



# UNIVERSITY OF HAWAII SYSTEM

## Legislative Testimony

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Testimony Presented Before the  
House Committee on Finance  
February 25, 2016 at 3:00 p.m.

By

Michael Bruno  
Vice Chancellor for Research  
University of Hawai'i at Mānoa

HB 1625 HD1 – RELATING TO THE UNIVERSITY OF HAWAII

Chair Luke, Vice Chair Nishimoto, and Members of the Committee on Finance:

The University of Hawai'i (UH) does not support HB 1625 proposed HD1, which would require that an Organized Research Unit (ORU) of UH be primarily funded through the receipt of extramural funds and moneys transferred from the University of Hawaii research and training revolving fund; provided that the ratio of this sum to the sum of annual expenditures of state moneys shall be equal to or greater than five-to-one.

The University of Hawai'i opposes this measure because of its profound impact on the research and educational missions of the University and by extension, its impact to our State and the nation. Despite the changes made to the original bill, the proposed bill will have severe negative consequences and is in our view unnecessary

According to UH Executive Policy 12.213, "Establishment and Review of Organized Research Units", Organized Research Units "benefit the State of Hawaii directly through programs of applied research, extension service, and training in areas which meet community and regional human and economic needs". Further, "ORUs are normally established and maintained only in areas where the University has intrinsic research advantages or particular capabilities to respond to special needs". With regard to financial sustainability, the policy states: "In most cases, funding is obtained from both State and Federal sources, the ratio of external to core funding is greater than one, and more than one external funding source is involved".

By all of these expectations and measures, the UH ORUs have been remarkably successful:

1. They have provided distinct human and economic benefits to our community. For example, the School of Ocean and Earth Sciences and Technology, home to most of the UH ORUs, was recently celebrated by the Hawai'i Tourism Authority, Meet Hawai'i, and the state's tourism industry leaders as the 'Elele Organization of the Year for its outstanding work in helping to bring potentially more than \$100 million in convention business to the state. Researchers at the Hawaii Natural Energy Institute (HNEI) develop and evaluate novel renewable energy technologies. Importantly, the HNEI, like the other UH ORUs, is conducting R&D efforts that have real and lasting impact to our citizens, in this case helping to solve the State's critical energy needs. The Institute hosts an array of public-private partnerships to solve real-world problems in areas that range from battery technology and

alternative fuels, to the development of energy grid technology to increase the integration of renewable energy sources. The University of Hawaii Center on Aging continues to lead interdisciplinary efforts in research, educational programs and service to enhance the well-being of our older adults. The Center is conducting significant and impactful externally-supported projects that include the Hawaii Alzheimer's Disease Initiative, aimed at strengthening Hawaii's "dementia capability" through professional training, caregiver education, and new services for persons with dementia and their caregivers.

2. These and other activities at the UH ORUs leverage the existing, multi-disciplinary expertise at the University, as well as our unique location and environment to conduct research and training that could not possibly be performed anywhere else on earth.

3. The ORUs have significantly contributed to a remarkable increase in the externally-supported research at UH. The extramural funding at the University of Hawai'i at Mānoa has increased from \$193 million in FY01 to more than \$300 million presently. Although the UH Executive Policy mentioned earlier sets the expectation for the ratio of external to core funding as greater than one, the ORUs have consistently outperformed this expectation. For example, if we examine the numbers from FY11 through FY15, the ratio described in the proposed legislation ranged from 4.7 to 6.0 at the School of Ocean and Earth Sciences and Technology, which includes most of the UH ORUs, and 7.2 to 10.1 at the UH Cancer Center. I should mention that the John A. Burns School of Medicine has never been regarded as an ORU at UH.

As stated in the UH Strategic Directions, 2015-2021, the goal of the Hawai'i Innovation Initiative is to "Create more high-quality jobs and diversify Hawai'i's economy by leading the development of a \$1 billion innovation, research, education and training enterprise that addresses the challenges and opportunities faced by Hawai'i and the world." The UH ORUs have the primary role in this initiative. We are committed to ensuring that the work of the ORUs is sustainable, and further that they continue to address the most challenging problems of our time while also educating and inspiring students to achieve their full potential.

Let me end by returning to a phrase that appears here in my testimony as well as in the proposed legislation: "Research and Training". The ORUs, by virtue of the leading-edge nature of their research, the real-world impact of their work, and the passion and expertise of their faculty and research staff, are among the most exciting and effective places of learning that I have encountered in my 30 years as an educator and researcher. Undergraduate and graduate students participate in research projects here, in some of the most advanced research enterprises in the world, alongside many of the world's leading scholars. To the extent that the aim of the proposed legislation is to increase the involvement of ORU faculty in the UH educational mission and the participation of UH undergraduate students in the ORU research mission, I am supportive. This is in fact a primary goal of our ongoing research strategic planning process.



The House Committee on Finance  
Thursday, February 25, 2016  
3:00 p.m., Room 308

**RE: RELATING TO THE UNIVERSITY OF HAWAI'I**

Attention: Chair Sylvia Luke, Vice Chair Scott Nishimoto and  
Members of the Committee

The University of Hawaii Professional Assembly (UHPA) urges the committee to **oppose HB 1625, HD1**. It is a proposal that substantially alters the ability of the University of Hawai'i and its faculty members to determine the direction and means to advance research programs.

It inappropriately broadens the scope of legislative oversight to dictate the management of research programs and define the compensation and working conditions of Bargaining Unit 7 members. It's provisions undermine UHPA as the exclusive bargaining agent and seeks to circumvent the union's right to negotiate compensation and working conditions.

UHPA urges the Committee to **defer this proposed legislation**.

Respectfully submitted,

Kristeen Hanselman  
Executive Director

**University of Hawaii  
Professional Assembly**

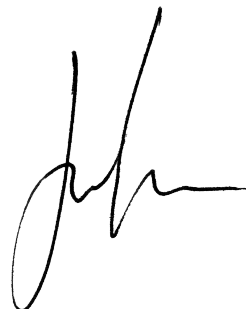
**FROM:** James Foster  
**TO:** Committees on Higher Education and the Arts, and Governmental Operation  
**RE:** **HB1625-HD1** RELATING TO THE UNIVERSITY OF HAWAII.  
**DATE:** 24 February 2016

Representative Luke and other distinguished committee members, I want to thank you for this opportunity to address HB1625-HD1. My name is James Foster. I am an Associate Researcher at the University of Hawaii, focusing on developing applications of GPS for understanding and mitigating natural hazards. I strongly oppose this bill.

My research includes: the development of a new tsunami detection network that will improve tsunami warnings; developing technology to monitor the tectonic faults that generate devastating earthquakes and tsunamis; investigations of volcanoes activity; improving estimates of sea-level change. I chose my research areas because I live and work in Hawaii, and like that I am able to apply my training to problems that are so clearly important to my community. Over the last three years I have successfully secured grants worth more than \$2.2M. These grants not only enable my research, but also provide salaries for research assistant and technicians, and for myself and another senior colleague. My research provides inspiration and financial support for students, and brings national and international recognition and prestige to the University.

All my research stands on the shoulders of a broad foundation of basic research, much of which attracts less grant support than I have received, and is thus more dependent on some significant level of institutional support. I also rely on both the administrative and collegial support that I receive as a part of a vibrant Organized Research Unit. I believe that HB1625 HD1 is antithetical to the mission of the university. Its passage would almost certainly kill my research program and force me to pursue my career elsewhere.

Yours Sincerely,

A handwritten signature in black ink, appearing to be 'James Foster', written in a cursive style.



**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Wednesday, February 24, 2016 10:04 AM  
**To:** FINTestimony  
**Cc:** garbeil@hawaii.edu  
**Subject:** \*Submitted testimony for HB1625 on Feb 25, 2016 15:00PM\*

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Harold Garbeil	Individual	Oppose	No

Comments:

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Testimony Submitted to the Committee on Finance  
**February 25, 2016 at 3:00pm**  
Conference Room 308

Michael Guidry

**HB 1625 HD1 – RELATING TO THE UNIVERSITY OF HAWAII**

Chair: Rep. Sylvia Luke, Vice Chair: Rep. Scott Y. Nishimoto, and members of the committee:

Background

I provide this testimony as a private citizen in opposition to HB 1625 HD1. In my professional capacity I serve as the undergraduate chair of the Global Environmental Science (GES) Program administered by the Department of Oceanography in the School of Ocean and Earth Science and Technology at the University of Hawaii at Manoa (UHM).

I leave it to others to explain how the proposed legislation would fundamentally harm the ability of Organized Research Units (ORUs) to conduct research. I would like to instead highlight how the proposed legislation would deleteriously impact the following three critical undergraduate-related education areas at the UHM: (I) STEM-related education and research; (II) STEM-related degree programs; and (III) female and local STEM students.

I. Negative Impact on Undergraduate STEM-Education and –Research

In terms of undergraduate education and research, the proposed legislation decimates one of the primary avenues for undergraduates at UHM to experience and engage in fundamental scientific education and research -- a hallmark opportunity provided by any top-flight public or private university in their undergraduate education enterprise.

To be more explicit, the width and breadth of research that these ORUs span and support allows for systematic and regular integration of STEM undergraduates (from various degree programs, schools, and academic units across the UHM) into their active, cutting-edge research programs and foci.

These undergraduates contribute directly to the UHM research mission in ways beneficial to the state of Hawaii and to the general advancement of science. They also receive hands-on scientific and technical training and educational experience that classrooms can not teach or offer. This experience is essential for workforce placement or moving on to graduate school in STEM-related fields or professional degree programs upon graduation.

II. Negative Impact on the UHM Global Environmental Science (GES) Program

Students in the UHM GES Program have conducted primary research with at least eight of the ten (80%) listed ORUs in this proposed legislation.

The results of these research experiences and mentoring by ORU faculty served as the foundation for the student's research thesis project degree requirement – a cornerstone of the GES Program. Without completing this research project experience degree requirement, GES students can not graduate.

III. Negative Impact on Females and Local Students in STEM-related Programs like GES

For GES Program graduates, 60% are female and 50% are from Hawaii.

These ORUs, through their offering and mentoring of research experiences, fill a critical role training underrepresented and underserved STEM-related populations (e.g., females) and local students. In turn, this training allows graduates to enter to the workforce with the necessary skills or continue their education at the graduate/professional degree level.

Summary

**This proposed legislation would do significant damage to STEM-related undergraduate education and research at the UHM. The proposed legislation would negatively impact STEM-related undergraduate degree programs, underrepresented populations (females), and local students. ORUs are essential components for STEM-related research and education, STEM-related workforce training, and preparation for graduate school in STEM-related fields and professional fields.**

Thank you for the opportunity to provide testimony in opposition to this measure.

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Wednesday, February 24, 2016 9:38 AM  
**To:** FINTestimony  
**Cc:** rlukas@hawaii.rr.com  
**Subject:** Submitted testimony for HB1625 on Feb 25, 2016 15:00PM

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

Submitted By	Organization	Testifier Position	Present at Hearing
Roger Lukas	Individual	Oppose	No

Comments: Testimony submitted to the Committee On COMMITTEE ON FINANCE Rep. Sylvia Luke, Chair Rep. Scott Y. Nishimoto, Vice Chair Rep. Romy M. Cachola Rep. Matthew S. LoPresti Rep. Ty J.K. Cullen Rep. Nicole E. Lowen Rep. Lynn DeCoite Rep. Richard H.K. Onishi Rep. Aaron Ling Johanson Rep. James Kunane Tokioka Rep. Jo Jordan Rep. Kyle T. Yamashita Rep. Jarrett Keohokalole Rep. Feki Pouha Rep. Bertrand Kobayashi Rep. Gene Ward Thursday, February 25, 2016 3:00 P.M. Dear Committee members: Please do not advance this bill. The State of Hawaii subsidizes film productions in Hawaii because of the publicity for our islands and to stimulate the economy, and because it is recognized that there are substantial cost barriers for film productions in Hawaii. The organized research enterprise at the University of Hawaii should not be considered to be any less worthy of such State support. The research enterprise took decades to build, but it could be lost in a very few years. It is already severely challenged. I say this as a retired professor of oceanography who witnessed and participated in the remarkable advances of the University of Hawaii research and education enterprise over more than three decades. I do not have a direct stake in the outcome of your deliberations, though as a citizen of the State of Hawaii I certainly care about legislation that will be detrimental to the State's economy. Regarding the draft bill's objective of further shifting of State resources from research to classroom education at UH-Manoa, I hope that the Committee members will consider that what distinguishes UH-Manoa from all other campuses in the UH System is its substantial organized research enterprise. It is the outstanding research conducted at UHM that gives the University of Hawaii its international reputation. A university is a place of knowledge generation (research), knowledge transfer (education), and knowledge service (applications of knowledge to external problems). Education is a fundamental aspect of a university, but education is much more than just teaching classes, grading exams and awarding diplomas. Students learn in many ways outside of the classroom, for example as assistants in research labs, in the field, and in the applications of knowledge to societal problems. The committee should consider the value of knowledge generation about issues facing Hawaii, and knowledge application in reaching solutions for these issues. Organized Research Units at the University of Hawaii were originally conceived to address research matters of significance to the State of Hawaii where

resident expertise was deemed to be important. They still provide this essential function. Research faculty positions were created to bring talented researchers to the University of Hawaii, which is far from the mainstream of academia, and where the infrastructure and support for research has been very inconsistent over time and across research areas. These faculty have to work much harder, and travel further, to overcome disadvantages to achieve the same levels of professional success as their mainland colleagues. An essential one-day meeting on the mainland takes three days for a UH researcher to attend, with two of those in airports and on airplanes. Field research often interferes with teaching, but it is essential to the generation of knowledge including knowledge of Hawaii, its environment, and its people. It is also critical to the training of future generations of knowledge practitioners in Hawaii. Over the years, many of those 100% research positions were sliced and diced to partially support the existing research enterprise, with the rest of faculty time supported by instruction and extramural funding. The following is a list of research areas where UH faculty have made substantial contributions over the years that are directly relevant to important issues affecting Hawaii. This list is far from complete, being only what I could think of in a few minutes. Volcanoes Earthquakes Tsunami Vog and human health Vog prediction Water resources Flooding Hurricanes El Nino Climate change around Hawaii Sea level rise Coastal erosion Invasive species Transportation and traffic management (e.g. Traffic cams) Network protocols and management OTEC Solar power Wind power Wave power Biofuels Tropical diseases (e.g. dengue) Hawaii epidemiology and genetic links to disease Aging and longevity genetics Marine mammals Beach safety Fisheries management Aquaculture Near-earth asteroid detection Endangered species Waste management Coral reefs Ocean acoustics Pacific Islands archaeology and anthropology Marine pollution The value of knowledge that has been generated at the University of Hawaii and applied to these areas of state-wide concern should not be discounted. Likewise, the out-of-classroom education of students that has taken place alongside this research should not be overlooked. Then there is the overall economic value of UH research activity to the State of Hawaii, well-addressed by Carl Bonham of the University of Hawaii Economic Research Organization in a report just a few years ago. That report documents very clearly that the State investment in research pays economic dividends to the State with a large multiplier. The metric of [extramural funds generated/State funds for research salaries] is a poor measure of the economic benefits of organized research to the State of Hawaii. In my opinion, the draft legislation will kill the University of Hawaii as a Research I university, and will reduce the pool of expertise available to help generate solutions to existing (and unknown future) matters of state-wide concern. Roger Lukas, Emeritus Professor of Oceanography Consulting Oceanographer

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Testimony in **OPPOSITION** to bill HB1625-HD1 and its amended version after passing through the HED committee on 2/16/2016.

