



UNIVERSITY OF HAWAII SYSTEM

Legislative Testimony

**Written Testimony Presented Before the
Senate Committee on Education and
Senate Committee on Energy and Environment
March 14, 2008 at 2:00 p.m.**

by

Virginia S. Hinshaw, Chancellor
and
Richard Dubanoski, Dean
College of Social Sciences
University of Hawai'i at Mānoa

HB 2166 HD1– RELATING TO THE UNIVERSITY OF HAWAII

Chair Sakamoto, Chair Menor, and Members of the Committees:

Thank you for the opportunity to testify today. Unfortunately, the University of Hawai'i at Mānoa can only support the intent of the bill at this time because of our pressing priorities, such as our tremendous need for repairs and maintenance and health and safety issues, which are critical to our ability to perform our core mission for the State of Hawai'i. We recognize that you have many priorities and issues to weigh for the state, so the following information on this program is provided to assist you in your decision-making process.

Sustainability is clearly a critically important effort for the entire State of Hawai'i. The University is committed to reducing its energy consumption and the Saunders Project has been leading a strong effort to accomplish that outcome. Our goal is to develop models for energy savings at the campus to benefit the entire university community and the people of Hawai'i. Currently repairs and maintenance projects are yielding substantial savings for the campus, so that has to be our major focus at this time, but there is certainly great respect and appreciation for the Saunders Project.

Thank you for the opportunity to testify, we appreciate all interest in the University, and want to emphasize that we will be able to perform better in all arenas and best serve the state with support of the current campus priorities and restoration of our infrastructure.



COLLEGE OF SOCIAL SCIENCES
HAWAII ENERGY POLICY FORUM
UNIVERSITY OF HAWAII AT MĀNOA

Hawai'i Energy Policy Forum

Mr. Robbie Alm, HECO
Ms. Amy Asselbayer, Ofc of US Rep.
Neil Abercrombie
Ms. Madeleine Austin, World Business
Academy
Ms. Catherine Awakuni, Div. of
Consumer Advocacy
Mr. Warren Bollmeier
HI Renewable Energy Alliance
Mr. Carlito Caliboso, PUC (Observer)
Mr. Albert Chez, Chevron
Mr. Kyle Datta, U.S. Biofuels
Sen. Kalani English, HI State Senate
Mr. Mitch Ewan, UH HNEI
Mr. Carl Freedman
Haiku Design and Analysis
Mr. Mark Glick, OHA
Mr. Steve Golden, The Gas Company
Dr. Michael Hamnett, RCUH
Ms. Paula Helfrich, EDAH
Mr. William Kanekeo, HI Institute for
Public Affairs
Mr. Darren Kimura, Energy Industries
Holdings
Mr. Mike Kitamura, Ofc of US Sen.
Daniel K. Akaka
Mr. Kai Kobayashi, Maui County
Mr. Laurence Lau, DOH
Ms. Yvonne Lau, Ofc of US Rep.
Mazie Hirono
Mr. Allyn Lee, C&C of HNL
Mr. Aaron Leong, Ofc of US Senator
Daniel K. Inouye
Dr. Stephen Meder, AIA-Honolulu
Sen. Ron Menor, HI State Senate
Mr. Jeff Mikulina, Sierra Club
Dr. Bruce Miller, UH Ofc of
Sustainability
Dr. Sharon Miyashiro, Social
Sciences Public Policy Ctr.
Rep. Hermina Morita, HI State
House of Representatives
Mr. Tim O'Connell, USDA/Rural
Development
Mr. Richard Paglinawan
Pa Ku'i A Lua
Ms. Melissa Pavlicek, Western States
Petroleum Assn
Mr. Randy Pereira, HI State AFL-CIO
Mr. Rick Reed, Inter-Island
Solar Supply
Dr. Rick Rochefeau, UH HNEI
Mr. Peter Rosegg, HECO
Mr. Steven Rymsha, KIUC
Mr. Riley Saito, PowerLight Corp.
Mr. Glenn Sato, Kauai County OED
Mr. Bill Short, BIA of Hawaii
Ms. Carilyn Shon, DBEDT
Mr. Ray Starling, HI Energy Grp
Mr. Lance Tanaka, Tesoro HI Corp
Dr. Don Thomas, UH Center for the
Study of Active Volcanoes
Mr. Murray Towill, Hawai'i
Hotel Assn
Ms. Joan White, Hon Community
Action Program

