

January 31, 2018

Members of the 29th State Legislature
Hawaii State Capitol
415 S. Beretania Street
Honolulu, Hawaii 96813

Re: **HB1598** - Relating to the International Moon Base Alliance

I am pleased to provide testimony in strong support of this measure, which would help establish a Multinational Lunar Architecture Alliance, coordinated through the Hawaii Office of Aerospace Development, that would identify the goals, challenges, and methodologies for promoting the development and implementation of prototype habitats and technologies to support a sustainable return of humans to the Moon.

As a former Chairman of both the Japan-U.S. Science, Technology, and Space Applications Program (JUSTSAP) and the Hawaii Aerospace Advisory Committee (HAAC), I have engaged in numerous multinational programs enabling opportunities to leverage Hawaii's Moon-like terrain, resident scientific and technological expertise, and numerous research alliances with space-faring nations throughout the Asia-Pacific region to advance the exploration and utilization of space beyond low-Earth orbit.

The Moon provides a logical near-term destination for future space enterprise that can serve as a testbed for a broad range of technologies, including renewable energy, broadband telecommunications, additive manufacturing (3-D printing), *in-situ* resource utilization – all of which ultimately will be required to extend humanity's reach through our Solar System. Yet these same technologies, once tested and validated in the lunar environment, could be applied to significantly improve qualities of life on our home planet.

National space agencies worldwide, along with major aerospace corporations, research institutions, and leading universities, have all expressed strong interest in supporting humankind's return to the Moon, and Hawaii (in the pioneering spirit of those Polynesian voyagers who first settled the islands) is exceptionally well positioned to both contribute to and benefit from this enterprise.

As such, I would strongly recommend passage of this timely legislation, and would be happy to address any questions from your committees concerning this recommendation.

Sincerely,



Stephen M. D. Day
Chairman Emeritus

The Japan-U.S. Science, Technology & Space Applications Program (JUSTSAP)
and
The Hawaii Aerospace Advisory Committee

HB-1598

Submitted on: 1/31/2018 5:57:57 PM

Testimony for EDB on 2/2/2018 8:45:00 AM

Submitted By	Organization	Testifier Position	Present at Hearing
HENK ROGERS		Support	No

Comments:

Statement of **Henk B. Rogers**

Chairman
PISCES
Blue Planet Foundation
Blue Planet Research

Founder
International MoonBase Alliance
International MoonBase Summit

Before the COMMITTEE ON ECONOMIC DEVELOPMENT & BUSINESS

Friday, February 2nd , 2018 @ 845am

State Capitol, Conference Room 309

In consideration of **HB 1598**

RELATING TO THE SPACE INDUSTRY.

Testimony of Henk Rogers for HB 1598:

Humankind will build permanent settlements on the Moon.

Many governments and private companies are building the capability for humans to go to the Moon. The issue is, what will we build on the moon to welcome such human lunar surface missions in the future. The answer is a MoonBase.

A MoonBase must be made out of in situ resources. It's simply too expensive to send all of a permanent settlement from Earth to the Moon in pieces and attach them together like the ISS. We must robotically build a MoonBase out of materials we find on the Moon.

Before we build anything on the Moon or send robots to build something on the Moon, we will have to practice here on Earth. We must practice the sintering of regolith (Moon/Mars dust). We must practice robotics and AI. We must practice pressurized architecture. Where should we do this?

The answer is Hawaii. The volcanoes of Hawaii are mostly made of the same material as the regolith on the Moon and Mars. We have potential MoonBase analog sites within an hour's drive of major ports, airports, hotels, housing and high tech engineering facilities (we build the best telescopes in the world).

We are forming the International MoonBase Alliance. It will be made up of space agencies, space exploration companies, space-related academic institutions. The aim of this organization is to create a public-private partnership that will build MoonBase analog sites on Earth and follow that with MoonBases on the Moon.

There are other reasons for choosing Hawaii. We are in the USA, yet we are close to our Asian Space Faring Partners. Hawaii culture should be the culture of the Moon and all of Space. Hawaii is the right place to build a MoonBase Analog.

The opportunity for Hawaii is to become a center for Space Exploration, like Florida, Texas, Alabama and California. We can use our unique geology as a leverage point to bring this very profitable industry sector to Hawaii.