My name is Gabriel Dima and I am PhD student in my 7<sup>th</sup> year at the Institute for Astronomy, which is one of the organized research units directly affected by the passing of this bill.

I **oppose** this bill because I see it as unreasonable to impose a fixed 5:1 limit on the ratio of extramural to state funds in research institutions. Acquiring research grants is not a predictable process and the total amount of money available from extramural sources is fixed each year and depends on forces outside the control of researchers. The economic downturn in 2008 caused the federal funding for the National Science Foundation (NSF) and NASA (the typical funding agencies for Astronomy) to stay flat for 5 years. While this may not seem too bad, a flat funding curve is bad when you account for inflation and the increasing number of researchers joining the community. While right now the economy is on a better track and the federal grant budgets are creeping upwards again, it is not inconceivable that the funding will be diminished again due to other factors.

The point I am making is that the availability of extramural research grants is heavily dependent on factors outside of researchers' control. Imposing a rigid ratio on funding availability for the departments will make them very susceptible to shocks due to contractions in federal funds. Research faculty is already spending a large amount of time writing grant proposals instead of engaging in research. By imposing these restrictions on our departments you would be making them less competitive since any potential hires will re-consider choosing appointments here if they feel afraid their funding could be pulled due to factors largely outside their control. The people who would accept the positions would perhaps be less well qualified. Thus attracting less talented faculty the departments will be less competitive and thus attract less extramural funds which would lead to a decrease in funding. This type of feedback loop would destroy the departments.

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Wednesday, February 24, 2016 9:31 AM  
**To:** FINTestimony  
**Cc:** rcflentz@gmail.com  
**Subject:** \*Submitted testimony for HB1625 on Feb 25, 2016 15:00PM\*

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Rachel CF Lentz	Individual	Oppose	No

Comments:

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Testimony Presented to the House Committee on Finance  
**February 25, 2016 at 3:00pm**

Margo H. Edwards

**HB 1625 HD1 - RELATING TO THE UNIVERSITY OF HAWAII**

Chair Luke, Vice Chair Nishimoto, and Members of the Committee on Finance:

I provide this testimony as a private citizen in opposition to HB 1625 HD1. In my professional capacity I serve as the Interim Director for the Hawai'i Institute of Geophysics and Planetology and as the Interim Executive Director of the Applied Research Laboratory, both at the University of Hawai'i.

The Hawai'i Institute of Geophysics (HIG) was established in 1958. Hawai'i Revised Statute §304A-1501 (§304-42) mandated the formation of an institute of geophysics at the University of Hawai'i (UH) that "shall undertake basic research and training in geophysics, and shall disseminate knowledge of geophysics affecting Hawaii, and to the extent its facilities permit, may serve to apply the results of its research to geophysical problems in the State." In 1994 the Planetary Geosciences group, then in the UH Department of Geology and Geophysics, merged with HIG to form the Hawai'i Institute of Geophysics and Planetology (HIGP). HIGP is one of the UH Mānoa organized research units addressed by HB 1625 HD1.

Currently there are 35 faculty in HIGP who support an additional 65 staff, post-doctoral researchers and students. In contrast to the notion that "organized research units are not economically sustainable as stand-alone units," HIGP has been an economic engine for UH and the State, generating an annual average of ~250% return on the investment of State moneys over the past fifteen years, totaling more than \$100M of extramural revenue. HIGP faculty typically raise 25-100% of their salaries through extramural funding, with State support providing critical funding stability that helps ensure success. If the proposed legislation were to be enacted, the result would not be the enrichment of the State, but rather its impoverishment, as these proven, productive researchers depart to find positions with less onerous requirements.

HIGP's positive economic impact extends well beyond its ratio of extramural to State moneys. Through the Hawai'i Space Flight Laboratory, HIGP is building a cottage industry of technicians and engineers to support the emerging field of small satellite development, including a nascent capability to launch these satellites from the islands. HIGP research has spun off multiple high-tech companies in the State, employing dozens of personnel not captured in the list of 100 HIGP faculty, staff and administrators. HIGP operates state-of-the-art equipment, such as the Keck Cosmochemistry Laboratory, which provides fundamental capabilities for agencies like the National Aeronautics and Space Administration and attracts a host of national and international clientele ready to pay for its unique services.



As mandated, HIGP serves the State, the Nation and the world in researching and sharing knowledge about geophysical problems involving earthquakes, tsunami, volcanic activity, geothermal resources, sound in the ocean and atmosphere, and the physical properties of materials. HIGP's Hawai'i Groundwater and Geothermal Resources Center partners with Hawai'i's Department of Land and Natural Resources, Department of Business, Economic Development & Tourism, Department of Health, and the Hawaiian Electric Company to disseminate information related to the State's natural resources via the internet. The Center for the Study of Active Volcanoes provides local through international training in volcano hazards monitoring. HIGP researchers provide critical data and support for the Treaty on the Non-Proliferation of Nuclear Weapons and the Chemical Weapons Convention arms control treaty. HIGP engineers support first responders worldwide through the development of innovative technologies such as stand-off sensors to detect explosives at distances of hundreds of feet.

Recognizing that education and research are mutually enhanced when accomplished conjointly, HIGP's Space Grant Consortium supports fellowships, training programs, workshops for teachers and public exhibitions that promote the appreciation and understanding of scientific research within the broader community. Students get hands-on experience with HIGP research faculty, building and deploying instruments in environments ranging from Mars to the bottom of Earth's ocean. These students in turn serve as role models, encouraging and inspiring younger generations to follow in their footsteps. This succession of knowledge and experience that HIGP has developed is critical to sustainably building the skilled workforce necessary to support the State of Hawai'i's bid to diversify its economy through a high-tech industry. If the proposed legislation were to be enacted, the impact on the present would be painful, but the impact on the future could potentially be unrecoverable.

Thank you for the opportunity to provide testimony in opposition of this measure.

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Wednesday, February 24, 2016 9:06 AM  
**To:** FINTestimony  
**Cc:** wprice@hawaii.edu  
**Subject:** \*Submitted testimony for HB1625 on Feb 25, 2016 15:00PM\*

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Wes Price	Individual	Oppose	No

Comments:

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Wednesday, February 24, 2016 9:02 AM  
**To:** FINTestimony  
**Cc:** zeebe@hawaii.edu  
**Subject:** Submitted testimony for HB1625 on Feb 25, 2016 15:00PM

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Zeebe, Richard	Individual	Oppose	No

Comments: I also appose the amended version. Comments: This bill will destroy research units that address critical state problems, contribute to student education, and bring extramural funding into the state (millions of dollars). It would have a devastating effect on Hawaii's education and economy. I strongly urge you to vote against bill HB1625 \*AND\* amended version.

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Wednesday, February 24, 2016 8:53 AM  
**To:** FINTestimony  
**Cc:** paulnachtigall@gmail.com  
**Subject:** Submitted testimony for HB1625 on Feb 25, 2016 15:00PM

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
paul nachtigall	Individual	Oppose	No

Comments: This bill is flawed. Despite strong opposition from the community it was passed to your committee. Please note the previous testimony. The State of Hawaii has a board of Regents and a high paid administrative staff to administer the University. Legislators attempting to reach down and micromanage University affairs do no good for the people of the State. Please defeat this bill. It is based on a total lack of understanding of how Organized Research Units function at the University of Hawaii. It will produce the opposite of its intended effect. Sincerely and with Respect, Paul E. Nachtigall

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February 24, 2016

Dr. Rhett Butler  
1661 IHILOA Loop  
Honolulu, HI 96821

Committee on Finance  
HOUSE OF REPRESENTATIVES

Madam Chair, Mr. Vice Chair, and members of the Committee on Finance:

I am a resident of Honolulu and a registered voter. I am writing to express my strong **opposition** to HB1625 HD1.

The legislation proposed in HB1625 HD1 has no demonstrable benefit for the people of Hawai'i. Worse, it threatens to damage excellence in our State. HB1625 HD1 ignores the fact that the University of Hawai'i researchers are among the world's experts. The foremost international scientific journal, *Nature*, in 2015 rated UH's research programs in Earth and Environmental Science at 15<sup>th</sup> globally—leading Harvard, Princeton, Yale, *and* Oxford Universities. This has been accomplished in part by the research of the Hawai'i Institute of Geophysics and Planetology, which has brought in more than \$140M in extramural funding since 2001—a return of more than \$3 on each \$1 of State funding. Where else can such a return be found, even in the private sector?

Organized research has an important role for the State of Hawai'i. This State is particularly susceptible to geophysical disasters. The same forces that have made such beauty in our islands are capable of great destructive potential. Our knowledge of these threats arises almost entirely from research at the University of Hawai'i. Earthquake, tsunami, volcanic, submarine landslide, VOG—each of these are studied, monitored, and delineated by research scientists, not simply for science but rather for the societal benefits to Hawai'i's people. Direct results that affect everyday life are seismic building codes, earthquake hazard response, expanded tsunami evacuation zones, resolution of tsunami currents near-shore and

in harbors, VOG warnings, detailed mapping of submarine landslides and their concomitant tsunami threat at the coast. These scientists also study and advise the State on groundwater surveys, geothermal potential, submarine cable routes, and lava flow dynamics.

Should we rely upon researchers at other Universities to answer these questions, refine our understanding, and advise the State? Where is our *kuleana* of accomplishment, pride, and self-reliance in our State in meeting the challenges that nature presents us?

It would be great if the Legislature recognized our successes at UH. But it is imperative that this bill be quashed.

Sincerely,

A handwritten signature in blue ink, appearing to read "Rhett Butler". The signature is fluid and cursive, with a large initial "R" and a long, sweeping tail.

Rhett Butler

**Testimony against House Bill 1625 proposed HD1, amended February 16, 2016, to be heard by the House Committee on Finance on February 25**

Dear chair Luke, dear vice chair Nishimoto, dear members of the House Committee on Finances, my name is Günther Hasinger. I am the Director of the Institute for Astronomy at UH Manoa, submitting this testimony in strong opposition to HB 1625 proposed HD1 and amended February 25. I am submitting this testimony as an individual.

While we understand the motivation of the proposed amendment HD1 to the bill, HB1625, we feel that the specific measures proposed in this bill are unnecessarily prescriptive and burdensome, and will do serious damage to a highly productive academic research enterprise in a strong international competition. This is still true, even after the amendment of the bill in the House Committee for Higher Education on February 25. We also believe that many of the desired outcomes are already being achieved or well on the way to being achieved.

At the Institute for Astronomy all of our tenure track and tenured R faculty have an obligation to teach, which is spelled out explicitly in their appointment letter. Since several decades we are running one of the largest and highly ranked astronomy graduate programs. Recently we have started two very attractive undergraduate programs in astronomy and astrophysics in close cooperation with the UH Manoa College of Natural Sciences. We already require new R faculty and those seeking merit salary increases to fund a portion of their salary from external funds. Thus we are moving in the proposed direction.

For many years IfA faculty have been receiving extramural funds, which are substantially larger than the state appropriated funds in our budget. The IfA faculty do this as part of their academic excellence and individual entrepreneurship, in full academic freedom. To prescribe certain outcomes and funding ratios for their work would have a net negative effect on our research excellence and education mission.

The Institute for Astronomy (IfA) was founded with the explicit goal to develop astronomy as an economic driver for the State of Hawaii, in particular for Hawaii Island. Over the past half century, IfA has been the driving force behind the development of world-class astronomy education and research in Hawaii, including in particular the development of the state-of-the-art international observatories on Maunakea and Haleakala. A recent study of the UH Economic Research Organization (UHERO) shows that in 2012 astronomy had a total economic impact of \$168 million, a job creation impact of 1400, and generated State taxes of \$8.2 million, about twice as much as we received in G-funds. This is not even yet including the TMT and DKIST projects, or the Maui Space Surveillance complex on Haleakala.

Astronomy has other direct benefits to the State of Hawaii. It directly provides close to 1000 jobs in a clean high-tech activity that offers employment opportunities in STEM fields to local young people. This is particularly important when such jobs are

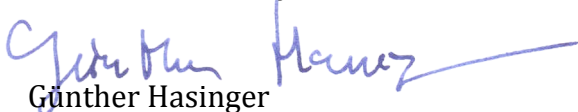
hard to find without leaving Hawaii. Our astronomy outreach programs are particularly effective in sparking interest in Hawaii's youth for all types of STEM-related fields - not just astronomy. The fascination of astronomical research attracts a whole generation of young children into the world of science to learn the tools of mathematics and science.

The Pan-STARRS and ATLAS observatories are providing the world's best early-warning system for dangerous asteroids, such as the one that struck Russia two years and ago, and even larger ones that could have devastating impact. All of this is funded with Federal dollars, but contributing to the economic impacts discussed above. The Maunakea Weather Center (MKWC) was created to provide custom forecasts for the observatories. Recently, MKWC has adapted its computer programs to predict the dispersion of Vog from the Kilauea volcano. This valuable service is at no cost to the State. Twenty years ago, a \$2 million up-front contribution from the Maunakea observatories expedited the installation of fiber-optics communications infrastructure on Hawaii Island, and today astronomy is leading the big data efforts in the State. The innovative technology that IfA creates is a broad catalyst for future economic development in Hawaii that goes far beyond astronomy. For example, IfA innovation has spun off new Hawaii businesses working in remote sensing instrumentation to new technologies for solar power.