Testimony of
Darren Kimura
Co-Chair, Energy Efficiency Working Group

Senate Committee on Education
Senate Committee on Energy & Environment
Friday, March 14, 2008
2:00 pm
Conference Room 225

IN SUPPORT OF HB 2166, HD 1 – Relating to the University of Hawaii

I am Darren Kimura, Co-Chair of the Energy Efficiency Working Group of the Hawaii Energy Policy Forum ("Forum"). The Forum has been meeting since 2002 and has adopted a common vision and mission, and a comprehensive "10 Point Action Plan," which serves as a framework and guide for meeting our preferred energy vision and goals. The Forum supports the passage of HB 2166, HD 1 that achieves the goal of Point Two to promote conservation and energy efficiency.

The "Sustainable Saunders" initiative was originally proposed in Fall 2006 by the UH Legislators in Residence, Representative Barbara Marumoto and Senator Suzanne Chun Oakland. The initiative has been supported by the Forum and the efforts to date are to be commended.

The Forum became involved with the Sustainable Saunders initiative, which sought to become a model of sustainability on campus and for the state, beginning with energy conservation measures at the Saunders Hall building.

In 2006, the Forum, through its "Energy by Example" program, sponsored five \$20,000 professional Preliminary Energy Assessments, which were awarded to various organizations to demonstrate the cost-effectiveness of building and/or retrofitting buildings with energy efficiency measures. Saunders Hall, the focus of the "Sustainable Saunders" initiative, was awarded one of the assessments because of the interest by the University and the residents of the building as well as its potential for showcasing resulting savings through energy efficiency actions.

More specifically, the Forum's engineering assessment was used to identify Energy Conservation and Renewable Energy Measures that would save energy, promote sustainable form and function, and save taxpayer money. Opportunities for cost effectively installing technologies such as new air conditioning chillers, lighting upgrades and energy management controls were found. Additionally, renewable energy opportunities were identified to produce green power from a solar photovoltaic system and reduce thermal gain by the installation of a green roof. These would constitute a landmark project for the University and for the State.

Since the initiation of the Sustainable Saunders proposal, and as a result of the Forum's Energy by Example energy assessment, the UHM administration, in partnership with HECO and students and faculty from the campus, has installed an electrical sub-meter in the building to monitor energy use, and performed a lighting assessment of the building. Building occupants have also made impressive energy conserving behavioral changes.

These are important first steps; however, more is needed in supporting the UHM administration to move forward in demonstrating energy and dollar savings and an improved quality of life in the campus facilities.

HB 2166, HD 1 provides a blank appropriation to fund the energy conservation measures and tests two renewable energy technologies – wind and solar. It is estimated that an appropriation of \$1,024,000 will be needed to fund these measures and tests. If implemented, these measures will provide Saunders Hall a savings of \$167,350 per year and save over a million kilowatt hours/year. This is the roughly the equivalent of:

- Offsetting the energy consumed from approximately 90 households per year
- Planting approximately 958 trees per year
- Eliminating approximately 504,000 lbs of carbon dioxide per year

These energy efficient, sustainable initiatives would support the efforts of the UHM administration to demonstrate how existing buildings can showcase the energy goals of the University and of Act 96 passed by this Legislature in 2006, by demonstrating the benefits of energy, cost and greenhouse gas reductions and improved campus facilities as a result of collaborative work among numerous Hawaii stakeholders ranging from government to the private sector.

We strongly support the Sustainable Saunders initiative and HB 2166, HD 1 as they advance efforts to achieve the energy conservation and efficiency goals of our 10 Point Plan.

Thank you for the opportunity to testify.

TO: Senator Norman Sakamoto, Chair, Committee on Education
Senator Ron Menor, Chair, Committee on Energy & Environment

FROM: David Nixon, Associate Professor, Social Sciences Public Policy Center
University of Hawaii at Manoa

RE: Expression of Support for HB 2166
scheduled for testimony 3.14.2008 at 2:00pm, Conference Room 225

Thank you for the opportunity to express my support of HB2166.

