Orbital Sciences Corporation, Blue Origin, Bigelow Aerospace, and Sierra Nevada Corporation are among the companies developing systems with the goal to offer tourists, as well as scientists and businesses, a means into space. These are the very companies that the President's Administration holds up as examples of the innovative spirit required to win the future. Hawai'i has the opportunity to establish itself as a founding member of this new industry, by helping to develop the infrastructure, spaceports with unique services and capabilities, on which this new industry will be built. Hawai'i can capitalize on its investments and experience in exploration research to encourage the development of new and expanded research and commercialization opportunities, and foster international cooperation for space initiatives, such as the Pacific International Space Center for Exploration Systems (PISCES) and the International Lunar Research Park (ILRP).

As a member of the Hawai'i State Aerospace Advisory Committee, I am writing to encourage your strongest possible support for Senate Bill 112, which would appropriate funding for the Office of Aerospace Development, DBEDT, to pursue a commercial spaceport license from the Federal Aviation Administration (FAA) for the State of Hawai'i; for Senate Bill 165, which would promote the continuing development of the aerospace industry in Hawaii by providing the office of aerospace development with sufficient funding and staff support to effectively carry out its statutory duties; and Senate Bill 1496, which would establish "development and operation of space exploration and lunar research related activities" as "eligible business activities" for enterprise zones in Hawai'i

The President, quoting Robert Kennedy, reminded us that "the future is not a gift. It is an achievement."

Respectfully yours,

A handwritten signature in black ink, appearing to read "Steven J. Skladanek".

Steven J. Skladanek  
Director of Marketing, Lockheed Martin Commercial Launch Services  
Member, Hawai'i Aerospace Advisory Committee

George R. Ariyoshi  
999 Bishop Street, 23<sup>rd</sup> Floor  
Honolulu, HI 96813

**TESTIMONY**

February 4, 2011

Re: Testimony in support of SB 165 and SB 1496 relating to  
Aerospace Development and Enterprise Zones

Dear Members of the Twenty-Sixth Legislature:

I am writing this testimonial in strong support of two very important and related measures this Session – SB 165 and SB 1496 – which together will provide *unprecedented* opportunities for our State to lead pioneering efforts in the exploration and utilization of space, as well as to benefit from the substantial scientific, educational and commercial opportunities these programs will bring to Hawaii residents.

As I know many of you appreciate, and as noted in these measures, aerospace is a strategic and timely growth industry for Hawaii. Our unique mid-Pacific location, Moon and Mars-like terrain, substantial resident expertise in a broad range of scientific and engineering disciplines, and both academic and business partnerships with nations throughout Asia and the Pacific, clearly afford multiple assets and capabilities that can be leveraged to realize humankind's full potential in space, and in so doing engage our State as both a major contributor to and beneficiary of global space enterprise.

Since its inception in 2007, the Office of Aerospace Development (OAD) at the Dept. of Business, Economic Development and Tourism has played a major role in both facilitating and coordinating aerospace activities statewide, including major international conferences and workshops, multinational space agreements and coalitions, STEM education and public outreach programs, and the development and implementation of space exploration centers. In doing so, OAD has established extensive networks with state, national and international aerospace institutions and organizations, and is now well positioned to leverage Hawaii's strategic advantages in this industry to expand and diversify Hawaii's leadership on the space frontier.

For example, the National Aeronautics and Space Administration (NASA) is currently crafting a new roadmap for space exploration – one that embraces interdisciplinary research and development, forged through public-private partnerships and multinational alliances, that can lead us back to the Moon, to asteroids, to Mars and beyond. To succeed in this effort, considerable resources will need to be devoted to the design, testing and evaluation of new technologies to support both robotic and human missions to space; to training the next generation of scientists, engineers and entrepreneurs that will implement these missions; and to empowering the public to participate in these adventures.

Recognizing Hawaii's exceptional ability to help achieve all of these goals, NASA has contracted with OAD to develop a *multinational model* for a *sustainable settlement beyond low-Earth orbit* – a permanent human presence in space that is a core objective of both President Obama's National Space Policy and the 2010 Congressional NASA Authorization Act. The model is being designed in collaboration with the Pacific International Space Center for Exploration Systems, or PISCES (which OAD helped establish at the University of Hawaii at Hilo), and is focusing on development of an International Lunar Research Park (ILRP) on the Moon that would be that would be operated by a consortium of space-faring nations from around the world.