We have a chance to start something really big in Hawaii. We need the State to support our efforts to get the Space Exploration business in Hawaii.

Aloha,

Henk B. Rogers

Chairman
PISCES
Blue Planet Foundation
Blue Planet Research

Founder
International MoonBase Alliance
International MoonBase Summit



DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

DAVID Y. IGE
GOVERNOR

LUIS P. SALAVERIA
DIRECTOR

MARY ALICE EVANS
DEPUTY DIRECTOR

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Statement of
LUIS P. SALAVERIA
Director
Department of Business, Economic Development, and Tourism
before the
HOUSE COMMITTEE ON ECONOMIC DEVELOPMENT & BUSINESS

Friday, February 2, 2018
8:45 a.m.
State Capitol, Conference Room 309

in consideration of

HB 1598
RELATING TO THE SPACE INDUSTRY.

Chair Evans, Vice Chair Keohokalole, and Members of the Committee.

The Department of Business, Economic Development, and Tourism (DBEDT) appreciates the intent, but respectfully must **oppose** HB 1598, which creates a multinational lunar architecture alliance committee within DBEDT's Office of Aerospace Development to provide recommendations and guidance for the development of an evolvable lunar architecture on the island of Hawaii, as well as to organize an international Lunar Development Summit in Hawaii during the fall of 2017.

At present, DBEDT does not have the sufficient staff or resources to support another space committee. There is already within DBEDT, the Hawaii Aerospace Advisory Committee and the Pacific International Space Center for Exploration Systems Board, both of which may be able to provide the recommendations and guidance for the evolvable lunar architecture.

Since the fall of 2017 has already passed, we do not intend to expend any funds for a summit after the fact. If it is intended for a future event, the estimated cost of putting on a summit of this magnitude is \$250,000. With limited resources, DBEDT has prioritized supporting growth of businesses that have the potential to create the most jobs as our primary focus.

We respectfully, ask that you hold this measure.

January 30, 2018

Dear Members of the 29th Hawaii State Legislature:

On behalf of the Maui Economic Development Board (MEDB), I am pleased to provide testimony in strong support of HB1598 relating to the space industry.

Formed in 1982 as a 501(c)(3) nonprofit organization, the Maui Economic Development Board, Inc. was structured as a convener of both public and private sectors to achieve a mission of economic diversification. From MEDB's inception, we have viewed the cultivation of the aerospace sector as one of several key strategies for diversifying the State's economy.

MEDB concurs with the intent of HB2706 to enable the establishment and operation of an International MoonBase Alliance, as originally proposed during the International MoonBase Summit on the Island of Hawaii in October, 2017.

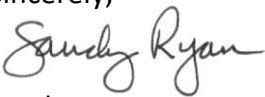
We believe the proposed Alliance, headquartered in Hawaii, will provide multiple opportunities for our State to engage (through both international and public-private partnerships) in the design, development, testing and validation of innovative technologies that will enable humankind to return to the Moon, as well as to establish a sustainable space economy that will substantially expand and diversify both scientific and commercial space enterprise.

Hawaii's volcanic regolith, which closely approximates that found on the lunar surface, provides an ideal environment to test and validate innovative technologies for deployment on the lunar surface. Hawaii's ongoing scientific and technological collaboration with space-faring nations throughout the Asia-Pacific region, as well as research and development partnerships with NASA and other national space agencies and organizations worldwide, will also enable our State to establish multinational coalitions to advance lunar exploration, development, utilization, and (ultimately) sustainable settlement on both the Moon's surface and in cis-lunar space.

The potential scientific, commercial, and educational benefits that would rebound to Hawaii through such enterprise are truly substantial, and as such we wholeheartedly endorse the vision for establishing the International MoonBase Alliance outlined in this legislation.

Thank you for the opportunity to testify on this bill.

Sincerely,



Sandy Ryan

Program Director, Maui Economic Development Board, Inc.
Maui Representative, Hawaii Aerospace Advisory Committee

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

TESTIMONY IN SUPPORT OF:
HB1598 – RELATING TO THE SPACE INDUSTRY

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

I am writing to express my strong support for the passage of HB1598.

