

SB 1496

RELATING TO ENTERPRISE ZONES.

Adds businesses engaged in the research or development of space exploration related activities to the definition of "eligible business activity" activity under the state enterprise zone law.

George R. Ariyoshi
999 Bishop Street, 23rd 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.

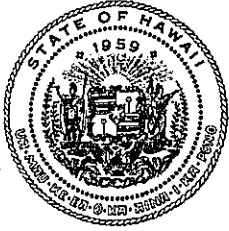
I believe aerospace is precisely this type of industry for Hawaii, and as such would urge you to pass this timely legislation.

Thank you for the opportunity to provide these comments.

Sincerely,


George R. Ariyoshi

GRA:khy



NEIL ABERCROMBIE
GOVERNOR

RICHARD C. LIM
INTERIM DIRECTOR

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

No. 1 Capitol District Building, 250 South Hotel Street, 5th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804
Web site: www.hawaii.gov/dbedt

Telephone: (808) 586-2355
Fax: (808) 586-2377

Statement of
RICHARD C. LIM
Interim Director

Department of Business, Economic Development & Tourism
before the

**SENATE COMMITTEE ON PUBLIC SAFETY, GOVERNMENT OPERATIONS AND
MILITARY AFFAIRS
AND
ECONOMIC DEVELOPMENT & TECHNOLOGY**

Thursday, February 10, 2011

2:50 p.m.

State Capitol, Conference Room 224

in consideration of

SB 1496

RELATING TO ENTERPRISE ZONES.

Chairs Espero and Fukunaga, Vice Chairs Kidani and Wakai, and members of the Committees. The department supports the intent of SB 1496 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 and HB 1363 in the current session, as well as in HCR 123 from the 2010 Session, aerospace is a strategic and timely growth industry for our state. 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 strategic assets and capabilities that can be

leveraged to realize humankind's full potential in space, as well as create well-paying jobs and both educational and business development opportunities for citizens statewide.

One such program is the Pacific International Space Center for Exploration Systems (PISCES), established through Section 201-72, Hawaii Revised Statutes, and headquartered at the University of Hawaii at Hilo. A multinational research and education center, PISCES is dedicated to the innovation of new technologies to enable and sustain human settlements beyond low-Earth orbit, and to date has brought over \$2 million in research funding and private investments to Hawaii, established space science curricula at U.H. Hilo, 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 on the Moon.

PISCES is now working to develop a prototype lunar outpost on the Big Island of Hawaii to 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. The goal is to develop the simulated outpost through international partnerships and private sector investments, and this timely legislation is both consistent with and vital to this effort. 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



STATE OF HAWAII
DEPARTMENT OF TAXATION
P.O. BOX 259
HONOLULU, HAWAII 96809
PHONE NO: (808) 587-1530
FAX NO: (808) 587-1584

FREDERICK D. PABLO
INTERIM DIRECTOR OF TAXATION

RANDOLF L. M. BALDEMOR
DEPUTY DIRECTOR

**SENATE COMMITTEES ON PUBLIC SAFETY, GOVERNMENT &
MILITARY AFFAIRS AND ECONOMIC DEVELOPMENT &
TECHNOLOGY**

**TESTIMONY OF THE DEPARTMENT OF TAXATION
REGARDING SB 1496
RELATING TO ENTERPRISE ZONES**

TESTIFIER: FREDERICK D. PABLO, INTERIM DIRECTOR OF
TAXATION (OR DESIGNEE)
COMMITTEE: PGM-EDT
DATE: FEBRUARY 10, 2011
TIME: 2:50PM
POSITION: NO POSITION; CONCERNED WITH COST

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; however is **concerned with the revenue loss.**

The revenue loss is estimated to be approximately \$450,000 per year when the project becomes operational

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:

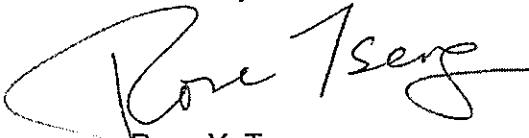
As a member of the Hawaii State Aerospace Advisory Committee, I am pleased to provide testimony in strong support of Senate bills 112, 165 and 1496, which, respectively, appropriate funds for a spaceport license from the Federal Aviation Administration, provide the Office of Aerospace Development with 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