The Sustainable Saunders initiative was originally proposed in Fall 2006 by the UH Legislators in Residence, Representative **Marumoto** and Senator **Chun Oakland**, and it is rapidly emerging as the focal point for sustainability on the UH Manoa campus. It is designated by the Chancellor and the Sustainability Council as one of the primary pilot projects for energy conservation. The initiative is spearheaded by the Social Sciences Public Policy Center, and is augmented in a significant way by a fantastic bunch of students who work tirelessly, effectively, and passionately through their independent student organization - the Sustainable Saunders HUB. Sustainable Saunders is being operated as a service learning experiment, and we have the dedicated and passionate contributions of many UH undergraduate and graduate students.. We're doing all this in a way to ensure that Saunders can serve as a model or template for public office buildings across the UH and the islands of Hawaii. I firmly believe that in the process, we are training the future leaders of Hawaii.

Saunders Hall is a tangible focal point for sustainability on the UH Manoa campus, and we have some dramatic and impressive accomplishments and projects underway. We launched a new deposit-bottle recycling program that achieved an 87% overall recycling rate, and reduced the number of bottles going into the dumpster by 70%. We launched an interactive Earth Day event that brought thousands of visitors to Saunders Hall to explore the possibilities and limits of workplace sustainability. Saunders Hall is home to most of the social science departments on campus. Naturally, then, we are in the process of doing some important scientific studies of human behaviors, and we have several very serious and carefully researched conservation programs underway that, together, can reduce the energy use of the building by a minimum of 20% with little or no resource investment. We have secured valuable equipment donations and commitments for installation assistance from several private sector renewable energy companies sufficient to install both the **FIRST WIND TURBINE** on the Manoa campus and the **FIRST SOLAR PV ARRAY** on the Manoa campus. These are to be small research and demonstration projects that are vital, in my view, to move UH to the forefront of research and education in these fields.

Sustainable Saunders is working in cooperation with many campus and private sector partners. Our solar PV project is a collaborative effort between the Public Policy Center, HNEI, and four private sector companies who will be donating valuable equipment . Our bathroom retrofit

demonstration is in cooperation with UH Facilities, the Board of Water Supply, and two private sector donors. We have received some important seed money from the Dean of the College of Social Sciences, the Vice Chancellor for Facilities, the UH Manoa Sustainability Council, and our own fundraising efforts. Our submeter project has benefitted from some tremendous and selfless contributions from HECO. We are working in close cooperation with Facilities for the AC management plan

While many of the research and conservation projects of the Sustainable Saunders initiative focus on small scale human behaviors, conservation can only take us so far, and there are some very important technology investments that could emphatically bolster Saunders Hall as the focal point for energy conservation on the Manoa campus. UH Manoa Facilities management has long included the antiquated air conditioning system in its 'deferred maintenance list'. A professional energy and resource audit of Saunders Hall conducted by Energy Industries and sponsored by the Hawaii Energy Policy Forum echoed those plans in recommending an air conditioning retrofit and a large renewable energy and green roof installation on the Saunders rooftop as very cost-effective efforts. The AC upgrades will **pay for themselves in reduced energy and water costs** - for some items, the payback period is **less than three years**.

All told, EI recommended investments totaling \$1.7 million for Saunders. However, I don't support all of their recommendations.

- We are not prepared to go forward with a green roof installation, yet.
- We much prefer that the renewable energy systems be set up as *demonstration and research* test-beds, rather than a large utility installation (and we have most of the necessary equipment for such projects already donated).
- EI failed to include a VAV system in their recommendations, which makes it unwise and unproductive to install variable motors for the Air Handling Units in isolation.

The table on the following page describes what I think would be an ideal budget for the money proposed in HB2166. Most of the AC upgrades are identical to those identified in the EI audit and proposed by UH Manoa Facilities for many many years. The renewable energy budget is a minimal investment in jump starting the also long overdue move of UH to take the lead in Hawaii's renewable energy. It will pay for some additional monitoring equipment and will leverage the donated equipment and installation assistance that is valued in the tens of thousands of dollars.