The ILRP will be implemented in three phases, beginning with development of a prototype lunar base at PISCES to test and evaluate innovative robotic, communications, and other technologies required to establish and sustain a long-term settlement on the Moon, as well as to train the scientists, engineers, and other professionals that would develop and utilize the proposed lunar outpost.

The second phase will involve implementing a "robotic village" on the lunar surface - building upon unmanned missions currently under development at NASA and other space agencies, as well as commercial efforts championed by Google Lunar X-Prize contestants and other entrepreneurial ventures. Robots in the village would be teleoperated from Earth, and provide a unique capability for scientists, educators and students in Hawaii to explore the lunar surface and conduct groundbreaking experiments.

The final phase would include the full build-out of sustainable robotic and human modules on the lunar surface, including a platform for atmosphere-free observations of our Earth, Sun and other planets within our solar system; comets and asteroids that potentially could strike Earth; and galaxies at the very edge of the universe. These modules would also facilitate mining of the lunar regolith to spur space commerce, an outpost for media to enhance public awareness of the benefits of space exploration, a profitable destination for space tourism, a staging ground for both robotic and human missions to asteroids, Mars, and other "deep space" bodies, and a testbed for advanced technologies that eventually would enable pioneering voyages beyond our solar system.

I serve as the United States Advisor to the Japan-U.S. Science, Technology & Space Applications Program (JUSTSAP), which is the international body that worked with OAD to develop the PISCES concept for the State of Hawaii. To facilitate the development and implementation of the ILRP, we are now expanding JUSTSAP into a Pacific International Space Alliance (or "PISA") that will provide a unique forum, headquartered in Hawaii, through which government, industry and university representatives from nations worldwide will collaborate to fund and construct the prototype ILRP facilities and programs in Hawaii.

I receive no compensation for this effort. I have been involved in excess of 15 years, because I truly feel that aerospace can be an important part of Hawaii's future and that we must not lose this opportunity.

I firmly believe the ILRP and PISA represent exceptional and timely opportunities for our State that will advance space science, education and commercial development in the islands, as well as extend and sustain Hawaii's leadership role in the exploration and settlement of space. But to realize these substantial benefits, we must proactively resolve to nurture our State's full potential in aerospace.

Funding appropriate through SB 165 will allow OAD to support the development of ILRP prototype facilities at PISCES over the coming year, as well as launch the Pacific International Space Alliance (for which it serves as Secretariat) through a multinational symposium on the island of Hawaii this November. It also will enable OAD to represent our State at strategic aerospace planning meetings at NASA Headquarters and regional space centers, develop strategic partnerships with major aerospace corporations nationwide, and provide community outreach programs that can inspire Hawaii's youth to pursue both STEM-related educational programs and associated career opportunities.

Establishing the development and operation of space exploration and lunar research related activities as eligible business activities for an Enterprise Zone in Hawaii (through SB 1496) is also critical to encourage aerospace companies to invest in the development and implementation of the ILRP prototype modules at PISCES, as well as to support affiliated research and development programs at the University of Hawaii at Hilo.

At a time when declining commercial activity and soaring budget deficits are creating significant financial challenges for residents statewide, we need to pursue innovative and sustainable measures that can rejuvenate our economy. *I believe the key to reversing our current economic downturn is to invest in Hawaii's future* – providing measured and sustained support for strategic growth industries that have strong potential for job creation, revenue generation, and expanding our technologically-skilled workforce.

I believe aerospace is precisely this type of industry for Hawaii, and as such would urge you to pass this timely legislation.

Thank you for the opportunity to provide these comments.

Sincerely,

  
George R. Ariyoshi

GRA:khy





February 9, 2011

Jim Chisaffi  
Office of Aerospace Development  
Dept. of Business, Economic Development & Tourism  
State of Hawaii  
Honolulu, Hawaii 96813

Dear Jim:

For our recent discussions concerning aerospace initiatives in Hawaii, I commend your State for its visionary efforts to help grow and diversify both your local aerospace industry and our national space program. Hawaii has many diverse resources, capabilities and advantages that can positively contribute to our national space endeavors.