Without the type of vision and leadership that IfA has exercised over the past half century, it is unlikely that world-leading astronomy and its many benefits would have come to Hawaii. The fact that IfA is able to do this is, in no small part, due to its organization as an ORU. A major factor in this is the ability to attract world-leading research faculty in a highly competitive environment. Higher education and research are closely connected. The one is not possible without the other. At every world class university, such as Harvard, Princeton, Caltech, Cambridge, Yale etc. you have a combination of first class education with outstanding research. The same is true for the good state universities, UC Berkeley, University of Tokyo, Munich, Leiden, Cambridge, Oxford etc.

In summary, we are aware of the many pressing demands on State General funds both within the University and throughout the State - and we understand the motivation of this bill to achieve a proper balance between State and external funding for ORU's. At the same time, we feel that the objectives of this bill are already being achieved and that further progress does not require the type of measures proposed. On the contrary, these measures would severely hamper our competitiveness. We also want to remind everyone of the special capabilities and benefits that ORU's were intended to provide and in fact are providing to all of the citizens of Hawaii.

Honolulu, February 23, 2016

  
Günther Hasinger



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**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Jerris Hedges	Individual	Oppose	No

Comments: Regarding HB 1625 HD1 Aloha Esteemed Legislators, I am submitting this testimony as a private citizen in opposition of HB 1625 HD1. This bill attempts to legislate the operations of the University of Hawaii - Manoa regarding various organized research units and the John A. Burns School of Medicine. The measure fails to acknowledge the state economic benefit from well run scientific operations at the University of Hawaii - Manoa and imposes arbitrary and wasteful regulations and reporting requirements without appreciating the larger detrimental impact of those factors on the educational experience (due to a restricted ability of students to pursue research training in Hawaii), on the economy of Hawaii (due to a restricted ability of research programs to bring federal grants to Hawaii), or the overall efficiency of campus operations. This is a punitive bill with little redeeming value. Please do not support this bill.

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February 24, 2016

46-035 Konohiki St. #3865  
Kaneohe, HI 96755-6118  
808-235-8525  
meech@ifa.hawaii.edu

To the House Committee on Finance

My name is Karen J. Meech. I am a research faculty member at UH, submitting this testimony as an individual. I believe that HB 1625 HD1 would have devastating effects on the university and the state, and I strongly oppose the amended version of this bill.

The Institute for Astronomy (IfA) is one of the organized research units (ORU) at UH. My faculty colleagues and I bring in far more research dollars annually than is contributed by the state. The UH Manoa ORUs create an environment of excellence in research, innovation and teaching that enable the categorization of UH Manoa as a Carnegie-1 research university. This places UH Manoa in the top few percent of all accredited four-year colleges and universities in the US, and brings in higher tuition dollars.

The research programs at IfA bring in large prestigious programs and people, including new telescope facilities, instruments for space facilities, and have the potential to lead in the development of space missions. These large projects bring valuable high-tech jobs to the state, as well as educational opportunities in research and technology for local students. At the IfA we have had many highly acclaimed programs for middle school and high school students that enable local students to excel. These type of experiences can feed local students into UH programs.

As federal research dollars get more difficult to secure, the faculty at Carnegie-1 institutions, and those with large research enterprises will be in the best competitive position to secure those funds. Since the 1990s, the proposal success rate for NASA funding has dropped by a factor of 2 because of the flat government budgets and increased proposal pressure. Because of the research excellence of the ORUs, we have continued to secure funding in this environment.

HB 1625 HD1 would cripple the research efforts at UH and could put the Carnegie-1 categorization in jeopardy. It is unlikely that faculty could sustain long-term funding at a 5:1 ratio over what the state provides. Drastically increasing the teaching will result in a direct decrease in the ability of faculty to do research and generate research dollars. This will decimate graduate programs and postdoctoral training since these are funded by research funds and the graduate programs would collapse. Because of this, mainland and local students will no longer consider UH when they are seeking

an education in science and in the high tech areas. I suspect that this would also lead to significant loss of the most highly regarded UH faculty to competing mainland universities, decimating the ability of UH to secure federal funding. Having a strong research university is key to providing technological and economic benefits to the state, and high quality education to local students.

Testimony Submitted to the House Committee on Finance  
**February 25, 2016 at 3:00pm**  
Conference Room 308

Brian Taylor

**HB 1625 – HD1 – RELATING TO THE UNIVERSITY OF HAWAII**

Chair: Sylvia Luke, Vice Chair: Scott Nishimoto, and members of the committee:

Background

I provide this testimony as a private citizen in opposition to HB 1625 HD1. In my professional capacity I serve as the Dean of the School of Ocean and Earth Science and Technology, that includes four Departments and five Organized Research Units (HIGP, HIMB, HNEI, PBRC and Sea Grant). I have served UH for 34 years, the first 24 as a Department instructional faculty member and the last 10 as Dean.

This legislation proposes program and salary funding prescriptions and reporting for organized research units (ORUs) of the University of Hawai'i. Should it be enacted, this legislation would do significant harm to the University and its ability to serve the State using knowledge gained from excellence in research on such issues as renewable energy, disaster resilience and preparedness, fresh water resources, climate change, living marine and terrestrial resources, healthy living and graceful aging.

Mission Specialization

All University of Hawaii faculty have teaching, research and service functions, but UH Manoa also has specialized faculty, as negotiated in the Collective Bargaining Agreement with UHPA– such as Researcher, Extension Agent, Specialist, Librarian, etc. And some of these are concentrated in units with specialized functions, such as CTAHR and Sea Grant for extension services, Organized Research Units, Hamilton Library, etc.

UH Manoa is the premier place of higher learning in the State, with the capacity to enrich, inspire and transform minds, lives and livelihoods. Our undergraduate teaching programs and Instructional faculty provide the most cost-effective higher education per graduating student in the State. UH Manoa is also a research-intensive university, with a mission to conduct research that matters to Hawaii and the world in areas of Hawaii's particular need or natural advantage. And UH Manoa is a 1907 land-grant college, and subsequently sea-grant and space-grant, with a mission to transfer knowledge gained in the areas of agricultural, marine and space sciences to practical advances for the people and businesses of the State.

Organized Research Units

Within this tri-fold mission of Hawaii's flagship university, ORUs were established to "advance the University's research and training mission", . . . "benefit the State of Hawaii directly through programs of applied research, extension service, and training in areas which meet community and regional human and economic needs" . . . "long term" . . . "where the University has intrinsic research advantages or particular capabilities". UH policy further states: "In most cases, funding is obtained from both State and Federal sources, the ratio of external to core funding is greater than one, and more than one external funding source is involved". UH Manoa has established ORUs in only a few focus areas such as Energy, Water

Resources, Cancer, Aging, Astronomy, Geophysics, Marine Biology and Biosciences, and, in the past, the Pineapple Research Institute (when that product was so important to the State's economy).

The ORUs have led to UH Manoa's disproportionate share of Federal funding and world-class reputation. They leverage more external than State funding (whereas few academic Colleges do), some many times so, and collectively serve as one of the State's high-tech employers, economic engines and sources of innovation. As such they are a critical part of the UH Innovation Initiative. They are operational 24/7/365 and, as intended, provide long-term, world-class, mission critical, infrastructure and equipment (e.g., ships, telescopes and labs) to students and faculty.

### Leveraging

The leveraging of ORUs is not limited to extramural funding. For example, this year I was proud to receive from the Hawaii Tourism Authority on behalf of SOEST the 'Elele Organization of the Year award for helping to bring what promises to be more than \$100 million in convention business to the State.

Anchored by SOEST, UH is ranked in the top 15 Universities in the world in the Geosciences (earth, ocean, atmosphere, polar and planetary sciences). This reputation precedes me when I recruit students, faculty and staff to the University. They want to be involved in cutting edge research that matters, surrounded by faculty, staff and facilities that are world class. All the faculty in SOEST, in Departments and ORUs, teach and mentor students, albeit to differing degrees, and oftentimes as much in the field and the lab as in the classroom. This specialization maximizes productivity and engagement.

It also means that **productivity needs to be collectivized and measured at the unit level, rather than by fractions of individual tenured faculty salaries**. For example, a given Principle Investigator usually supports not only a fraction of their own State salary but also the salary of other non-State-supported faculty, staff, post-docs and students, not to mention major facilities and research costs. Furthermore, the ORU collective is much greater than the sum of its individual parts/faculty, their specialization and interdisciplinary expertise collectively providing an "effective means of pooling appropriate expertise, equipment and management resources", as per UH policy.

Finally, had this proposed Legislation been in place, our most productive ORU's (such as HNEI), that today leverage many, many times more Federal than State dollars, would not have survived long enough to become so – despite the importance of their work to the State.

Thank you for the opportunity to provide testimony in opposition to this measure.

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**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Sayed Bateni	Individual	Oppose	No

Comments:

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**HB1625**

Submitted on: 2/23/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
SHIV K SHARMA	Individual	Oppose	No

Comments:

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**HB1625**

Submitted on: 2/23/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Stephen Martel	Individual	Oppose	No

Comments:

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**HB1625**

Submitted on: 2/23/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Linda Martel	Individual	Oppose	No

Comments:

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Testimony Presented Before the  
Committee on Finance  
Thursday February 25, 2016 at 3pm

By  
Christy Nishita, Ph.D.  
Interim Director, Center on Aging, University of Hawaii

RE: HB1625 HD1; In Opposition

Chair Luke, Vice-Chair Nishimoto, and Members of the Committee on Finance,

My name is Christy Nishita and I am the Interim Director of the Center on Aging (COA) at University of Hawai'i at Mānoa (UHM). I am providing *individual* testimony in opposition to HB1625 because of its negative impact on the capacity building and future growth of COA.

COA is a small unit on campus, conducting primarily applied research, program development and evaluation in the community. It does not have any faculty supported by state funds. Instead, COA has been active in bringing in contracts and grants over the past few years. Current projects address important community needs such as family caregiving, elder abuse, dementia, and building an "age-friendly city". *However*, efforts by its half-time Interim Director and temporary researchers, are limited to activities specified in contracts. It has not been able to engage in strategic planning or a broad based assessment of the needs of Hawaii's older population. Nor has it been able to fully achieve all areas of its mission, which is to develop educational programs and initiatives in gerontology. Permanent positions will help to achieve this goal.

I would like to thank the Committee on Higher Education for their support of bills requesting 2 permanent positions with funding at COA (HB1883, HB493 HD1). If passed, these faculty, one specialist and one instructional faculty member, will identify workforce development needs and gaps in aging, create educational initiatives on campus, and implement training for practitioners and caregivers in the community. This *protected time*, to focus on strategic planning and needs within the state, is important for its long-term growth.

Even if COA is successful in securing 2 additional permanent positions, the pursuit of extramural funding will not end. It is already a part of the culture of the COA to compete for grants and contracts to support financial sustainability; as well as to advance scholarship and build recognition for COA locally, nationally, and internationally. COA is and will continue to be driven to discover, innovate, and create meaningful change for older adults in Hawaii.

**Testimony Related to**  
**House Bill 1625 HD1**  
**RELATING TO THE UNIVERSITY OF HAWAII**  
**Presented before the**  
**House Committee on Finance**  
**The Twenty-Eighth Legislature**  
**February 25, 2016**  
**by**  
**Richard J. Wainscoat**

Chair Luke, Vice-Chair Nishimoto and members of the Committee. My name is Richard Wainscoat and I am a faculty member at the University of Hawaii Institute for Astronomy. I am submitting this testimony in strong opposition to this bill as an individual.

I believe that HB1625 HD1 is misguided and would cause irreparable harm to the University of Hawaii, and to the Institute for Astronomy. The bill targets some of the most prestigious research units of the University of Hawaii and would impose unrealistic requirements.

The bill contains errors. For example, tenured faculty at the Institute for Astronomy, including those in “R” positions, are required to teach.

The Institute for Astronomy has led astronomy development in Hawaii. The economic benefit to the state of Hawaii from astronomy far exceeds the state funding that has been provided to the Institute for Astronomy.

The requirement of a 5:1 ratio of extramural funding to state funding is unrealistic, and ignores the teaching, outreach and other educational and community work that some of the research units (such as the Institute for Astronomy) perform.

I urge you to reject this bill.



2800 Woodlawn Dr.  
STE #263  
Honolulu HI 96028

23 February 2016

in reference to House Bill 1625

Growth of the state's technology sector is an important component of any plan to achieve diversification in Hawaii's economy. Significant progress has been made in recent years through programs supported by federal and state initiatives, but more is required to move Hawaii's technology industry to support technology development and subsequent commercialization. Continuing innovations in the science and technology fields will not only enable the State to succeed in a global marketplace, but will also support a sustainable economic growth mechanism through diversification and technology-based product development.

Spectrum Photonics is a technology-oriented small business whose core technology is based on intellectual property licensed from the University of Hawaii, Manoa. At the time of Spectrum Photonics founding in 2008, we carefully considered where to locate the company. Having previously served as VP for Research with ICx Technologies, a publicly-traded technology company with research locations distributed in ten states across the Mainland, I considered many possibilities. The candidate list was eventually shortened to Florida, Texas, California and Hawaii. Although we were relatively unfamiliar with the business climate in Hawaii, we decided to establish our business on Oahu. We chose to locate Spectrum Photonics in Hawaii for numerous reasons, but the strength and reputation of the research programs at University of Hawaii Manoa in addition to the value proposition of new intellectual properties, were chief among those reasons.

Enactment of HB1625 would impose long term damage to the reputation, productivity, and infrastructure of the research enterprise at UH Manoa. At current levels, state support of the UH organized research units provides the funding necessary to attract and retain the quality faculty needed to achieve and maintain nationally-competitive research programs. It is my understanding that UH annually brings \$350,000,000 - \$450,000,000 into the state through extramurally-funded research grants and contracts, which in and of itself is an extremely valuable source of non-state revenues. This is not the end of the story, however, as the presence of a strong university research enterprise is undeniably one of the most important factors in the establishment and growth of a vibrant technology-based business community. During its seven year of operation, Spectrum Photonics has steadily grown to an employee headcount of 16 and has received approximately \$16,500,000 in federally-funded research and development contracts through 2015. We recently announced a new \$16,900,000 federal contract award, with Spectrum Photonics serving as the contract prime and UH included as one of our subcontracted team members. With this and future awards we anticipate company headcount increasing to 30-50 within the next 3-5 years; however, continued growth for small technology companies like ours is based in part on the sustained health of the UH research units.