item	Cost	Annual resource savings (in kWh)	Annual financial savings	Estimated Payback Period (in years)
Chiller Replacement (to a variable speed motor)	\$480,000	310,600	\$49,700	9.3
Variable Primary Flow on Chill Water Pumps	\$118,000	112,200	\$18,000	6.3
Variable Frequency Drives on Condenser Water Pumps	\$46,000	91,000	\$14,600	2.8
Variable Frequency Drives for Cooling Towers	\$62,000	97,600	\$15,700	3.7
Occupancy Sensors for Office Fan Coils	\$118,000	135,700	\$21,800	5.2
Energy Management System	\$80,000	78,700	\$12,600	6.3
Renewable Solar/Wind Demonstration Project	\$44,000	26,000		
Totals	\$948,000	902,400	\$144,700	5.7

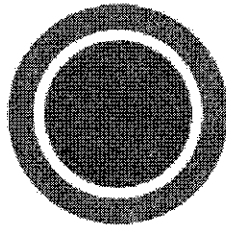
We are the beneficiaries of lots of moral support, some important logistical support, and we have become a focal point for private sector donor support. But we could use your help with these long overdue efforts. Blessed with abundant resources, the University of Hawaii can be a leader for the state and the world in solar and wind energy, and we're playing catch-up. I urge you to support the Sustainable Saunders effort to bring these crucially important technology investments to the University.

UH has set as a 30% energy reduction goal by 2012, and I know of no other place on campus as promising as Saunders to blaze the trail towards meeting that goal. I urge you to support this initiative.

I am writing to you as a citizen and as the UH faculty most intimately connected to the **Sustainable Saunders initiative**. Please note that I am not writing to you as a spokesperson for the University of Hawaii, and I do not want this bill to supplant any other essential funds in the University of Hawaii budget.

Thank you for the opportunity to express my support for this important legislation.

SUSTAINABLE SAUNDERS
Help Us Bridge (HUB) Student Sustainability Team



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March.11, 2008

TO: COMMITTEE ON EDUCATION AND COMMITTEE ON ENERGY AND ENVIRONMENT

Senator Norman Sakamoto, Chair and Senator Jill N. Tokuda, Vice Chair

Senator Ron Menor, Chair Senator and Gary L. Hooser, Vice Chair

FROM: Shanah Trevenna
Student Sustainability Coordinator
UHM Sustainable Saunders

RE: Expression of Support for HB 2166, scheduled for testimony 3.14.2008 at 2pm

Senators on the Committee on Education and the Committee on Energy and Environment,

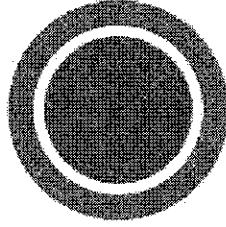
The student team working on the Sustainable Saunders Hall project at the University of Hawaii at Manoa is very appreciative of the opportunity to testify in support of HB 2166.

Our team is comprised of passionate, committed students who have made the Saunders Hall project a top priority in our lives. Calling ourselves the HUB standing for Help Us Bridge our mission is two-fold: to demonstrate a sustainable community evolution and connect with the campus and extended community so that our united efforts can magnify and accelerate change. We have designed a web site to make transparent every detail of our progress such that what we learn, everyone learns (sustainablesaunders.hawaii.edu).

It has been a dream come true to coordinate this project. Previously, students devoted toward sustainability felt alone in their efforts. Sustainable Saunders gives everyone a tangible place to plug in and feel supported. Together we help each other brainstorm ideas, raise funds and remain very inspired. Through our community outreach and inclusive principles we aim to inspire and unite the community toward tangible change. The whole is truly greater than the sum of its parts.

Sustainable Saunders is also a unique opportunity to apply the UN's proven, whole-system approach which explores how improvement efforts in one area affect all other areas. And by working with the community throughout the entire process not only does this project evaluate the environmental and economic impact of sustainable solutions, it emphasizes the impact on an often overlooked asset, the people who live, breathe and

SUSTAINABLE SAUNDERS
Help Us Bridge (HUB) Student Sustainability Team



LIVE CONNECT CREATE

work here. We are exploring the effects on behavior, health, productivity and perhaps most importantly, hope.

While we have been able to accomplish much with donated time and equipment from the community, we are approaching the time when additional resources are needed to invest in equipment that will pay itself back within a few years through the energy savings. Air conditioning repairs and retrofits would be top of the list. We also hope to invest in an energy management system that would help us manage the energy use resulting in conservation, but would also serve as an on-line portal for the community. UH should also be taking the lead in renewable energy for Hawaii. Saunders is the ideal site to have the first wind and solar demonstrations, especially since we've designed the plan with facilities and experts in the field. We just need some additional capital to make it happen.