For example, your strategic mid-Pacific location and long-standing ties with nations across Asia and the Pacific make the islands an ideal site to support collaborative international scientific, educational, and commercial development programs related to space exploration. In particular, the Big Island's diverse volcanic terrain is most suitable for developing an analog lunar base to test and evaluate new technologies to support future robotic/human missions to moon and Mars.

Hawaii also has resident expertise in space-related fields, with over forty NASA principal investigators at the University of Hawaii performing ongoing research in astronomy, planetary geosciences, robotics, satellite communications, laser-based power systems, and other technologies critical for supporting future space exploration missions around and beyond planet Earth.

The NASA Space Portal fully recognizes these strategic advantages, and looks forward to our continued partnership with the State of Hawaii in advancing our nation's space exploration efforts, especially through a new annex to our Space Act Agreement that will focus on developing an analog test site on the Island of Hawaii to support development of a multinational research park on the Moon - a program that will not only extend humankind's exploration of our solar system, but also help bring the manifold scientific, educational, economic and humanitarian benefits of space back to Earth.

With best wishes,

Dr. Daniel J. Rasky

Director, Space Portal

Senior Staff Scientist

NASA Ames Research Center, M/S 555-3,

Moffett Field, CA 94035

Phone/fax: (650) 604-1098/4666





# The Aerospace States Association

107 S. West Street, Suite 510, Alexandria, VA 22314  
Tel: 202 257-4872 E:mail: AerospaceStates@comcast.net

Alabama  
Alaska  
Arizona  
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Illinois  
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Ohio  
Oklahoma  
Oregon  
Pennsylvania  
Puerto Rico  
Rhode Island  
South Carolina  
South Dakota  
Tennessee  
Texas  
Utah  
Vermont  
Virginia  
Washington  
West Virginia  
Wisconsin  
Wyoming

February 7, 2011  
Testimony for SB 112, SB 165 and SB 1496  
2011 Session - Hawaii State Legislature

Dear Members of the Twenty-Sixth State Legislature:

We are most pleased to provide testimony in strong support of SB 112, SB 165, and SB 1496 – all of which recognize aerospace as a strategic and timely growth industry for Hawaii, and collectively provide the critically needed support to help realize your State's full potential in this dynamic technology sector.

As you may know, the Aerospace States Association is a nonpartisan organization, led by Lt. Governors and other top-ranking state leaders, that advocates on behalf of all fifty states for R&D funding, workforce training, economic development in aerospace and aviation, and excellence in math and science education to help keep states competitive in the global aerospace marketplace. We view the aerospace industry as an engine that defends our nation, drives our economy, and provides Americans with inspiring and highly paid jobs. Our homeland security, economic vitality, and national mobility clearly rely upon and benefit from a strong and diversified aerospace sector.

The State of Hawaii has been an active member of ASA since its inception, and over the years has substantially contributed to both the growth of our organization and our national debate on aerospace. Your State also has several unique characteristics - in particular, its mid-Pacific location, Moon-Mars like terrain, and strategic international ties with the Asia-Pacific community – which make it an ideal location to support a wide range of aerospace-related activities, including pioneering research in astronomy, planetary geosciences and deep space surveillance; the development, testing and evaluation of innovative technologies to advance both robotic and human space missions; growth as a strategic international node supporting advanced aviation training and the rapidly emerging commercial space transportation sector; and innovation in STEM education to inspire the next generation of aerospace entrepreneurs. The Hawaiian team won the first national Real World Design Challenge sponsored by ASA. Your new Space Act Agreement with NASA also well positions Hawaii to be both a major contributor to and beneficiary of our national space program.

ASA is committed to supporting state-based initiatives that can strengthen our nation's leadership in aerospace, and believe the recommendations set forth in these resolutions will both advance this objective as well as strengthen Hawaii's role as a major contributor to and beneficiary of the global space enterprise. We look forward to working with all of you in realizing this vision.

Thank you for the opportunity to testify on these measures.

Respectfully,

Brian Dubie  
Chair, Aerospace States Association

Testimony Presented Before the  
House Committee on Economic Revitalization and Business

Tuesday, March 22, 2011  
8:00 a.m.