Testimony Presented Before the
Senate Committee on Public Safety, Government Operations, and Military Affairs
and the
Senate Committee on Economic Development and Technology
Thursday, February 10, 2011
2:50 p.m.
By

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

SB1496 RELATING TO ENTERPRISE ZONES

Chairs Espero, Fukunaga, Vice Chairs Kidani, Wakai and Members of the Committees:

The University of Hawai`i at Hilo supports the intent of SB 1496 to amend the definition of "eligible business activities" for "enterprise zones" in Section 209E-2, Hawai`i Revised Statutes, to include "development and operation of space exploration and lunar research related activities".

On behalf of the University of Hawai`i at Hilo, thank you for the opportunity to testify in support of SB 1496. Amending the definition of "eligible business activities" for "enterprise zones" to include research related activities has important potential to enable the further development of an "Innovation Economy".

An example of the kind of initiative mentioned above is the Pacific International Space Center for Exploration Systems (PISCES) was established through Section 201-72, Hawai`i Revised Statutes. PISCES is headquartered at the University of Hawai`i at Hilo and has been an important seed in this development. PISCES is a multinational research and education center and is focused on the innovation of new technologies to enable and sustain extra-terrestrial human settlements. PISCES has brought over \$2 million in research funding and private investments to Hawai`i, enabled diversified space science curricula at UH Hilo, 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 on the Moon. Research related to the PISCES initiative goes well beyond aerospace to include questions of extra-terrestrial habitat, ecological, and agricultural sustainability and takes advantage of resident expertise in these research areas. PISCES is now working to develop a prototype lunar outpost on the Big Island of Hawai`i to 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. The proposed legislation will enable educational, and research development that will provide training and mentorship to local students not available anywhere else.



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.

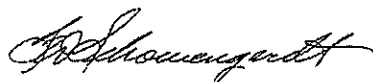
The ILRP will be built in or adjacent to the existing Science and Technology Park at the university, where the base facilities for many of the Mauna Kea telescopes are located, and would be part of the enterprise zone as requested in SB1496. With this designation, companies could lease space in the park 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 5th 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

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

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 Hawai‘i’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 Hawai‘i’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"

STEERING COMMITTEE

Osamu Odawara
Tokyo Institute of Technology
Chairman

Dan Bland
JAMSS America, Inc.
Vice Chairman – United States

Susumu Yoshitomi
Japan Space Forum
Vice Chairman – Japan

SECTOR REPRESENTATIVES:

Dan Rasky
NASA Space Portal

Mitsuru Ohnishi
JAXA Aerospace R&D Directorate

Christopher Pestak
Battelle Memorial Institute

Shigeru Aoki
Shimizu Corporation

Kim Binsted
University of Hawaii

Mamoru Yoshimoto
Tokyo Institute of Technology

Pascal Lee
The Mars Institute

Tetsuji Yoshida
GSP Japan, Inc.

Beth McKnight
McKnight Communications

Junichi Yamasaki
NHK Engineering Services, Inc.

SENIOR ADVISORS:

The Honorable George Ariyoshi
Former Governor of Hawaii

Senator Will Espero
Hawaii State Legislature

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.

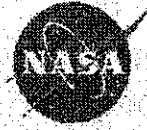
Looking to the future, innovative programs like PISA, PISCES, and the ILRP will be able to leverage Hawaii's diverse natural resources, abundant scientific and technological expertise, unique geographical terrain, and strategic mid-Pacific location to support the development and implementation of pioneering 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

February 9, 2011



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

Dear Jim:

Per 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.

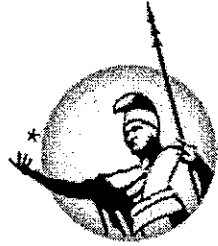
Hawaii also has resident expertise in space-related fields, with over forty NASA principal investigators at the University of Hawaii performing ongoing research in astronomy, planetary geosciences, robotics, satellite communications, laser-based power systems, and other technologies critical for supporting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

A handwritten signature in black ink, appearing to read "Dan J. Rasky".