Our future viability as a Hawaii-based producer of technology-based products depends on the successful establishment of technology innovation, commercialization, and infrastructure improvement. Spectrum Photonics is not unique in this matter; all current and future technology-oriented Hawaii-based businesses are fundamentally reliant on innovation and infrastructure. Enactment of HB1625 would quickly serve to erode and diminish the state's infrastructure as well as its primary engine for intellectual innovation.

We strongly urge defeat of HB1625.

Sincerely,

A handwritten signature in blue ink, appearing to read "Edward T. Knobbe".

Edward T. Knobbe, Ph.D.  
President and CEO  
Spectrum Photonics, Inc.

**From:** mailinglist@capitol.hawaii.gov  
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**To:** FINTestimony  
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**HB1625**

Submitted on: 2/23/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Darren Okimoto	Individual	Oppose	No

Comments:

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**Subject:** Submitted testimony for HB1625 on Feb 25, 2016 15:00PM

**HB1625**

Submitted on: 2/23/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Steven Businger	Individual	Oppose	No

Comments: Although the motivation for this bill is understood. This bill would have a disastrous effect on the research enterprise at the UHM. It would result in layers of bureaucratic friction that would seriously impede the performance of research, which in turn would make UHM significantly less competitive in an increasingly competitive arena. UHM has world-class research programs that funnel \$millions of resources into the State of Hawaii economy, while producing important products and services that Hawaii relies on. This bill needs to be killed here and now.

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**HB1625**

Submitted on: 2/23/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Kevin Higaki	Individual	Oppose	No

Comments:

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My name is Nicholas Kaiser. I am an astronomer at the Institute for Astronomy at the University of Hawaii and I am writing as an individual to oppose HB1625.

I believe that the State of Hawaii and the University made a great decision when they decided to exploit the opportunity allowed by the superior observing conditions on Mauna Kea as compared to other sites to build up research in astronomy at UH. The UH share of observing time on the top-notch international observatories that have flocked to the State allowed the Institute for Astronomy to establish a world class reputation in research and brought international leaders in the field to work here and to teach at the University. With nurture, and with the advent of the Thirty Meter Telescope, the future prospect for the IfA to retain its world-class status is bright.

But the proposed bill would do great damage to this 'jewel in the crown' of UH. Researchers at the Institute have brought in a great deal of grant funding over the years, and will no doubt continue to do so, and the current Director has been moving to increase the amount of salary off-load that faculty should provide from their grants. But the level of support dictated in HB1625 is entirely unrealistic in the current funding environment. If enacted, this would render IfA uncompetitive and unable to continue to attract leading lights in the field of astronomy, and the University and the State will suffer.

Your sincerely,

Nicholas Kaiser, FRS (Fellow of the Royal Society).



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**HB1625**

Submitted on: 2/23/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Marek Kirs	Individual	Oppose	No

Comments:

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## TESTIMONY IN OPPOSITION TO HB 1625

My name is Peter Mouginis-Mark. For the last 33 years, I have been a researcher faculty member within the Hawaii Institute of Geophysics and Planetology (HIGP). I am submitting this testimony as an individual and a Hawaii resident since 1982. **I strongly oppose HB 1625, even with the amended wording coming out of the Board of Higher Education!**

I contend that any restriction on the ability of my Institute, or any other organized research unit (ORU) at the University of Hawaii (UH) is highly detrimental to the mission of the University and would have serious negative impacts for the State. It is incorrect that research be treated as separate from the teaching and community service roles for the students and the State. During my time at UH, I have raised over \$24,000,000, and have spent the majority of these funds in supporting over 40 staff and students who would otherwise not have had jobs here in Hawaii. Furthermore, the notion that researcher do not teach is in error, since I have taught over 80 credits at UH at all levels ranging from introductory undergraduate courses to graduate-level. I have also graduated 14 graduate students as their committee chair, served on a further 10 graduate committees, and mentored 10 undergraduate students working on research topics.

Research is the economic driver for the University, and it is the State salary support that enables us to explore high-risk/high-payoff funding opportunities. For instance, at the present time I am Science Lead on a \$20,000,000 proposal to the National Science Foundation that would provide critically needed geophysical information on Hawaii's water resources. I would never have worked for almost a year to help develop this project had I not had the State salary support that I now receive. And if this support were not available, the people of Hawaii would be left with an uncertain future regarding the availability and quality of water in such critical localities as Honolulu and Kailua-Kona.

A second example where the State benefits from the research skills at UH lies in the many scientific conferences that we attract to the State. The testimony of my Dean (Dr. Brian Taylor) notes that SOEST has recently been congratulated by the Hawaii Tourism Board for generating over \$100,000,000 in new visitor revenue by organizing conferences in Hawaii. In my own case, as part of my researcher effort, I am helping to plan a conference in 2018 that will bring an estimated \$9,000,000 to the State – a figure that dwarfs all of the salary that I have been paid by the State since I became a faculty member in 1982!

The same situation is true for all of my Institute, as well as the remainder of the School of Ocean Earth Science and Technology (SOEST). SOEST has been ranked by the international journal Nature as the 15<sup>th</sup> best in the world, and this is because we raise over \$100M per year in funding. But Federal grants are becoming increasingly difficult to win, and so to continue to expand there has to be stability for the core researchers and their support staff. HB 1625 would completely destroy our capability to attract such funding because, with fixed budgets, hundreds of support staff would be let go in order to use the funds for faculty salaries. The impact on the University would be catastrophic,

and the negative impact on the State through the loss of these jobs would be severe. Indeed, I would predict a downward spiral in the quality of effort at UH that would essentially make UH Manoa another community college within 5 – 10 years. I am sure that this is not the intent of HB 1625.

The final issue is one of a faculty salary cap. Both HIGP and SOEST have to compete at the international level for the best and brightest researchers and teachers. We have accomplished this because we are able to offer market-driven salaries; this has enabled us to achieve the ranking of 15<sup>th</sup> university in the world for geosciences. If there were a salary cap, not only would we be unable to hire the next generation of innovative researchers, but we would be at great risk of losing our current capabilities. It would truly be a case of killing the goose that lays the golden egg for the State, as the salary support is but a small fraction of the total dollars raised by the researchers.

Accordingly, I continue to strongly oppose HB 1625, and hope that the House Committee on Finance will reject this bill.

Thank you for your time in reading my testimony.



Peter Mougini-Mark  
2212 Round Top Drive  
Honolulu, HI 96822  
(808) 387-3700

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**HB1625**

Submitted on: 2/23/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Patricia Cooper	Individual	Oppose	No

Comments:

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**HB1625**

Submitted on: 2/23/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Kelly Lockhart	Individual	Oppose	No

Comments:

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My name is Christoph Baranec. I am a tenure-track Assistant Astronomer at the Institute for Astronomy (IfA) at UH Manoa, submitting this testimony as an individual. The IfA is an Organized Research Unit (ORU) distributed across Oahu, Maui and Hawaii Islands. I specifically live and work in Hilo, although I teach classes at both UH Hilo and UH Manoa.

The proposed amendment HD1 to the bill HB1625 places an undue burden on researchers at Organized Research Units (ORU) at the University of Hawaii. I believe in transparent reporting of how UH funds ORU, and this reporting mechanism is already in place. The major flaw in this amendment culminates in §304A-(c),(5),(C): “During the third year of employment and thereafter, twenty-five per cent of the salary may be funded by state moneys.” It is infeasible for the majority of faculty to raise 75% of their salary through external funds. I specifically develop and build adaptive optics technology and use it for astronomical research for which I have to main funding avenues, the National Science Foundation (NSF) and NASA. Both have limits on the amount of direct salary that can be requested as part of proposals. For example, the NSF grant proposal guide<sup>1</sup> Section II.C.2.g.i.a. states, “As a general policy, NSF limits the salary compensation requested in the proposal budget for senior personnel to no more than two months of their regular salary in any one year. This limit includes salary compensation received from all NSF-funded grants.”

I currently have 1 grant from NASA which covers 1 month of my salary per year, and I just submitted a \$4.3M proposal on 2/22/2016 to the NSF that, if selected for funding, will also cover 1 month of my salary per year. The majority of funding for this proposal will go to support engineers, graduate students and postdoctoral scholars at the University. The instrument built as part of the proposal will be used by graduate students, as well as undergraduate students in astronomy at UH Manoa and UH Hilo.

Unfortunately this external funding is by no means assured and success rates for federal awards are dropping<sup>2</sup>. We are in competition with the best schools in the world and are already at a disadvantage in terms of funding (e.g., endowments, alumni giving). The proposed amended HD1 to the bill HB1625 puts Hawaii at an even greater disadvantage by creating an undue burden on researchers having to fund the majority of their salaries. Instead, the legislature should see ORU researchers as investments that uniquely create a long-term educational, economic and social benefit to the people of Hawaii.

Sincerely,



Christoph Baranec

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<sup>1</sup> [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg)

<sup>2</sup> “Impact of Declining Proposal Success Rates on Scientific Productivity,” Cushman, P., et al., 2015. (<http://arxiv.org/abs/1510.01647>)

Testimony for Public Hearing  
House Committee on Finance

**February 25, 2016 at 3:00pm**  
Conference Room 308

Darren T. Lerner  
47-387 Lulani St.  
Kān‘eohe, HI 96744

**HB 1625 HD1– RELATING TO THE UNIVERSITY OF HAWAII**

Chair: Sylvia Luke, Vice Chair: Scott Nishimoto, and members of the committee:

Good morning Representatives Choy, Ichiyama and members of the committee. I provide this testimony as a private citizen in opposition to HB 1625. In my professional capacity I serve as the director for the University of Hawai‘i Sea Grant College Program (Hawai‘i Sea Grant) and the Interim Director for the University of Hawai‘i Water Resources Research Center (WRRC). This legislation establishes program and salary funding requirements for organized research units of the University of Hawai‘i. Should it be enacted, this legislation would do significant harm to all organized research units at the University and would severely reduce the ability for Hawai‘i Sea Grant and WRRC to continue their more than 50 years of successful engagement in research, extension, education and outreach serving Hawaii’s communities. Should this bill pass it may ultimately result in the closure of Hawai‘i Sea Grant and WRRC programs in Hawai‘i.

The Water Resources Research Act of 1964, which was signed into Public Law 88-379 by President Lyndon B. Johnson, was established to promote understanding of critical state and regional water management and policy issues through research, community outreach and engagement, and public education, ultimately creating the National Institutes of Water Resource Research. WRRC was established in 1964 and is part of a 54 program network including programs in the 50 US states, the District of Columbia, Puerto Rico, the US Virgin Islands, and Guam.

The Water Resources Research Act established the Water Resource Research Institutes as a partnership program with core federal funding requiring a match of non-federal funds from the states where they are located. Each institute must demonstrate non-federal matching funds and a commitment from the state in the amount of 2 dollar for every 1 federal dollars received. In as much as most of the extramural funding garnered by the significant efforts of the faculty of WRRC and the faculty of any organized research unit at the University of Hawai‘i for that matter, is derived from federal funding opportunities, HB1625, should it be enacted into law, would remove the ability to provide the required match and demonstrated commitment of the State of Hawaii as a partner in this more than 50 year relationship with the Federal Government. Should the WRRC fail to provide the required 2:1 match, the result would be withdrawal of the federal support and closure of this program.

The National Sea Grant College Program Act of 1966, which was signed into Public Law 89-688 by President Lyndon B. Johnson, was modeled after the Land Grant Act of 1862 and established

what is now a network of 33 university based programs focused on understanding and communicating conservation and sustainable use of coastal and ocean resources to the betterment of coastal communities across all US coastal states, Great Lakes states, Puerto Rico and Guam. Hawai'i Sea Grant was established in 1968.

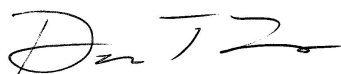
The National Sea Grant College Program Act established the Sea Grant Colleges as a partnership program with core federal funding requiring a match of non-federal funds from the states where they are located. Each Sea Grant College Program must demonstrate non-federal matching funds and a commitment from the state in the amount of 1 dollar for every 2 federal dollars received. In as much as most of the extramural funding garnered by the significant efforts of the faculty of Hawai'i Sea Grant and the faculty of any organized research unit at the University of Hawai'i for that matter, is largely from federal sources, HB1625, should it be enacted into law, would remove the ability to provide the required match and demonstrated commitment of the State of Hawaii as a partner in this nearly 50 year relationship with the Federal Government.

Hawai'i Sea Grant is a highly leveraged program with 5 FTE supported by institutional funds, an additional 10 FTE supported by federal funds and 30 FTE that are project-based and supported by extramural funds. I respectfully offer that this is an equation that greatly benefits the University and State of Hawai'i. Reducing the commitment of institutional funds will only serve to reduce the ability to provide the basis for the significant leveraging demonstrated. Abolishing institutional support will remove the ability to provide the required matching funds and would ultimately result in the removal of Hawai'i Sea Grant's institutional status and dissolution of the program.

Both of these programs, not unlike other organized research units at the University of Hawai'i strive for a future for Hawai'i where the environment sustainably supports culturally, economically and socially inclusive and resilient communities. To do this we must better understand, communicate, and develop policy based on knowledge gained from excellence in research on disaster resilience and preparedness, coastal process such as beach erosion and sea level rise, and the sustainable use of fresh water resources, renewable energy, and food sources. I hope that you will agree that maintaining the utmost effectiveness of the organized research units at the University of Hawai'i, the State of Hawai'i's only Carnegie 1 Research Institution (R1: Doctoral Universities – Highest Research Activity), are key to this success.

Thank you for the opportunity to provide testimony in opposition of this measure.

Sincerely,

A handwritten signature in black ink, appearing to read "Darren T Lerner". The signature is fluid and cursive, with the first name "Darren" being more prominent than the last name "Lerner".

Darren T Lerner



Dear Hawaii State Legislature:

I am writing to express my strong **OPPOSITION** to **House Bill 1625 HD1 HSCR 629-16 Proposed**.

In 1992, I graduated from the University of Hawaii at Manoa with a PhD in Geology & Geophysics. I have lived in Hawaii for 30 years and raised two children here who also graduated from UH. I am now a professor in the Hawaii Institute of Geophysics and Planetology (HIGP). Throughout my research career, I have managed 23 external grants and contracts worth approximately \$45.8M or an average of \$1.9M/year since graduation. A very high proportion of these funds are used to support faculty co-Investigators, staff, and students that have all supported the State economy.