By

Donald O. Straney, PhD  
Chancellor, University of Hawai'i at Hilo

**SB165 AND SB1496 RELATING TO AEROSPACE DEVELOPMENT AND ENTERPRISE ZONES**

Chair McKelvey, Vice Chair Choy, and Members of the Committee:

I would like to lend my support to both SB 165 and SB 1496, which will promote the continuing development of the aerospace industry in Hawai'i by providing funding for the Office of Aerospace Development (OAD) and several of the key initiatives it supports, as well as by encouraging the private sector to invest in our university-based research and development programs.

The initiatives supported by SB 165 have important potential for diversifying the economic drivers of the State of Hawai'i and enabling the further development of an "innovation economy." An important character of this initiative is the inherent suitability of Hawai'i, and its location, making the program resistant to being transplanted once developed. UH Hilo is vitally interested in a strong OAD, so that it may enable important educational and research programs that will help to revitalize the Hawai'i Island economy.

For instance, OAD support of the Pacific International Space Center for Exploration Systems (PISCES) will enable development of an International Lunar Research Park (ILRP) on the island of Hawai'i, including a simulated lunar outpost, where research will be conducted, new technologies developed, students educated, and astronauts trained. For our local students, this will mean the development of educational opportunities not available anywhere else. Such developments have the potential to make the UH Hilo Astronomy program unique in the world and unparalleled in experiential education. The unique character of this initiative will promote not only education and research in aerospace travel, but also extra-terrestrial habitats. It is a project with great promise for the university, the state, the nation, and all of humankind.

In addition, establishing the development and operation of space exploration and lunar research related activities as eligible business activities for an Enterprise Zone in Hawai'i (as enabled through SB 1496) will be critical to encourage private industry to invest in the development and implementation of the ILRP prototype modules at PISCES, as well as to support affiliated research and development programs at the University of Hawai'i at Hilo.

Development of an aerospace support industry in Hawai'i offers important educational, research, and economic benefits. The relatively modest investment proposed has great potential for development of high paid workforce development, unique educational and research collaboration opportunities, the promotion of our state as a progressive and future-oriented venue for high technology enterprises, and diversification of our state's economy.

On behalf of the University of Hawai'i at Hilo, thank you for the opportunity to testify in support of SB 165 and SB 1496.

Testimony Presented Before the

House Committee on Economic Revitalization & Business

Tuesday, March 22, 2011

8:00 a.m.

By

Cam Muir, PhD

Associate Dean, College of Arts & Sciences, University of Hawai`i at Hilo

### **SB165 RELATING TO AEROSPACE DEVELOPMENT**

Chair McKelvey, Vice Chair Choy, and Members of the Committee:

The University of Hawai`i at Hilo supports the intent of SB 165 to promote the continuing development of the aerospace industry in Hawai`i by providing funding for office of aerospace development (OAD) and several of the key initiatives it supports.

On behalf of the University of Hawai`i at Hilo, thank you for the opportunity to testify in support of SB 165. The initiatives supported by SB 165 have important potential for diversifying the economic drivers of the State of Hawai`i and enabling the further development of an "Innovation Economy". An important character of this initiative is the inherent suitability of Hawai`i, and its location, making the program resistant to being transplanted once developed. Funding to OAD, formed by Act 149 of Session Laws of 2007, will enable important educational, and research programs that will help to revitalize the Hawai`i Island economy. Support of the Pacific International Space Center for Exploration Systems (PISCES), the Pacific International Space Alliance (PISA), and NASA's Habitat Demonstration Module, will enable development of important national and international public-private partnerships, improved national and international research collaboration potential, and the development of educational opportunities for our local students not available anywhere else. Such developments have the potential to make the UHH Astronomy program unique in the world and unparalleled in experiential education. The unique character of this initiative will promote not only education and research in aerospace travel, but also extra-terrestrial habitats. Research in sustainable extra-terrestrial habitats will leverage our resident expertise in sustainable agricultural systems, conservation biology and environmental science.

Development of an Aerospace support industry in Hawai`i is a timely initiative that offers great educational, research, and economic benefits. The relatively modest investment proposed has great potential for development of high paid workforce development, unique educational and research collaboration opportunities, and diversification of our State's economic drivers.

Mahalo for the opportunity to testify on this bill.