Thank you once again for the opportunity to testify in support of Sustainable Saunders, a project we are very passionate about and which is been the source of much inspiration, collaboration and tangible action.

Shanah Trevenna
Student Sustainability Coordinator

**THE UNIVERSITY OF HAWAII ENVIRONMENTAL CENTER IS PLEASED
TO SUBMIT THIS TESTIMONY IN ACCORDANCE WITH ACT 132 OF
1970 WHICH CREATED THE CENTER. AUTHORS ARE MEMBERS OF
THE UNIVERSITY COMMUNITY.**

RL: 2188

**HB 2166 HD1
RELATING TO THE UNIVERSITY OF HAWAII**

Senate Committee on Education
Senate Committee on Energy and Environment

Joint Public Hearing – March 14, 2008
2:00 p.m., State Capitol, Conference Room 225

by

Denise Eby Konan, Department of Economics
Mary Tiles, Department of Philosophy and Chair of the Sustainability Council
Peter Rappa, Environmental Center

HB 2166 HD1 appropriates an unspecified amount of funds to the University of Hawaii to finance energy conservation and renewable energy matters to make Saunders Hall a campus and community model of sustainability and energy conservation. We emphasize that our testimony on this measure does not represent an official position of the University of Hawaii.

The Environmental Center supports the intent of this bill. We strongly support the student initiative to reduce the amount of energy used by Saunders Hall on the UH Manoa (UHM) campus. Sustainable Saunders is a wonderful model for individual behavioral modification and is a project that has the full support and enthusiasm of those students, faculty and staff who are involved. In an ideal world, they would get all the necessary funds needed for retrofits. We applaud the Legislature for its interest in Sustainable Saunders.

Saunders Hall, however, is not the largest energy user among campus buildings though it is perhaps the best documented. We would not like to see the funding of retrofits for Saunders Hall come at the expense of the repair and maintenance of other more energy intensive buildings on the UHM campus. We ask the committees to keep in mind that UHM is currently devising a strategy to address energy use on campus; a strategy that attends to the need to stick to campus priorities and the plan for tackling big ticket energy reduction measures. We further suggest that the language be made flexible to include Saunders "and other high impact energy retrofits on the Manoa campus." This flexibility will allow campus energy planners to include Saunders among other energy saving projects.

Thank you for the opportunity to comment on this bill.

testimony

From: Keith Blake [kblake@mac.com]
Sent: Thursday, March 13, 2008 11:45 PM
To: testimony
Subject: In support of House Bill no: HB 2166, HD1

In support of House Bill no: HB 2166, HD1

NOTICE OF HEARING

DATE: Friday, March 14, 2008
TIME: 2:00p.m.
PLACE: Conference Room 225

State Capitol

415 South Beretania Street

COMMITTEE ON EDUCATION
Senator Norman Sakamoto, Chair
Senator Jill N. Tokuda, Vice Chair

COMMITTEE ON ENERGY AND ENVIRONMENT
Senator Ron Menor, Chair
Senator Gary L. Hooser, Vice Chair

Aloha

My name is Keith Blake, I am an Undergraduate Architecture student at University of Hawai'i at Mānoa. I am expressing support for HB 2166. This bill will adequately supports the current and future accomplishments of Sustainable Saunders. We our in the process of picking the "low hanging fruit" of energy efficiency. Our next step is the replacement of the AC drive motors. When we conducted our initial survey to gauge occupancy satisfaction, the number one complaint was the building was too cold. Saunders Hall was designed by the premier Hawaiian architect Vladimir Ossipoff. Ossipoff also designed the state capital as well. His main focus was on designing open-air passively cooled structures. As a result, he never gave much attention to AC, in addition the AC technology in the 60's and 70's was also much less advanced. Sustainable Saunders is a data centric group, everything we do we gather extensive data. We also right thorough reports before and after any task we want to accomplish. These academic level reports are like nothing else being created, and can be great justification and data resources for other building managers. For example the State Capital was designed in the same era and by the same architect, our data could allow your building managers to easily justify upgrades that will save energy and increase your comfort.

Aloha and mahalo
Keith Blake

3/14/2008