Since 2002, I have been the Director of the NASA Hawaii Space Grant Consortium (HSGC) and the NASA Hawaii EPSCoR Programs. Both programs are part of HIGP. The function of HSGC is to provide STEM education and NASA workforce development opportunities in Hawaii. HSGC maintains 3 pipelines of high tech activities starting at K-12 and culminating in undergraduate and graduate fellowship research programs. Through our K-12 Future Flight Program, under the direction of Art and Rene Kimura, we encourage thousands of Hawaii's underrepresented youth to pursue robotics and other high-tech after school programs. As an example, in the early 1990's 0-1 students from Waiialua High School enrolled at the College of Engineering at UH, while now we receive applications from 10-15 students per year, and Waiialua students have a national reputation in robotics programs. The focus of HSGC is the 70-80 hands-on research fellowships (at as high as \$4000/semester) that are granted to undergraduates across the UH System. HSGC fellowships pair a faculty researcher with a student who gets a unique opportunity to participate in her/his mentor's research. Most students go on to graduate school as they build self-esteem and understand that their research makes a difference. Most of the mentors come from HIGP and other ORU's across UH-Manoa. HSGC impacts thousands of students per year.

Since 2007, I have been the Director of the Hawaii Space Flight Laboratory (HSFL). HSFL's objective is to design, build, test, launch, and operate small spacecraft from the Hawaiian Islands. On November 3, 2015, HSFL's first launch from the Pacific Missile Range Facility did not achieve orbit. However, there were a lot of successes. The world took notice that Hawaii can become a space-faring State, and the world took notice that our local students built a satellite that passed all tests for space flight. Of the 130 students working on the HiakaSat satellite, all were hired into high tech jobs as a result of their research experience that put them in a much better position to compete for jobs than others with only a Bachelor's degree. Many of these students worked in project teams as part of engineering capstone classes where our students worked on real problems related to space flight. Since launch, HSFL has received numerous queries for another launch at ~ \$18M and for work on another \$9M satellite project. US commercial companies want to launch 10,000 small satellites in the next few years. HSFL offers hands-on research opportunities that show that our students are valuable to this rapidly expanding growth industry. The exciting part is that a growing number of government labs and commercial groups are coming to UH to use HSFL facilities and students to perform research on the next generation of small satellites. This is all part of the HSFL plan to expand launch and small sat development opportunities in the State to create highly paid jobs as a complement to our traditional economic focus areas.

The proposed House Bill 1625 HD 1 would be devastating to UH Research, and also devastating to the many students that receive hands-on and very unique research opportunities as a result of our programs.

Thank you for your time and consideration,  
Dr. Luke Flynn  
94-1115 Hahana St.  
Waipahu, HI 96797

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Wednesday, February 24, 2016 11:41 AM  
**To:** FINTestimony  
**Cc:** anupam@hawaii.edu  
**Subject:** Submitted testimony for HB1625 on Feb 25, 2016 15:00PM

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Anupam Misra	Individual	Oppose	No

Comments: I have been a soft-money researcher at UH since 1992 and for many years had only "ZERO" fund support from the State of Hawaii. From, last year (2015) UH is giving me conditional 25% support (if our department has enough funds). For many years, our group has generated significantly more external funds that we get from the State of Hawaii. At present, I have several federal projects which brings about \$1.7 million dollars to UH. Instead of rewarding hard working researcher and providing them a secure future, this bill targets all researchers good or bad. This bill will significantly affect the future of research and innovation at UH in a very negative way. Why there is no bill to reward good workers, researchers or instructors? I also feel sorry for faculty members working at community colleges. These people teach lots of classes and generate significant income for the State, but are paid significantly lower than UH Manoa faculty. They deserve better pay.

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**To:** FINTestimony  
**Cc:** melanie.abecassis@gmail.com  
**Subject:** \*Submitted testimony for HB1625 on Feb 25, 2016 15:00PM\*

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Melanie Abecassis	Individual	Oppose	No

Comments:

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Testimony Submitted to the Committee on Finance  
Garrett Ito

**HB 1625– RELATING TO THE UNIVERSITY OF HAWAII**

Chair: Sylvia Luke, Vice Chair: Scott Nishimoto, and members of the committee:

I wish to voice my strong opposition to this bill. This bill imposes extraordinary requirements on the state's return on investment (5 to 1) in organized research units (ORUs) at UH, and on reporting of the finest minutia of activities and resources associated with these ORUs. I know of no other state-funded activity held to such exorbitant standards and detailed scrutiny.

Incredulously, I therefore read this bill as a statement that the State of Hawaii should divest in University-affiliated research in areas such as:

- Clean, freshwater resources for Hawaii's growing population
- Hawaii's marine and on-land living resources and ecosystems
- Award winning medical research supporting healthy living and aging for Hawaii's citizens, cancer treatment and patient care, as well as professional educating for Hawaii's physicians
- Research and education that leads the UH system in national rankings in areas such as the origin of earth and the solar system, natural hazard preparedness and resilience, and ocean and space engineering
- Renewable energy resources and infrastructure

Passing this bill will risk

- the loss of many millions of dollars annually of extramural funding with its immediate (2-to-1 on investment), as well as long-term direct economic impacts;
- the loss of a skilled workforce in the areas above and related fields;
- the loss of expertise that enables pertinent classroom instruction and student research training in these ORUs as well as their affiliated instructional organizations;
- the loss of long-term technological developments that will support Hawaii in a changing climate and global economy;

Respectfully, I implore you to support the investment into the long-term well being of Hawaii and stop this bill.

Heather M. Kaluna  
Hawai'i Institute of Geophysics and Planetology  
1680 East-West Road, POST 529  
Honolulu, HI 96822  
kaluna@higp.hawaii.edu

**Testimony Regarding HB 1625 HD1**  
February 24, 2016

Aloha e members of the Committee on Finance,

My name is Heather Kaluna and I am a Native Hawaiian postdoctoral researcher at the Hawai'i Institute of Geophysics and Planetology (HIGP). I am writing to **oppose HB 1625 HD1** because I believe this bill will have a drastically negative effect on the sustainability of organized research units (ORUs) at the University of Hawai'i, with a very strong possibility of losing these units all together. As someone who has obtained their Ph.D from the Institute for Astronomy and who is now a postdoctoral researcher at HIGP, I can truly say the loss of these ORUs would result in a significant lack of STEM (science, technology, engineering and mathematics) higher education and professional training opportunities within the state of Hawai'i.

From my experience, research faculty at these ORUs spend up to 50% of their time writing proposals and pursuing funding opportunities. Additionally, when looking at data from 2001 to 2014, the mean ratio of extramural funds to state funds in my department is about 2.5:1. When considering this ratio along with the amount of time spent pursuing extramural funds, it quickly becomes clear that achieving and sustaining a ratio of 5:1 would require research faculty to spend almost all of their time pursuing funding opportunities. The problem with this scenario is that the success of obtaining extramural funding is strongly dependent on the quality of research of the proposer. Thus, a 5:1 requirement quickly makes the sustainability of ORUs unachievable as our research faculty will not have the time needed to conduct the quality research that is required to write successful grant proposals.

Additionally, while research faculty may not formally teach in a classroom setting, they do spend a notable fraction of their time training undergraduate and graduate students, and postdoctoral researchers whom they support with these grant moneys. Without the professional and funding support from OSU researchers, I would not have been able to obtain my Ph.D and continue my professional development as a postdoctoral researcher. Lastly, having been born and raised on the island of Hawai'i, I cannot express more how detrimental the loss of ORUs would be on increasing the number of local (including Native Hawaiian) professionals in the growing scientific and technical workforce within the state. Thus, I kindly urge the committee to **oppose HB 1625 HD1**. Thank you for taking the time to consider my testimony.

Mahalo nui loa,  
Heather Kaluna

**From:** mailinglist@capitol.hawaii.gov  
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**To:** FINTestimony  
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**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Lily Shao	Individual	Oppose	No

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**Subject:** \*Submitted testimony for HB1625 on Feb 25, 2016 15:00PM\*

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Alexander Krot	Individual	Oppose	No

Comments:

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Testimony Presented to the House Committee on Finance  
February 25, 2016 at 3:00pm

Milton A. Garces

**HB 1625 HD1 – RELATING TO THE UNIVERSITY OF HAWAII**

Chair Luke, Vice Chair Nishimoto, and Members of the Committee on Finance:

I provide this testimony as a private citizen in opposition to HB 1625 HD1. In my professional capacity I serve as a Research Associate at the Hawai'i Institute of Geophysics and Planetology and as the Director of the UH Infrasound Laboratory in Kailua-Kona, Hawaii. I am one of the UH Researchers that would be directly impacted by this bill.

The Hawai'i Institute of Geophysics (HIG) was established in 1958. Hawai'i Revised Statute §304A-1501 (§304-42) mandated the formation of an institute of geophysics at the University of Hawai'i (UH) that "shall undertake basic research and training in geophysics, and shall disseminate knowledge of geophysics affecting Hawaii, and to the extent its facilities permit, may serve to apply the results of its research to geophysical problems in the State." In 1994 the Planetary Geosciences group, then in the UH Department of Geology and Geophysics, merged with HIG to form the Hawai'i Institute of Geophysics and Planetology (HIGP). HIGP is one of the UH Mānoa organized research units addressed by HB 1625 HD1.

Currently there are 35 faculty in HIGP who support an additional 65 staff, post-doctoral researchers and students. In contrast to the notion that "organized research units are not economically sustainable as stand-alone units," HIGP has been an economic engine for UH and the State, generating an annual average of ~250% return on the investment of State moneys over the past fifteen years, totaling more than \$100M of extramural revenue. HIGP faculty typically raise 25-100% of their salaries through extramural funding, with State support providing critical funding stability that helps ensure success. If the proposed legislation were to be enacted, the result would not be the enrichment of the State, but rather its impoverishment, as these proven, productive researchers depart to find positions with less onerous requirements.

HIGP's positive economic impact extends well beyond its ratio of extramural to State moneys. Through the Hawai'i Space Flight Laboratory, HIGP is building a cottage industry of technicians and engineers to support the emerging field of small satellite development, including a nascent capability to launch these satellites from the islands. HIGP research has spun off multiple high-tech companies in the State, employing dozens of personnel not captured in the list of 100 HIGP faculty, staff and administrators. HIGP operates and develops state-of-the-art equipment to provide fundamental capabilities for agencies like the US Department of State and the National Nuclear Security Administration, and attracts a host of selective clientele ready to pay for its unique services.



As mandated, HIGP serves the State, the Nation and the world in researching and sharing knowledge about geophysical problems involving earthquakes, tsunami, volcanic activity, geothermal resources, sound in the ocean and atmosphere, and the physical properties of materials. HIGP's Infrasound Laboratory researchers provide critical data and support for the United Nation's Comprehensive Nuclear-Test-Ban Treaty Organization as well as expertise and workforce training and development for diverse Federal agencies responsible for natural hazards and national security. HIGP engineers support first responders worldwide through the development of innovative technologies such as stand-off sensors to rapidly detect explosions from distances of hundreds of feet to thousands of miles.

Recognizing that education and research are mutually enhanced when accomplished conjointly, HIGP's Space Grant Consortium supports fellowships, training programs, workshops for teachers and public exhibitions that promote the appreciation and understanding of scientific research within the broader community. Students get hands-on experience with HIGP research faculty, building and deploying instruments in environments ranging from Mars to the bottom of Earth's ocean. These students in turn serve as role models, encouraging and inspiring younger generations to follow in their footsteps. This succession of knowledge and experience that HIGP has developed is critical to sustainably building the skilled workforce necessary to support the State of Hawai'i's bid to diversify its economy through a high-tech industry. If the proposed legislation were to be enacted, the impact on the present would be painful, but the impact on the future could potentially be unrecoverable.

Thank you for the opportunity to provide testimony in opposition of this measure.

Testimony Presented to the House Committee on Finance

**February 25, 2016, 15.00 hours**

Conference Room 308

Robert Wright

**OPPOSED** to House Bill 1625 HD1.

Dear Hawaii State Legislature:

HB 1625 HD-1 is aimed squarely at closing down organized research units at UH Mānoa, most of which are in SOEST, at the behest of a vocal subset of UH faculty. Unfortunately, the proposed bill is deeply flawed on both a financial and intellectual basis.

1. **SOEST is a fantastic investment of state tax dollars for the taxpayer of Hawai'i - for every \$1 the state taxpayer gives us we make another \$5 from external agencies.** SOEST currently receives about \$17 million per year in state funds. SOEST takes this investment and returns (in the form of extramural grants and contracts) about **\$100 million dollars per year in extramural funding**. This is a **5:1 return on investment for the state taxpayer** (with no economic multiplier applied). The vast majority of this is federal grant money. This is a direct injection of money into the state economy, from outside of the state economy, which **grows Hawai'i's GDP**. Close down the ORUs, and force the faculty who write the successful proposals to move to the mainland for better working conditions, **and the state economy will lose this money** (which will instead follow the researchers and nourish the economy of whichever state they move to). **Since its inception in 1988, SOEST has raised over \$2 billion in external grants and contracts.**
2. **SOEST creates high-tech, well-paid jobs for the state of Hawai'i, jobs that benefit the state's small businesses and service providers.** SOEST has almost 1000 staff members, of which only about 200 are faculty, and a smaller number than this are research faculty. **Only a fraction of the personnel who work in SOEST receive any state funds at all to support their positions.** Of the tenured research faculty that this bill seeks to terminate almost all already need to raise 25% to 50% of their salary from external grants. **We are already incentivized to work hard by the specter of a 25-50% pay cut if we do not raise grant money.** Fortunately we are very successful at raising extramural funds (see point 1). From this, we pay the remainder of our own salaries, and many engineers, scientists, graduate students, post-docs and support staff that keep SOEST running. I myself currently pay, from my NASA funding, three months per year of my own salary, 36 months per year of graduate student support, 20 months per year of senior engineering support, 18 months of post-doc support, and three months per year for an education and outreach specialist. These people pay state income and sales tax, buy groceries, eat in restaurants, pay rent and their mortgages, and make car payments. Our

research grant income directly supports Hawaiian small businesses and service providers. If this bill is passed, and I (and other successful research faculty) leave Hawai'i, so will salary support for these highly talented workers. **Hawai'i will lose high-tech jobs it desperately needs, and small businesses and service providers will feel knock-on effects as the research grants that flow from the mainland into the Hawaiian economy, and pass through their cash registers, disappear.**

3. **SOEST is a truly world-class academic center for Ocean and Earth Science education and research.** SOEST was recently ranked as the 15th best earth science program **in the world** by perhaps the world's most prestigious scientific journal, *Nature*, on the basis of the science we do. **SOEST is ranked ahead of MIT, Yale, Harvard, Cambridge, and UC Berkeley in this regard.** We are a world leader, by any metric you choose to use, and are something I hope that the state of Hawai'i feels proud of. **How many other academic units at UH are ranked as highly?**
4. **SOEST serves the state of Hawaii's needs.** SOEST conducts a wide variety of research of **direct importance to the state of Hawai'i**, including tsunami prediction, volcanic hazards, geothermal energy resources, water resource management, the biology of our ocean ecosystem, coastal erosion, coral reef health, our weather, renewable energy development, and ocean engineering, amongst others (<https://www.soest.hawaii.edu>)

Certain faculty members at UH want SOEST and the other ORUs shut down, as they blame the research effort for what they perceive as the deficiencies of UH Mānoa. However, their argument completely (and deliberately) ignores **the vastly positive contribution that that the ORUs have on the state economy** (which of course funds the university). UH Mānoa's research engine raised almost \$400 million last year. If this bill is passed then the state taxpayer *might* save a couple of tens of millions of dollars. **The state economy will lose hundreds of millions of dollars next year, the year after that, and every year after that.**

**SOEST is a great deal for the taxpayers of Hawai'i and an undeniably world class center of excellence for education and research into Earth science, ocean science, and associated technologies and engineering. The University of Hawai'i does not have many such centers of excellence, and it would be a shame to see it gutted.**

Thank you for taking the time to read this.