Pacific International  
Space Center for  
Exploration Systems

## TESTIMONY

**Date:** February 9, 2011

**To:** Members of the Twenty-Sixth Hawaii State Legislature

**From:** Dr. Frank Schowengerdt

**Subj:** Testimony in Support of SB112, SB165 and SB1496

I write in strong support of the aerospace-related bills SB112, SB165 and SB1496. These bills deal with a commercial spaceport license for Hawaii from the FAA; funding for the Office of Aerospace Development (OAD), the Pacific International Space Center for Exploration Systems (PISCES) and the Pacific International Space Alliance (PISA); and inclusion of space exploration and lunar research activities as eligible business activities for enterprise zones in Hawaii.

A measure similar to SB112 was passed in the 2009 legislature, but Hawaii's former Administration did not release funding appropriated through this bill. While commercial space transportation represents a long-range economic development opportunity, it is important that the licensing process begin now so that your state will be ready to launch (literally!) when the technology for sub-orbital point-to-point transportation matures. Other states are much further along in this process than Hawaii, even though your State has many demonstrable advantages over the others. In addition, private investors critical to developing the commercial space transportation network will send their dollars to states that have demonstrated both an interest in and commitment to grow this industry. The best way Hawaii can evidence this interest and commitment is by funding the environmental studies required to obtain a commercial spaceport license from the Federal Aviation Administration. SB 112 will provide the critical funds needed for this purpose.

For the past four years, your State Office of Aerospace Development (OAD), created through State statute, has been working to promote Hawaii's future in aerospace. Hawaii clearly has significant advantages in terms of location, geographical resources and international connectivity that well position aerospace as a strategic growth industry for your State. This is one of the most progressive and forward-looking industries in the world, and Hawaii can play a leadership role, both for our nation and the global space community, in pioneering new vistas for aviation, aeronautics, and space exploration. But to succeed in this endeavor, OAD needs adequate funding and staff support, and SB 165 would provide what I feel is the minimum amount of support this office requires to responsibly carry out its mandate - especially when other states, with significantly fewer advantages than Hawaii, are moving aggressively to expand their aerospace programs as drivers for economic development.

PISCES is one of the unqualified success stories of OAD's efforts to make a mark in space exploration. Through its testing, research, education and public outreach activities, PISCES has put Hawaii on the map in a way that no other activity has in this area. Tests at our site on the lower slopes of Mauna Kea have brought hundreds of scientists, engineers, technicians, government officials, public figures and members of the news media to the Big Island in recent years, and have injected millions of dollars into Hawaii's economy. The tests at PISCES also have demonstrated many new technologies that can help sustain life on the Moon and beyond, but again, which will also benefit the local economy.

For example, during the 2010 tests powerful solar concentrators were used to process the lunar-like soil at the PISCES test site in the same way that they will be used on the Moon to extract oxygen and water for life support. This and similar technology can help make Hawaii more energy-independent through widespread application of solar power in residential and commercial buildings. In addition, technologies tested at PISCES involving communication, robotics, and materials processing can help provide sustainable, high-paying jobs in non-polluting industries that are crucial to economic development in the State. We are also currently planning a robotics challenge involving students and a ground-penetrating radar study at our test site, in addition to a proposed life-support habitat for a human-factors study of interest to NASA.

Support of PISCES through SB165 will also enable us to move forward on developing the International Lunar Research Park (ILRP) initiative on the University of Hawaii at Hilo campus. The prototype ILRP to be developed on the Big Island (simulating one to eventually be deployed on the lunar surface) will provide the space, infrastructure and field areas needed to develop and test technologies for sustaining life on the Moon and beyond, while spinning off technologies to benefit the local economy.

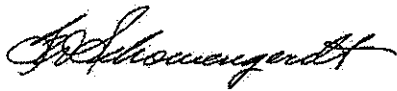
The ILRP will be built in or adjacent to the existing Science and Technology Park at the university, where the base facilities for many of the Mauna Kea telescopes are located, and would be part of the enterprise zone as requested in SB1496. With this designation, companies could lease space in the park to conduct research with government and university personnel, developing and validating technologies that will figure prominently in their business plans for space commerce. The ILRP has received enthusiastic response both inside and outside of NASA, and will be the subject of a workshop at NASA Ames Research Center on April 5<sup>th</sup> of this year involving such space luminaries as Buzz Aldrin and high-ranking officials from space companies and international space agencies.