Ever since the Apollo program era of the 1960s, Hawaii has played a major role in the exploration of our Moon. The island-state's lunar-like terrain has afforded researchers and lunar astronauts a feasible proxy for serving as a geological laboratory and training ground for human and robotic exploration of the Moon.

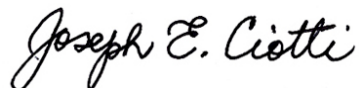
Decades of partnerships between the State government and spacefaring private-public institutions across the Asia-Pacific region have provided a wealth of knowledge, expertise and innovative undertakings in planetary research and entrepreneurial ventures. With this rich experience in lunar research and discovery, Hawaii stands strategically positioned to play a leadership role in the development of a prototype lunar outpost.

Besides the scientific advancement and economic impact that would result from actively engaging in the establishment of an international moon base, this committed involvement would provide high tech/STEM based career opportunities for students. As the Director of the Center for Aerospace Education at Windward Community College and the Project Manager for the University of Hawai'i Community College's Project Imua, I have been intimately involved in the educational needs and preparations of our youth in STEM and particularly aerospace careers.

Our UHCC students are currently engaged in the development of small space payloads and have already launched three payloads into space. The opportunities generated from a moon base project would enhance the educational and career skills of our pre-engineering students. The prospects of establishing an international alliance for lunar exploration would be a major boost to encouraging other students to pursuing high tech jobs locally and significantly boost our State's economy.

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

Mahalo nui loa,



Dr. Joseph E. Ciotti
Physics Department / Windward Community College



January 31, 2018

Members of the 29th State Legislature
Hawaii State Capitol
415 S. Beretania Street
Honolulu, Hawaii 96813

Re: **HB1598** - Relating to the Space Industry

I am most pleased to provide testimony in strong support of this measure, which would help establish a Multinational Lunar Architecture Alliance to identify the goals, challenges, and methodologies for promoting the development and implementation of prototype habitats and technologies to support a sustainable return of humans to the Moon.

As Chairman of the Aerospace States Association's Space Exploration Committee, I am helping coordinate a national movement to return humankind beyond low-Earth orbit (where humans have not ventured since the Apollo program). The vision is to enable sustainable habits on the Moon's surface (and in cis-lunar orbit), with the goal of establishing a vibrant space economy (based on both the scientific and commercial utilization of lunar resources) that ultimately will enable a sustainable human presence beyond Earth.

The Moon provides a logical near-term destination for future space enterprise that can serve as a testbed for a broad range of technologies, including renewable energy, broadband telecommunications, additive manufacturing (3-D printing), *in-situ* resource utilization – all of which ultimately will be required to extend humanity's reach throughout our Solar System. Yet these same technologies, once tested and validated in the lunar environment, could be applied to significantly improve qualities of life on our home planet.

National space agencies worldwide, along with major aerospace corporations and leading universities, have all expressed strong interest in supporting humankind's return to the Moon; and Hawaii, with its Moon-like terrain, resident scientific and engineering expertise, and extensive multinational ties with research and development programs worldwide, is exceptionally well positioned to contribute to and benefit from such enterprise.

As such, I would strongly recommend passage of this timely legislation, and would be happy to address any questions from your committees concerning this recommendation.

Sincerely,

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

Jim Crisafulli

Chairman, Space Exploration Committee
Aerospace States Association

January 31, 2018

To: Members of the 29th Hawaii State Legislature

Re: Testimony in support of HB1598 Relating to the Space Industry

Recently, President Trump signed a new space policy directive that included the statement that the United States should return to the moon, and additionally that this return to the moon should not be NASA-alone, but rather with the inclusion of both international and public-private partnership sectors.

A recent MoonBase conference in Hawaii in October 2017 began to lay the ground work for the creation on an International MoonBase Alliance.

For over 60-years, Hawaii has been recognized as a high-quality analogue for testing lunar and mars operations. Apollo astronauts trained in Hawaii for their lunar missions in the late 1960s-early 1970s.

An alliance for a lunar MoonBase would include international, private and government participation. Hawaii could and should serve as a logical testing ground for the development of such a MoonBase.

This letter stands in strong support of the creation of such an alliance as outlined in HB1598.

Robert M. Kelso
Founder/CEO, Kelso Aerospace
Former Executive Director, PISCES



The Aerospace States Association

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Wyoming

Members of the Hawaii State Legislature House Bill 1598 RELATING TO THE SPACE INDUSTRY.