Dr Robert Wright.

HIGP/SOEST, University of Hawai'i at Mānoa

Testimony Presented to the House Committee on Finance  
**February 25, 2016 at 3:00pm**  
**HB 1625– RELATING TO THE UNIVERSITY OF HAWAII**  
From Greg Ravizza

I provide this testimony as a private citizen in opposition to HB 1625. Professionally, I am instructional faculty in the department of Geology and Geophysics at UH Manoa. In my opinion any cost savings that might be encouraged by enacting this bill will be outweighed by damage done to the UHM's research and teaching efforts. In terms of day-to-day operations there is no clear distinction between many I and R faculty. The world class work that these research units do serves state needs, enhances educational opportunities for UHM students and contributes significantly to the stature of the university. Specifically, I would like to emphasize that I regularly draw upon research results and ongoing research programs conducted by research units in my undergraduates teaching.

The support from the state that these research units receive plays an essential role in successfully competing for private and federal extramural funds. I am confident that anyone who actually takes the time to understand how the various research entities operate, and what they contribute to the university and the state will oppose the restrictive financial micromanagement described in the bill.

Shadia Rifai Habbal  
Institute for Astronomy  
University of Hawaii  
2680 Woodlawn Drive, B-103  
Honolulu, HI 96822  
808-206-1147  
[shadia.rifai@gmail.com](mailto:shadia.rifai@gmail.com)

My name is Shadia Rifai Habbal. I am a tenured faculty at the Institute for Astronomy (IfA) of the University of Hawaii (UH). I am submitting this testimony as an individual. I believe that HB 1625 HD1 would have devastating effects on the State of Hawaii, the University of Hawaii, and the people of Hawaii.

The Institute for Astronomy is one of the organized research units (ORU) at UH. It is an organization that has contributed world-wide to Astronomy since its foundation in the early 70's. Its contribution is not limited to research. It has been and remains heavily involved in teaching, education at the undergraduate and graduate levels, to outreach at the K-12 levels, as well as to the community at large.

My particular field of research is in solar physics. I worked at the Harvard-Smithsonian Center for Astrophysics, one of the premier institutions in astronomical research in the world, for 22 year, prior to moving to the IfA. The impetus for my move was for the unique opportunities offered for individual faculty at UH to make a difference among the student population, the public and outstanding research.

I have brought and continue to secure close to \$0.5 million in external funding on average per year, since my arrival here. This is research money to support student projects, and one of my main research activities to observe the solar corona during total solar eclipses. As eclipses take my international team across the world, often to very remote areas, the banner of IfA/UH is carried with us, as well as our pride to be a member of an institution that is a model of how research and education go hand in hand, across cultures, with no geographical boundaries stopping in our way.

Through our research, we educate and create new courses to expose the young generations to the beauty of the solar system, the Sun, our closest star, and its immediate impact on the planet that we call home. Through total solar eclipses, we educate the public about the clockwork of planetary motions, a clockwork whose impact extends to other stars and the burgeoning discovery of extrasolar planets.

DKIST will be the largest solar telescope in the world. Haleakala was chosen as its home among different sites across the US and the world. It is our duty through our teaching, education and research efforts to make this honor befitting to Hawaii. HB 1625 HD1 would be devastating to the future of this incredible project, to research and education in Hawaii.

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Wednesday, February 24, 2016 1:23 PM  
**To:** FINTestimony  
**Cc:** tayro@hawaii.edu  
**Subject:** Submitted testimony for HB1625 on Feb 25, 2016 15:00PM

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Tayro E Acosta-Maeda	Individual	Oppose	No

Comments: In my opinion the pass of this bill will put at risk millions of dollars annually of extramural funding, as well as long-term direct economic impacts. The loss of technology on the long term will deprive Hawaii of the tools to tackle climate and global economy changes; The passing of this bill will also induce the the loss of a skilled workforce in areas such as water resources, marine resources, medical research, renewable energies, disaster preparedness, and so on.

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## **HB 1625– RELATING TO THE UNIVERSITY OF HAWAII**

Chair: Isaac W. Choy, Vice Chair: Linda Ichiyama, and members of the committee:

I wish to voice my strong opposition to this bill. This bill imposes extraordinary requirements on the state's return on investment (5 to 1) in organized research units (ORUs) at UH, and on reporting of the finest minutia of activities and resources associated with these ORUs. I know of no other state-funded activity held to such exorbitant standards and detailed scrutiny.

Incredulously, I therefore read this bill as a statement that the State of Hawaii should divest in University-affiliated research in areas such as:

- Clean, freshwater resources for Hawaii's growing population
- Hawaii's marine and on-land living resources and ecosystems
- Award winning medical research supporting healthy living and aging for Hawaii's citizens, cancer treatment and patient care, as well as professional educating for Hawaii's physicians
- Research and education that leads the UH system in national rankings in areas such as the origin of earth and the solar system, natural hazard preparedness and resilience, and ocean and space engineering
- Renewable energy resources and infrastructure

Passing this bill will risk

- the loss of many millions of dollars annually of extramural funding with its immediate (2-to-1 on investment), as well as long-term direct economic impacts;
- the loss of long-term technological developments that will support Hawaii in a changing climate and global economy;
- the loss of a skilled workforce in the areas above and related fields
- the loss of expertise that enables pertinent classroom instruction and student research training in these ORUs as well as their affiliated instructional organizations.

Respectfully, I implore you to stop this bill.

Testimony Presented to the House Committee on Finance  
**February 25, 2016 at 3:00pm**

Erin P. Fitch

**HB 1625 HD1 – RELATING TO THE UNIVERSITY OF HAWAII**

Chair Luke, Vice Chair Nishimoto, and Members of the Committee on Finance:

I provide this testimony as a private citizen in opposition to HB 1625 HD1. In my professional capacity I serve as a PhD candidate in the field of volcanology, with study sites on the island of Hawai'i, and am associated with the Hawai'i Institute of Geophysics and Planetology and the University of Hawai'i Department of Geology and Geophysics.

The Hawai'i Institute of Geophysics (HIG) was established in 1958. Hawai'i Revised Statute §304A-1501 (§304-42) mandated the formation of an institute of geophysics at the University of Hawai'i (UH) that "shall undertake basic research and training in geophysics, and shall disseminate knowledge of geophysics affecting Hawaii, and to the extent its facilities permit, may serve to apply the results of its research to geophysical problems in the State." In 1994 the Planetary Geosciences group, then in the UH Department of Geology and Geophysics, merged with HIG to form the Hawai'i Institute of Geophysics and Planetology (HIGP). HIGP is one of the UH Mānoa organized research units addressed by HB 1625 HD1.

Currently there are 35 faculty in HIGP who support an additional 65 staff, post-doctoral researchers and students. In contrast to the notion that "organized research units are not economically sustainable as stand-alone units," HIGP has been an economic engine for UH and the State, generating an annual average of ~250% return on the investment of State moneys over the past fifteen years, totaling more than \$100M of extramural revenue. HIGP faculty typically raise 25-100% of their salaries through extramural funding, with State support providing critical funding stability that helps ensure success. If the proposed legislation were to be enacted, the result would not be the enrichment of the State, but rather its impoverishment, as these proven, productive researchers depart to find positions with less onerous requirements.

HIGP's positive economic impact extends well beyond its ratio of extramural to State moneys. Through the Hawai'i Space Flight Laboratory, HIGP is building a cottage industry of technicians and engineers to support the emerging field of small satellite development, including a nascent capability to launch these satellites from the islands. HIGP research has spun off multiple high-tech companies in the State, employing dozens of personnel not captured in the list of 100 HIGP faculty, staff and administrators. HIGP operates state-of-the-art equipment, such as the Keck Cosmochemistry Laboratory, which provides fundamental capabilities for agencies like the National Aeronautics and Space Administration and attracts a host of national and international clientele ready to pay for its unique services.



As mandated, HIGP serves the State, the Nation and the world in researching and sharing knowledge about geophysical problems involving earthquakes, tsunami, volcanic activity, geothermal resources, sound in the ocean and atmosphere, and the physical properties of materials. HIGP's Hawai'i Groundwater and Geothermal Resources Center partners with Hawai'i's Department of Land and Natural Resources, Department of Business, Economic Development & Tourism, Department of Health, and the Hawaiian Electric Company to disseminate information related to the State's natural resources via the internet. The Center for the Study of Active Volcanoes provides local through international training in volcano hazards monitoring. HIGP researchers provide critical data and support for the Treaty on the Non-Proliferation of Nuclear Weapons and the Chemical Weapons Convention arms control treaty. HIGP engineers support first responders worldwide through the development of innovative technologies such as stand-off sensors to detect explosives at distances of hundreds of feet.

Recognizing that education and research are mutually enhanced when accomplished conjointly, HIGP's Space Grant Consortium supports fellowships, training programs, workshops for teachers and public exhibitions that promote the appreciation and understanding of scientific research within the broader community. Students get hands-on experience with HIGP research faculty, building and deploying instruments in environments ranging from Mars to the bottom of Earth's ocean. These students in turn serve as role models, encouraging and inspiring younger generations to follow in their footsteps. This succession of knowledge and experience that HIGP has developed is critical to sustainably building the skilled workforce necessary to support the State of Hawai'i's bid to diversify its economy through a high-tech industry. If the proposed legislation were to be enacted, the impact on the present would be painful, but the impact on the future could potentially be unrecoverable.

Thank you for the opportunity to provide testimony in opposition of this measure.

Testimony Presented to the House Committee on Finance  
February 25, 2016 at 3:00pm

Margo H. Edwards

**HB 1625 HD1 – RELATING TO THE UNIVERSITY OF HAWAII**

Chair Luke, Vice Chair Nishimoto, and Members of the Committee on Finance:

I provide this testimony as a private citizen in opposition to HB 1625 HD1. In my professional capacity I have been a member of the research faculty of the Hawai'i Institute of Geophysics and Planetology since 2002, with expertise in volcanic activity and planetary exploration.

The Hawai'i Institute of Geophysics (HIG) was established in 1958. Hawai'i Revised Statute §304A-1501 (§304-42) mandated the formation of an institute of geophysics at the University of Hawai'i (UH) that "shall undertake basic research and training in geophysics, and shall disseminate knowledge of geophysics affecting Hawaii, and to the extent its facilities permit, may serve to apply the results of its research to geophysical problems in the State." In 1994 the Planetary Geosciences group, then in the UH Department of Geology and Geophysics, merged with HIG to form the Hawai'i Institute of Geophysics and Planetology (HIGP). HIGP is one of the UH Mānoa organized research units addressed by HB 1625 HD1.

I am one of 35 faculty in HIGP and collectively we support an additional 65 staff, post-doctoral researchers and students. In contrast to the notion that "organized research units are not economically sustainable as stand-alone units," HIGP has been an economic engine for UH and the State, generating an annual average of ~250% return on the investment of State moneys over the past fifteen years, totaling more than \$100M of extramural revenue. HIGP faculty typically raise 25-100% of their salaries through extramural funding, with State support providing critical funding stability that helps ensure success. Speaking for myself, I currently have externally-funded research grants worth \$1.2M, for projects including the dispersal of volcanic ash from explosive eruptions, to participating in the next Mars rover exploration mission (Mars2020). In addition to covering 25% of my own salary and all of my research expenses, this funding provides support for graduate students, undergraduates, and technical staff. Thus, my ability to compete successfully for research grants feeds into the State economy in diverse ways. If the proposed legislation were to be enacted, the scope and impact of my research program would necessarily be limited as my funds would have to be redirected away from my team and toward my own salary support and research expenses. Writing more research proposals would be a drain on the time available to me to conduct research, and would impact my research productivity, reputation, and by extension the "visibility" of HIGP and UH as key international players in scientific research. In the bigger picture, the result of the proposed legislation would not be the enrichment of the State, but rather its impoverishment, as proven, productive HIGP faculty depart to find positions with more supportive institutions.

As mandated, we in HIGP serve the State, the Nation and the world in researching and sharing knowledge about geophysical problems involving earthquakes, tsunami, volcanic activity, geothermal resources, sound in the ocean and atmosphere, and the physical properties of materials. In addition, we recognize that education and research are mutually enhanced when accomplished conjointly. In addition to engaging students in the classroom, I foster close involvement of both graduate students and undergraduates in my research programs. In recent years I have mentored 8 undergraduates through the UH Honors program, the UH Space Grant Consortium, for senior theses, and I have supported others directly from my research grants. All of these undergraduates were female, and all went on to graduate school at UH or on the US mainland, or into the local workforce.

Beyond my own research program, HIGP's Space Grant Consortium supports fellowships, training programs, workshops for teachers and public exhibitions that promote the appreciation and understanding of scientific research within the broader community. Students get hands-on experience with HIGP research faculty, building and deploying instruments in environments ranging from Mars to the bottom of Earth's ocean. These students in turn serve as role models, encouraging and inspiring younger generations to follow in their footsteps. This succession of knowledge and experience that HIGP has developed is critical to sustainably building the skilled workforce necessary to support the State of Hawai'i's bid to diversify its economy through a high-tech industry. If the proposed legislation were to be enacted, this pipeline would be broken, and the impact on Hawai'i's future could potentially be unrecoverable.