In summary, I believe the State of Hawaii could find no better area for economic development to complement its existing traditional sectors than aerospace. This industry produces jobs that pay roughly twice the U.S. national average, that are clean and attractive, and that cannot be outsourced to other countries. In fact, the space exploration activities in which we are currently engaged and that are supported through this legislation can attract people and businesses from all over the world.

We have already demonstrated this at PISCES by bringing in sustained business from the Canadian and German space agencies, in addition to research support from NASA. Rather than competing with current economic drivers in Hawaii such as tourism and agriculture, aerospace activities will attract more tourists to the Big Island to see what it will be like to live and work on the Moon, and will contribute new technologies to the agriculture sector as spin-offs from the sustainability research to be conducted at the ILRP.

I therefore urge your State Legislature to support these bills for the good of the state, the nation and the world.

Sincerely,



Frank Schowengerdt  
Director



MARS INSTITUTE

10 Feb 2011

Attn: 26<sup>th</sup> Legislature of the State of Hawaii

**RE: Mars Institute Testimony to the State of Hawaii Legislature in Support of Senate Bills 112, 165 and 1496.**

Dear Members of the Twenty-Sixth Legislature,

I am happy to provide testimony in strong support of Hawaii State Senate Bills 112, 165, and 1496, scheduled for consideration today.

I am chairman of the Mars Institute, a 501 c3 non-profit research organization whose mission is the advance the scientific study, exploration, and public understanding of the planet Mars. The Mars Institute is a world leader in space research, with focus on not just Mars itself, but also on the stepping stones that will allow humans to explore Mars: the Moon, near-Earth asteroids, and Mars's moons, Phobos and Deimos.

The Mars Institute has collaborations and partnerships with academia and industry across the nation and internationally, including with emerging space-faring nations of the Pacific Belt, particularly Australia and Japan. The Mars Institute is internationally recognized for its expertise in planetary analog research (research at sites on Earth that resemble the Moon or Mars and allow simulations of their exploration), and is the organization operating the *Haughton-Mars Project Research Station*, the world's largest privately operated polar research station (on Devon Island, in the Arctic). The Mars Institute collaborates with PISCES in Hawaii to advance Moon and Mars exploration, and views Hawaii potential in helping advance space exploration as critical and of strategic importance, for scientific, economic, and national security reasons.

We are 100% behind Senate Bills 112, 165, and 1496.

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February 8, 2011

Dear Members of the Twenty-Sixth Legislature:

On behalf of the 40 Real World Design Challenge partner organizations in government, industry and academia, I am pleased to provide testimony in strong support of SB112, SB165 and SB1496, which collectively advocate aerospace as a strategic and timely growth industry for Hawai'i.

The aerospace industry is a vital part of the economy of the United States and the State of Hawaii. It is critical for both national security and global economic competitiveness. Space tourism can provide an additional dimension to Hawaii's economy and enhance the existing tourist industry with billions of dollars in revenue. Lunar research and development also has the potential to stimulate the state's economy through industry contracts and tourism (a lunar research center is likely to become an exciting tourist destination!). For the past half century, Hawaii has been a leader in aerospace, and should consider this sector as a key part of the state's strategic economic development portfolio as you reach for the future.

We are delighted that Hawaii has been a partner in the Real World Design Challenge since its inception – with exceptional results (Iolani School on Oahu won the 2008/2009 National Championship and placed second in the 2009/2010 national competition!). The Real World Design Challenge in "green aviation", along with other educational initiatives, is enabling Hawaii to build the education and workforce pipeline needed to support the aerospace industry and other Science Technology, Engineering and Mathematics (STEM) disciplines. Much of the innovation in our society emanates from aerospace research and development and related spinoff technologies. These technologies are spawning new industries, which students in Hawaii (as "innovators of tomorrow") can help develop to grow the "innovation economy" of the 21st Century.

Innovation is a key driver of the economy. SB112, SB165 and SB1496 collectively afford substantial opportunities to help catalyze and sustain innovation in Hawaii. As such, I hope all of these measures will receive strong bi-partisan support during the 2011 Session.

Thank you for the opportunity to testify on this legislation.

Sincerely,

Dr. Ralph K. Coppola  
Director, Real World Design Challenge &  
Senior Director of Global Government & Strategic Education Programs at PTC