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



HAWAII AEROSPACE
ADVISORY COMMITTEE

Elliot Holokauahi Pulham, Chair

February 4, 2011

Senator Will Espero, Chair
Committee on Public Safety, Government Operations and Military Affairs
Hawai'i State Legislature

Senator Carol Fukunaga, Chair
Committee on Economic Development and Technology
Hawai'i State Legislature

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

Dear Senators Espero and Fukunaga:

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.

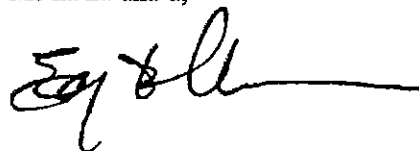
The Pacific International Space Alliance (PISA), another program coordinated through OAD, is a multinational coalition providing unique opportunities for local scientists, entrepreneurs and educators to form collaborative research and training partnerships with counterparts at leading institutions and 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

cc: Governor Neil Abercrombie
Lt. Governor Brian Schatz
Senator Brickwood Galuteria, Majority Leader
Senator Sam Slom, Minority Leader
Richard Lim, Interim Director - DBEDT
Jim Crisafulli, Director - Office of Aerospace Development

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.

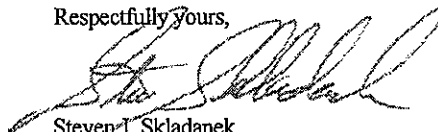
Hawai'i cannot rest on these successes if it is to continue to win its future. As the world changes, so must Hawai'i change to address and accommodate new challenges and opportunities.

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,



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



PACIFIC INTERNATIONAL SPACE ALLIANCE

"To promote and facilitate multinational space enterprise"

STEERING COMMITTEE

Osamu Odawara
*Tokyo Institute of Technology
Chairman*

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

Susumu Yoshitomi
*Japan Space Forum
Vice Chairman – Japan*

SECTOR REPRESENTATIVES:

Dan Rasky
NASA Space Portal

Mitsuru Ohnishi
JAXA Aerospace R&D Directorate

Christopher Pestak
Battelle Memorial Institute

Shigeru Aoki
Shimizu Corporation

Kim Binsted
University of Hawaii

Mamoru Yoshimoto
Tokyo Institute of Technology

Pascal Lee
The Mars Institute

Tetsuji Yoshida
CSP Japan, Inc.

Beth McKnight
McKnight Communications

Junichi Yamasaki
NHK Engineering Services, Inc.

SENIOR ADVISORS:

The Honorable George Ariyoshi
Former Governor of Hawaii

Senator Will Espero
Hawaii State Legislature

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*

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 20th 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

PTC®



11710 Plaza America Drive
Suite 2000
Reston, Virginia 20190
Phone: 703-298-6630
Fax: 703-871-5111
Email: rcoppola@ptc.com

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

To: Hawaii Legislators
From: Nancy C. Tashima
RE: Support of SB112, SB165 & SB1496
Date: February 8, 2011

Dear Members of the Twenty-Sixth Legislature:

I am pleased to provide testimony in very strong support of SB112, SB165, and SB1496 advocating support of aerospace related funding.

Considering the current financial situation of Hawaii, it is imperative and prudent that our State seek inventive 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.

SB112 will expand our traditional tourism based industry by providing funds for a spaceport license application. This Federal Aviation Administration license will afford the possibility of many new jobs and professions for Hawaii's citizenry. The stabilization and expansion of our economic base can greatly benefit from an international commercial spaceport.

SB165 will fund several aerospace related possibilities and 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.

I also support SB1496 since it makes possible the creation of businesses related to lunar and space research which would not only broaden our economic base, but allow for our Hawaii residents to succeed in their desires to be an entrepreneur within their own community.

I strongly urge you to support SB112, SB165, and SB1496 since they expand the aerospace related industries and therefore, create jobs and careers for Hawaii's population.

Respectfully submitted,

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



MARS INSTITUTE

10 Feb 2011

Attn: 26th 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.

Pascal Lee, Ph.D.
Chairman, Mars Institute
NASA Research Park
Moffett Field, CA 94035-0006
Tel: (408) 687-7103; E-mail: pascal.lee@marsinstitute.net