Thank you for the opportunity to provide testimony in opposition of this measure.

Testimony Submitted Before the House Committee on Higher Education

Stephen Parrish

HB 1625 HD1 Proposed –RELATING TO THE UNIVERSITY OF HAWAII

Chair: Isaac W. Choy, Vice Chair: Linda Ichiyama, and members of the committee:

My intent is to give you some insight into a possible repercussions of passing this bill that may of gone un-argued while being a brief as possible.

I am strongly opposed to this bill due its fundamental assumption. That “organized research units [ORU] were created in the University of Hawaii system to foster research activities that would increase extramural income to the State.”

This makes it very difficult as it would pigeon hole principal investigators into researching the same fields that provide the most grant money. While this may be great for the hot topics that are providing the money, the effect is less diversity of research being done. Funding for these highly competitive topics tend to go to all the same established/well known researchers.

This bill discourages progress in lesser known fields. By discouraging ORU’s to participate in academic research, we decrease the probability of making a true unique discovery. The very thing that would “enhance the reputation of the University nationally and internationally.” Many academic scientific discoveries have turned out to be groundbreaking. Forensic science would not be what it is today if Thomas Brock didn’t make the academic discovery of thermophiles in Yellowstone, paving the way for replication of DNA. A second example includes studying why a jellyfish glows green. Turns out this study lead to the discovery of green fluorescent protein (GFP) that is not ubiquitous in the realm of biology today. Monumental discoveries like these become much more difficult if ORU’s are now focused on pulling in grant money to pay their own salaries because they will no longer chase academic studies.

If you are interested in some of the seemingly insignificant research and some of the powerful discoveries made as a result, I highly suggest exploring the website:  
<http://www.goldengooseaward.org/>

Thank you for your time,  
Stephen Parrish

Re: Opposition to HB1625\_HD1 (HSCR 629-16)

The bill is to be discussed by the House Committee of Finance on February 25, 2016 at 3:00 pm.

My name is Gary R. Huss. I am a Researcher (R5) in the Hawai'i Institute of Geophysics and Planetology, University of Hawai'i and am submitting testimony as an individual.

I am Director of the W. M. Keck Cosmochemistry Laboratory, I teach graduate courses related to cosmochemistry in the Department of Geology and Geophysics, and I support and advise graduates students (I currently have two Ph. D. students). The core instrument in my laboratory is a state-of-the-art Cameca ims 1280 ion microprobe costing ~\$6,000,000 in today's market. It was purchased with equal shares of money from NASA, the W. M. Keck Foundation, and the University of Hawai'i. My laboratory and I have an international reputation for excellence in research, and we generate millions of dollars in research funding and millions of dollars in economic activity for the state of Hawai'i. Yet I fail to meet the minimum laid out in HB1625\_HD1 by a factor of >2, and there is no viable path forward by which I could ever meet those criteria. I provide details behind these statements below.

**Basic accounting for my operation:**

- 1) My research operation receives the following from the University: 10.2 months of my salary, half the salary of my laboratory manager, laboratory space in the basement of the POST building with utilities paid. Total: ~\$300,000 per year.
- 2) My research program currently has \$2,344,837 in active research grant funding (~\$781,612 per year). Over the lifetime of the lab (which opened in 2006), I have raised \$4,761,183 in research funding. This funding has generated ~\$1,856,000 in overhead return for the University.
- 3) My laboratory, which is the focal point of research by faculty members from HIGP and other units in UH, has facilitated obtaining ~\$16,000,000 in research funding over the past eight years. However, even though the work could not be done without my laboratory, this money cannot all be assigned to me in the calculation proposed in the bill, and money raised by other units to use my laboratory cannot even be assigned to HIGP.

To summarize the above, my research program has received roughly \$2,500,000 in operational support from the University since my lab opened, and I have generated \$4,761,000 in research funding that can be assigned to me according to the bill. By the criteria in HB1625\_HD1, I am failing by more than a factor of two to generate the money required to keep the laboratory open. This calculation does not give me credit for the money raised by others because my operation exists.

**Scientific productivity:** As of January, 2016, 58 peer-reviewed papers (with 10 more in process) had been published based on data from our laboratory. These papers all appeared in top-flight scientific journals (typical impact factor 3-5), including three in *Science* and one in *Nature Geoscience*, the gold standard for scientific papers. Included among these are papers on the first materials formed in the solar system, the timing of events during the first 25 million

years of solar system history, the origin of Earth's water, the nature of the particles that make up comets (based on measurements of material returned by NASA's Stardust Mission), and the composition of the sun (we measure solar wind trapped and returned to Earth by the Genesis Mission. We also measured the samples returned by the Japanese Hyabusa mission to an asteroid and are gearing up to measure the materials returned by NASA's OSIRIS-REx Mission to an asteroid. We are one of the preferred labs to analyze materials returned by NASA Missions and are thus an integral part of the US space program. A full list of our published papers can be found at:

<http://www.higp.hawaii.edu/cosmochemistry/research.html>

In addition to the peer-reviewed papers, researchers using data collected in our laboratory have made ~250 oral and poster presentations at annual international conferences such as the Lunar and Planetary Science Conference, the Goldschmidt Conference, the Meteoritical Society Meeting, and a variety of international workshops.

**Reputation of the University of Hawai'i:** The University of Hawai'i is currently considered one of the flagship international institutions in Astronomy and Cosmochemistry (the fields I am most familiar with). This reputation helps us to attract resources and top people (faculty, post docs, graduate students) to the University. We have a very high profile at national and international meetings, and we are invited in various capacities to give presentations at national and international venues (for example, I just visited Pacific Northwest National Laboratories in Washington State in January to advise them on setting up their new ion microprobe, and I have just been invited to give a keynote talk at the Goldschmidt conference, the annual international conference on Geochemistry, to be held in Yokohama, Japan, this summer). Bill HB1625\_HD1 would threaten this hard-earned reputation by damaging the UH research enterprise.

**Broader impacts of my research operation:** The limited accounting described in HB1625\_HD1 does not capture the full economic impact of our research effort. The reputation of our laboratory has permitted us to attract international meetings and workshops to Hawai'i, including Microscopy and Microanalysis (Convention Center, 2006), Chondrites and the Protoplanetary Disk (Kauai, 2007), Sixth Biennial Geochemical SIMS Workshop (Waikiki, November, 2011); and the Workshop on the Formation of the First Solids in the Solar System (Kauai, November, 2011). These events generated millions of dollars for the Hawai'i economy. The state gets VAT revenue and lodging taxes from this type of activity.

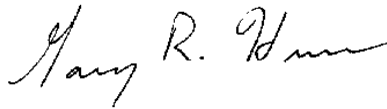
I currently pay part of my salary, the salaries of three full time staff and half of the salary of our laboratory manager, and I support two graduate students, for a total of about \$475,000 per year. This money goes directly into the Hawai'i economy. Applying the typical multiplier factor of ~2, gives ~\$950,000 in economic activity in the state every year. Many people from the mainland and from other countries come to Hawai'i to do research in our laboratory. Each visit generates revenue for hotels, restaurants, and rental car agencies. Each visitor puts ~\$2500 into the state economy, money that pays the salaries of Hawai'i workers. We have averaged 5 visitors per year for the last ten years, for an annual contribution to the Hawai'i economy of \$12,500 (~\$25,000 in total economic activity), making a total of ~\$975,000 of economic activity per year from my research program. This generates \$45,900 in VAT plus the income tax on

actual salaries of ~\$48,000 per year (total ~\$93,900 per year) for the state. My operation is not as expensive to the state as bill HB1625\_HD1 implies.

**Impact of proposed bill:** I compete with researchers from all over the country for research dollars. The total amount of US government money available for this work has not been growing at a rate that matches inflation, partly fallout from the economic downturn and partly due to the completely dysfunctional federal government. If I am required to raise 100% of my salary, as this bill implies, I will be significantly less competitive for the tight resources, because most researchers are not required to pay their full salaries. The assumption that we can simply increase our grant funding to cover any decreases in the amount state funding, is just wrong. With the “seed money” that I get from UH, I can raise several times the state contribution in research funds (but nowhere near the >5:1 the bill requires). Without the seed money, it is likely that I will raise less money, not more, generating a negative feedback loop that will eventually (probably sooner rather than later), kill my research operation.

The W. M. Keck Cosmochemistry Laboratory is one of the success stories of the University of Hawai‘i. If we cannot meet the criteria set out in HB1625\_HD1 for continued state support, then I don’t know who can.

Respectfully,

A handwritten signature in cursive script that reads "Gary R. Huss".

Gary R. Huss  
808-737-2032

Testimony Submitted to the House Committee on Finance

Deborah Eason

**HB 1625 HD1 (Amended) – RELATING TO THE UNIVERSITY OF HAWAII**

Chair: Sylvia Luke, Vice Chair: Scott Nishimoto, and members of the committee:

I provide this testimony as a private citizen in opposition to the amended HB 1625 HD1. While the amendments made by the House Committee on Higher Education lessen the prescriptive nature of the proposed bill, the substantive content, including an unrealistic and short-sighted funding model and burdensome level of reporting, remains unchanged. This bill proposes extraordinary requirements on the ratio of extramural-to-state funds (5 to 1) in organized research units (ORUs) at the University of Hawai‘i, and on reporting of the finest minutia of activities and resources associated with these ORUs. I know of no other state-funded activity held to such exorbitant standards and detailed scrutiny, nor are the proposed policies common practice at any other public research institute to my knowledge. Furthermore, the proposed metric of direct extramural-to-state funding ratio fails to account for the many long-term indirect benefits of a robust research program, including educating our future tech workforce and driving the local economy both inside out outside the tech industry (see for example SOEST’s recent award from the Hawaii Tourism Authority for helping to bring what promises to be more than \$100 million in convention business to the State of Hawai‘i). ORUs lead UH Manoa’s disproportionate share of Federal funding and world-class reputation, with significant tangible and intangible effects.

If enacted, this legislation would do significant harm to the University and its mission to conduct research relevant to Hawai‘i, resulting negative impacts on its international reputation as a leader in scientific research. The impacts on the University, innovation and scientific progress in the State of Hawai‘i, and the local economy would be long-lasting. This bill would act to divest in and critically endanger research programs in:

- Clean, freshwater resources for Hawaii’s growing population
- Hawaii’s marine and on-land living resources and ecosystems
- Research and education that leads the UH system in national rankings in areas such as natural hazard preparedness and resilience, ocean and space engineering, and crucial developments in renewable energy resources and infrastructure
- Award winning medical research supporting healthy living and aging for Hawaii’s citizens, cancer treatment and patient care, as well as professional educating for Hawaii’s physicians

Passing this bill will risk:

- the loss of many millions of dollars annually of extramural funding with its immediate as well as long-term economic impacts;
- the loss of long-term technological developments that will support Hawaii in a changing climate and global economy;
- the loss of related educational opportunities, and the resulting skilled workforce in the areas above and related fields

I respectfully implore you to reject this proposed measure.



**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Wednesday, February 24, 2016 12:16 PM  
**To:** FINTestimony  
**Cc:** kazu@higp.hawaii.edu  
**Subject:** \*Submitted testimony for HB1625 on Feb 25, 2016 15:00PM\*

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Kazuhide Nagashima	Individual	Oppose	No

Comments:

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**To:** FINTestimony  
**Cc:** melissaiwamoto@gmail.com  
**Subject:** \*Submitted testimony for HB1625 on Feb 25, 2016 15:00PM\*

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Melissa Iwamoto	Individual	Oppose	No

Comments:

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Wednesday, February 24, 2016 2:58 PM  
**To:** FINTestimony  
**Cc:** mrognstad@gmail.com  
**Subject:** Submitted testimony for HB1625 on Feb 25, 2016 15:00PM

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Mark Rognstad	Individual	Oppose	No

Comments: My name is Mark Rognstad, and I work as a specialist in the Hawaii Institute of Geophysics and Planetology at UH Manoa. This is my personal testimony; I don't represent any organization. As presently revised, HB1625 only requires consideration of researchers raising more than 80% of their salary funding from sources outside the State of Hawaii. While this is an improvement on the bill as originally written, this bill should not be passed. Historically, the research faculty at HIGP have raised two to three times as much external funding as we receive from the state, but the idea that we would have to raise five times as much would mean the end of funded research at UH.

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Chair: Sylvia Luke, Vice Chair: Scott Y. Nishimoto, and members of the committee:

I am writing to you with regard to House Bill 1625, HD1. I am opposed to this bill, and believe that it is misguided on several points. I have worked at several Colleges and Universities, both public and private, and thereby have some insight into how legislation at the state level can affect day to day operations for such institutions. It is not my intention to be condescending or abrasive, and I apologize if this testimony appears that way. I will attempt to keep my comments brief, and denote the corresponding sections of the bill where appropriate.

#### Section 1.

To start, it is misguided to suggest that scientific research should exist for the expressed purpose of securing extramural funding. While the acquisition of extramural funding is a useful and frequent consequence of operating research programs, such programs can and should exist (as many others do) for their intrinsic educational and humanitarian purposes. This is most immediately apparent, though not exclusive to, endeavors directly related to health, medicine, and the environment.

The above having been said, and intrinsic value notwithstanding, it should be noted that research programs, when examined as stand alone entities, will never appear at face value to be economically sustainable. The benefits of primary research are not immediate or obvious at the time said research is being conducted, but are nonetheless widespread and often difficult to measure. Adoption of knowledge and technologies developed from publicly funded research by the private sector is common and not always predictable, and the presence of research institutions often contributes to the development of technology industry and the attraction of educated workers and entrepreneurs.

Drawing a distinction in the respective value of instructional faculty versus research faculty is, at best, inaccurate. Such a distinction would be artificial, as the responsibilities of research faculty frequently change to accommodate the needs of their respective departments, and interactions between research faculty and students often occur in unofficial capacities that are difficult if not impossible to measure accurately. It should also be noted that the incidence of this kind of interplay, as well as the mere presence of successful research programs, acts as a significant attraction for tuition and tax paying undergraduates, who contribute to the success of the university as a whole.

#### Section 2.

Enforcing a strict five to one ratio of extramural to state moneys in research unit budgets, and recommending detailed plans on how to portion out funding patronizes duly appointed regents with the experience and authority to administer to their affairs, and degrades their ability to accommodate the needs of their respective programs with a

reasonable level of precision. Furthermore, requiring an extended funding plan for new research units is impractical, given the fact that it is impossible to predict how much extramural funding can or will be acquired with any accuracy given the constantly changing landscape of funding sources. This uncertainty could thereby be used to deny the creation of virtually any new research unit. From a financial perspective, it would be misguided to focus on creating barriers to the creation of research units, which almost always generate extramural funding in excess of their state funding, while allowing so many other programs which do not secure such moneys to continue without a comparable level of scrutiny.

Requiring the university system to submit reports pertaining to facility usage and faculty compensation in such exhausting detail would inevitably create additional overhead administrative costs, and waste the time of both university administrators and members of the legislature. This requirement would also inflate the costs this bill seems to be attempting to control.

Thank you for your time,  
Kenneth Armour

Testimony Submitted to the House Committee on Finance  
February 25, 2016 at 3:00 pm  
Conference Room 308

Alexander Shor

HB 1625 HD1 – RELATING TO THE UNIVERSITY OF HAWAII

Chair: Sylvia Luke. Vice Chair: Scott Y. Nishimoto, and members of the committee:

Background

**I offer this testimony as a private citizen opposed to HB 1625 HD1. I have previously testified against it to the House Committee on Education – it comes to your committee in slightly revised form, but no better, and I remain strongly opposed. I am especially concerned that the Education Committee ignored over 200 pages of opposing testimony (with no favorable testimony submitted at all). The intent of this bill appears to be to punish some of University of Hawaii's most successful research groups, and it leaves me deeply concerned and puzzled.**

In my professional capacity, I am the Associate Dean for Research of the School of Ocean and Earth Science and Technology (SOEST), the home of five of the Organized Research Units, or ORUs, that are singled out in this bill for management under new guidelines. I have been employed by University of Hawaii for a total of nearly 20 years, first on the research faculty from 1986 till 1998 (as a faculty member in HIGP, one of the ORUs addressed herein), and then again more recently as Associate Dean for Research of SOEST since 2007. Prior to coming to UH, I was educated and employed by Harvard, MIT and Columbia Universities and the Woods Hole Oceanographic Institution as a geologist and a seagoing oceanographer. Between my two periods of employment at UH, I served for 13 years as a Program Director at the National Science Foundation, in the Division of Ocean Sciences. I am quite familiar with procedures and policies guiding federally-funded research, not only at University of Hawaii, but more broadly in ocean and earth sciences at US private and public universities and federal science agencies (NSF, NOAA, ONR and NASA, particularly).

In my current position, I oversee the SOEST research portfolio (mostly projects managed by individual faculty members in our five ORUs and four departments), which is about \$100 million of extramural (mostly federal) research funds annually, and it supports work by some truly brilliant scientists, many of whom are not only outstanding researchers, but devote significant time and effort teaching both graduate and undergraduate students as well. It is truly an honor to be able to serve this exceptional group of faculty members in my current position, and I love working at the University of Hawaii.

Impact of HB 1625 on SOEST Grants for Federal Research

Federal research in SOEST is largely supported with grants, with some cooperative agreements and a few contracts. Most of the awards coming to SOEST

to support research are based on competitive proposals, with many of the federal programs having success rates of ten to thirty percent. Having even a fifty-fifty chance of proposal success is rare, indeed. Despite that, the overwhelming majority of our faculty have active research grants, and this is true whether their positions are Instructional or Research, and whether they are in academic departments or ORUs.

Agency rules for grants vary, some requiring institutional cost-sharing, some not. The rules suggested in HB 1625 about limits on how much state-funded salary could be paid to faculty in ORUs, however, would put faculty in our ORUs at a significant competitive disadvantage at the federal agencies that currently fund our faculty research. In accordance with the NSF Grant Policy Guide, for example: “*NSF normally limits salary compensation for senior project personnel on awards made by the Foundation, to no more than two months of their regular salary in any one year. This limit includes salary received from all NSF funded grants.*” Putting a requirement that ALL faculty members in an ORU would need to raise 75% of their salary from grants would make it nearly impossible for most of our NSF-funded faculty members to remain in ORUs, even with individual grant waivers of this rule.

The statement is made in the bill preamble that “...most universities require research faculty to cover **a portion** of their salaries with extramural funds...” Within SOEST, both in the academic departments and the ORUs, we expect almost all of our faculty to raise part of their salary extramurally. These expectations are written into their offer letters and are part of their performance evaluations. We also expect most SOEST faculty to teach and carry out research, whether they are Instructional or Researcher in classification. That said, I am personally unaware of ANY university that places the requirement of extramural support for tenure-track faculty as high as 75%. If such requirements do exist, they are definitely not at the ocean and earth science units that, like ours, rank in the top tier nationwide or internationally. The days of large, “soft-money” research institutions are largely in the past. Both federal research agencies and universities expect that their faculty will carry out research and teach, not just to one or the other, no matter their classification. The framework for supporting federal research has changed significantly in the past two decades, and the NSF grant policy noted above is a symptom of that change at the federal level.

One very concrete problem with this legislation is that it would preclude having the funds received to operate our ships count as support for our ORUs. I directly manage our research vessel operations (about \$10-15 million annually), including operation of two large ships (one owned by the US Navy, one by Hawaii), two research submersibles, our marine facility (currently moving from Pier 45 to new facilities at Piers 34-35 and Sand Island), and a large array of shared-use equipment and specialized instrumentation used by our faculty to study the oceans. The cost of operating these ships and seagoing research tools is supported by funds received through grants and contracts and RTRF, and not from the state general fund. The ship operating funds, however, do not come in through the individual ORUs, but instead come centrally to the School. Thus in the bill proposed here, these funds would not count at all toward the 5:1 ratio of extramural to State funding required to maintain an ORU. It is, in part, the availability of these ships and related

facilities that keeps our research programs in ocean science and related geosciences in the top tier, ranking alongside the very best universities and research laboratories in the world.

In another example of the negative impact of this bill, the Hawaii Sea Grant program would be penalized under a system in which very limited State salary funding is available to serve as cost-matching. Sea Grant has a cost-matching requirement built into its charter, as a shared federal-state program, and limiting the amount of funds available for this purpose will cut the amount of extramural funding that can be raised. Sea Grant has for many years been one of our most successful programs for supporting student projects and for conducting research projects of direct benefit to the local community. This bill would be particularly damaging to its function.

More generally, the apparently arbitrary guideline that the state must benefit with five dollars of ORU income for every one dollar of state funds would potentially force us to limit pilot programs and curtail partial support for high risk ventures designed to engender large, future research programs.

### In Conclusion

As a taxpayer and homeowner in Hawaii, I am very concerned about the cost of living, the quality of life and the quality of education available here for myself, my family (including our two children) and future generations. I came here because of the superb reputation of University of Hawaii in ocean science research. That reputation is well deserved. From long experience both at the University of Hawaii and elsewhere in the US at university and federal research centers, however, I can state unequivocally that the bill that is proposed here will not improve the function and cost-effectiveness of research at UH, nor will it result in higher quality research or more research. Instead, it creates new and difficult divides between teaching faculty and research faculty. It will necessarily cause some of our best researchers to leave (with their grants) for places that encourage their productivity with positive incentives rather than constrain it with additional regulations. With new limits on salary in a time of declining overall federal support for basic research, we will see others lose out on grant opportunities due to lost competitiveness (or inability to qualify at all).

I predict that if this bill is passed in its present form, and particularly if it passes in conjunction with other pending bills related to the operation of the Research Corporation of the University of Hawaii (RCUH), we will have to shut down our research ship operations within three to five years, as the flexibility needed to maintain steady ship operations on annual federal budgets will become too great to continue as our research grants decline and the overall SOEST research enterprise withers and dies. I see that as a major step down in our capabilities, and our reputation, and though it is something I very much doubt you intend, I think it is an almost certain result of the changes proposed here.

**I strongly oppose this bill, for my children's future and that of our state economy. I urge you to vote against it.**



**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Wednesday, February 24, 2016 3:31 PM  
**To:** FINTestimony  
**Cc:** paredes@hawaii.edu  
**Subject:** Submitted testimony for HB1625 on Feb 25, 2016 15:00PM

**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Lloyd Paredes	Individual	Oppose	No

Comments: Please kill this bill as it would hinder research at the University of Hawaii.  
Thank you.

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Sent: Thursday, February 25, 2016 8:28 AM  
To: FINTestimony  
Cc: kauaimermaid@gmail.com  
Subject: \*Submitted testimony for HB1625 on Feb 25, 2016 15:00PM\*



**HB1625**

Submitted on: 2/25/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Tiffany R Anderson	Individual	Oppose	No

Comments:

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From: mailinglist@capitol.hawaii.gov  
Sent: Wednesday, February 24, 2016 9:20 PM  
To: FINTestimony  
Cc: jkonter@hawaii.edu  
Subject: Submitted testimony for HB1625 on Feb 25, 2016 15:00PM



**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

Submitted By	Organization	Testifier Position	Present at Hearing
Jasper Konter	Individual	Oppose	No

Comments: To: House Committee on Finance Re: Amended House Bill 1625 Position: Opposed The proposed salary requirements in House Bill 1625 will shift, in a matter of a few years, the majority of salary sources to external grants for research units. This is proposed in a time of significant decline in federal grant funding (approximately 50% decline in nationwide success rates across most fields: e.g., C. Cesare, Nature, 2015 -- dx.doi.org/10.1038/nature.2015.18631). Most federal programs (the main sources for external funding) have annual or biannual solicitations, and 10-20% funding rates, leading to limited opportunities to ramp up external salary sources across entire research units within only a handful of years. Clearly, this will affect faculty retention (threat of salary reduction vs. family obligations), which will reduce both fundamental-to-the-state-research and external fund generation (less people = less research and less money), which also eliminates external salary funding for local support staff, research activities and purchases locally, research training for the university's students, and eventually the (inter)national ranking of the university (e.g., state universities like Univ. North Carolina, Chapel Hill dropped 35 to 59 due to cuts and salary freezes; bot.unc.edu/files/archives/PP 512 FB 2 Faculty Retention.pdf). Rankings affect "market-value" of the students, and in turn the quality of the students attracted to the university. In addition, rankings affect the quality of future faculty members that will apply for open positions, in turn affecting the quality of education and research performed in Hawaii.

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Sent: Wednesday, February 24, 2016 5:09 PM  
To: FINTestimony  
Cc: tokunaga@ifa.hawaii.edu  
Subject: Submitted testimony for HB1625 on Feb 25, 2016 15:00PM  
Attachments: Testimony against HB 1625.pdf



**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Alan Tokunaga	Individual	Oppose	No

Comments:

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Sent: Wednesday, February 24, 2016 11:37 PM  
To: FINTestimony  
Cc: juanita.andaya@gmail.com  
Subject: \*Submitted testimony for HB1625 on Feb 25, 2016 15:00PM\*



**HB1625**

Submitted on: 2/24/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Juanita Andaya	Individual	Oppose	No

Comments:

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**LATE**

Testimony to the House Finance Committee

February 25, 2016 at 3 pm

Conference Room 308

HB 1625, HD1 – Relating to the University of Hawaii

Dear Chair, Vice Chair, and Members of the House Finance Committee:

I oppose the amended HB 1625, HD1.

The introduction of the amended HB 1625, HD1, will cause less flexibility to the ORUs to recruit potential researchers to the University of Hawai'i due to the rigid terms and conditions for employment/salary to conduct research in UH. Those talented and interested candidates will be discouraged to consider UH as their prospective employer due to the high cost of living in Hawai'i besides unattractive terms to start a research career here.

As evidenced by leaving ORUs alone to have its autonomy to set the hiring/salary guidelines for researchers, the research has been growing continuously bringing in millions of dollars of revenue and external funding into the State of Hawai'i. In addition, the continued growing number of 1,000+ employees in RCUH has been benefiting from the principal investigators' research.

The introduction of amended HB 1625, HD1, if passed, will stifle the growing research in Hawai'i and harm lots of RCUH and UH employees with diminished existing responsibilities and will eventually lose their jobs. The result will end up jeopardizing instead of helping the economy of Hawai'i to grow.

In addition, the protocol report of personnel, funding, and costs movement will slow down the operations of ORUs. Many vacant positions in RCUH and UH have been left unfilled due to decreased State funding. The ORUs researchers, administrators, and support staff, who have been working more for less since the 2009 economic downturn, should focus more on the opportunities for high revenue generated research work. They should not be required by law, without additional State funding, to prepare the burdensome annual reports of personnel, funding, and costs movement to the Legislature via the Board of Regents.

ORUs have been doing fine in raising the stature of UH globally, and increasing both external funding and employment opportunities to the State. Thus, amended HB 1625, HD1, should not be passed.

Thanks for the opportunity to comment.

Submitted by Katrina Ing-Shum  
private citizen

**LATE**

FINTestimony

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From: mailinglist@capitol.hawaii.gov  
Sent: Thursday, February 25, 2016 10:54 AM  
To: FINTestimony  
Cc: roger@hawaii.edu  
Subject: Submitted testimony for HB1625 on Feb 25, 2016 15:00PM

**HB1625**

Submitted on: 2/25/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

Submitted By	Organization	Testifier Position	Present at Hearing
Roger S. Fujioka	Individual	Oppose	No

Comments: UH is classified as Research One University, which is the top tier of all Universities in the US because it conducts top tier research. Research units and faculty researchers are key to this UH classification. Basic UH research units and core research faculty members for these research units must be maintained to maintain this top tier classification.

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**LATE**

Testimony to the House Finance Committee

HB 1625, HD1 – Relating to the University of Hawaii

February 25, 2016

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ORUs have been doing fine in raising the stature of UH globally, and increasing both external funding and employment opportunities to the State. Thus, amended HB 1625, HD1, should not be passed.

Thanks for the opportunity to comment.

Katrina Ing-Shum  
private citizen



**LATE**

FINTestimony

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From: mailinglist@capitol.hawaii.gov  
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To: FINTestimony  
Cc: chris.ostrander@gmail.com  
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**HB1625**

Submitted on: 2/25/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Chris Ostrander	Individual	Oppose	No

Comments:

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Cc: chris.ostrander@gmail.com  
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**HB1625**

Submitted on: 2/25/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Chris Ostrander	Individual	Oppose	No

Comments:

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**HB1625**

Submitted on: 2/25/2016

Testimony for FIN on Feb 25, 2016 15:00PM in Conference Room 308

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Rene M. Kimura	SOEST	Oppose	No

Comments:

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