On behalf of the Aerospace States Association and state Lieutenant Governors I am pleased to provide this testimony for your consideration.

The Aerospace States Association is a nonpartisan organization of Lieutenant Governors and other top-ranking leaders from every state that represents states' interests in federal aerospace and aviation policy development. Our overall goal is to help promote and synergize state assets and capabilities in ways that can strengthen and diversify U.S. leadership in this industry.

ASA's Space Committee has proposed a series of recommendations to advance our national space program. To achieve these goals, we believe our nation needs to embrace a collaborative, multinational vision for space exploration – one that incorporates the extensive knowledge, resources and capabilities developed through our nation's historic space missions, along with the substantial experience and achievements of other space-faring nations.

We also must leverage the substantial assets, expertise and entrepreneurial spirit of our private sector in pioneering the space frontier – not only to maximize the potential benefits from research and exploration, but also to facilitate development and utilization of extraterrestrial resources that can benefit people on Earth, as well as support long-term voyages to and settlements on other planets.

The bill before you today is consistent with our goals and objectives.

Sincerely,

Charles H. Huettner, Executive Director

LATE

HB-1598

Submitted on: 2/1/2018 8:18:57 PM

Testimony for EDB on 2/2/2018 8:45:00 AM

Submitted By	Organization	Testifier Position	Present at Hearing
Melodie Aduja	OCC Legislative Priorities	Support	No

Comments:

**PRESENTATION OF THE
OAHU COUNTY COMMITTEE ON LEGISLATIVE PRIORITIES
DEMOCRATIC PARTY OF HAWAII
TO THE COMMITTEE ON ECONOMIC DEVELOPMENT
AND BUSINESS
THE HOUSE OF REPRESENTATIVES
TWENTY-NINTH LEGISLATURE
REGULAR SESSION OF 2018
Friday, February 2, 2018
8:45 p.m.
Hawaii State Capitol, Conference Room 309**

RE: Testimony in Support of HB 1598 RELATING TO SPACE INDUSTRY

To the Honorable Cindy Evans, Chair; the Honorable Jarrett Keohokalole, Vice-Chair, and Members of the Committee on Economic Development and Business:

Good morning. My name is Melodie Aduja. I serve as Chair of the Oahu County Committee ("OCC") Legislative Priorities Committee of the Democratic Party of Hawaii. Thank you for the opportunity to provide written testimony on House Bill No. 1598, relating to the Office of Aerospace Development, the space industry, and an evolvable lunar architecture. The OCC Legislative Priorities Committee is in favor of House Bill No. 1598 and support its passage.

House Bill No. 1598 is in accord with the Platform of the Democratic Party of Hawai'i ("DPH"), 2016, as it promotes the space industry in Hawaii by creating a Multinational Lunar Architecture Alliance to provide recommendations and guidance for the establishment of an evolvable lunar architecture on the Big Island of Hawaii and to plan a development summit.

The DPH "recognizes that the responsible use and development of technology in all its manifestations offer immense potential for our community, government, including institutions of higher education and business sectors. DPH encourages synergistic research, development, commercialization and educational programs that promote technological proficiency and innovation. In particular, DPH supports Science, Technology, Engineering and Math (STEM) initiatives in our public, private and charter schools as these prepare the next generation to address the needs of our state. DPH also supports programs that facilitate incubator, i.e., start-up opportunities for new and promising technologies and encourages the local retention of our intellectual resources." (DPH Platform, Lines 148-156 (2016)).

Given that House Bill No. 1598 establishes a Multinational Lunar Architecture Alliance, it is the position of the OCC Legislative Committee to support this measure as it facilitates start-up opportunities for new and promising technologies and encourages the local retention of our intellectual resources.

Thank you very much for your kind consideration.

Sincerely yours,

/s/ Melodie Aduja

Melodie Aduja, Chair, OCC Legislative Priorities Committee

Email: legislativepriorities@gmail.com, Tel.: (808) 258-8889

LATE

HB-1598

Submitted on: 2/2/2018 5:48:39 PM

Testimony for EDB on 2/2/2018 8:45:00 AM

Submitted By	Organization	Testifier Position	Present at Hearing
Kat Culina		Oppose	No

Comments: