



STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

Date: 02/12/2016
Time: 02:00 PM
Location: 309
Committee: House Education

Department: Education

Person Testifying: Kathryn S. Matayoshi, Superintendent of Education

Title of Bill: HB 2569, HD1 RELATING TO ENERGY.

Purpose of Bill: Requires DOE to: (1) Establish a goal of becoming net-zero with respect to energy use by January 1, 2035; (2) Establish microgrid pilot projects at public schools that also serve as emergency shelters; and (3) Expedite the cooling of all public school classrooms. Authorizes the issuance of general obligation bonds and the use of funds from the Green Infrastructure Loan Program to implement cooling measures in public school classrooms. (HB2569 HD1)

Department's Position:

The Department of Education (DOE) supports HB 2569 HD1. Becoming net-zero with respect to energy use by January 1, 2035 is in-line with Board of Education Policy 6710 to utilize 90% on-site renewable energy by 2040.

The passage of this bill to authorize the DOE and the Department of Budget and Finance (B&F) to borrow \$100,000,000 from the green infrastructure loan program will enable the DOE to install LED lighting and increase energy efficiency on a statewide basis. Energy efficiency is an important first step to reduce the energy usage at the schools.

Step two is to size the renewable energy systems to meet this reduced load along with any increases from air conditioning. Current regulatory options of "grid-supplied" and "self-supplied" are problematic for the DOE for two reasons. One is the size limit of 100 kilo watt photo voltaic (PV) systems only cover a portion of a school's energy needs. Secondly, the credits earned for PV energy generation cannot be carried over month to month. Solar PV systems produce the most energy in the summer months, but this is the time of lowest usage for the schools. The changes to net energy metering no longer give the DOE the ability to carry over credits. As a result, the DOE does not have a cost-effective pathway to achieving 90% clean energy without policy changes.

While the DOE agrees that thermal conditions in many classrooms need to be improved, this

must be done with careful consideration of both the up front initial costs and the costs that are to be carried into the future. Therefore funding provisions for heat abatement must also include considerations for the ongoing electricity, maintenance, and replacement costs of any systems installed, and that these costs will need to be built into the DOE's operating budget.

Thank you for the opportunity to testify on HB 2569, HD1.

DAVID Y. IGE
GOVERNOR



WESLEY K. MACHIDA
DIRECTOR

RODERICK K. BECKER
DEPUTY DIRECTOR

EMPLOYEES' RETIREMENT SYSTEM
HAWAII EMPLOYER-UNION HEALTH BENEFITS TRUST FUND
OFFICE OF THE PUBLIC DEFENDER

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE

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ADMINISTRATIVE AND RESEARCH OFFICE
BUDGET, PROGRAM PLANNING AND
MANAGEMENT DIVISION
FINANCIAL ADMINISTRATION DIVISION
OFFICE OF FEDERAL AWARDS MANAGEMENT (OFAM)

TESTIMONY BY WESLEY K. MACHIDA
DIRECTOR, DEPARTMENT OF BUDGET AND FINANCE
TO THE HOUSE COMMITTEE ON EDUCATION
ON
HOUSE BILL NO. 2569, H.D. 1

February 12, 2016
2:00 p.m.

RELATING TO ENERGY

House Bill (H.B.) No. 2569, H.D. 1, is a two-part bill that accelerates the cooling of Hawaii public classrooms, establishes energy usage goals for the Department of Education (DOE) and requires the DOE to establish at least one microgrid pilot project at public schools that serve as emergency shelters in each county.

Specifically, Part I of the bill:

- Requires the DOE to establish an energy use goal of net-zero by January 1, 2035 across all public school facilities, sets the amount and value of energy consumed by the DOE during FY 2015-16 as the benchmark for measuring progress, and requires the DOE to submit annual reports to the Legislature each session;
- Requires the DOE to establish at least one microgrid pilot project at public schools that serve as emergency shelters in each county which will provide power to operate the campus without reliance on the existing electric grid, and requires the DOE to report to the Legislature in 2018 with findings and recommendations; and
- Requires the DOE to expedite the cooling of all public school classrooms, requires DOE contractors to maximize energy efficiency and installation and operating cost

savings over the life of the project, and requires the DOE to submit progress reports to the Legislature.

Part II of the bill is identical to H.B. No. 2726 which is the Administration's emergency appropriation measure to accelerate the cooling of public school classrooms and reduce the DOE's energy costs. Part II specifically:

- Appropriates special funds from the Hawaii Green Infrastructure Special Fund to provide a loan to the DOE and the Department of Budget and Finance (B&F) for the equipment and installation of air conditioning, energy efficient lighting and other energy efficiency measures;
- Authorizes DOE and B&F to borrow from the Green Infrastructure Loan Program and authorizes DOE to expend the funds for the equipment and installation of air conditioning, heat abatement equipment, energy efficient lighting and other energy efficiency measures;
- Appropriates general obligation (G.O.) bond funds to DOE for the equipment and installation of air conditioning, heat abatement equipment, energy efficient lighting and other energy efficiency measures; and
- Appropriates general funds to B&F to make the initial loan repayment to the Green Infrastructure Loan Program.

B&F defers to the DOE on Part I of the bill. B&F strongly supports Part II of the bill which will allow DOE to more expeditiously address heat abatement concerns, while employing energy efficiency measures to offset increased energy needs. This measure will allow such projects to be implemented as quickly as possible and with least disruption to the affected schools to provide improved learning and teaching environments for public school students and teachers.

This measure proposes to primarily utilize funds loaned from the Green Infrastructure Loan Program, with G.O. bond funds also requested. Bond Counsel has also opined to us that the DOE may be a borrower of a green infrastructure loan.

Using the Green Infrastructure Loan Program funds will allow the State to make the best use of its existing resources, as these funds are currently available. Although the terms of the loan are still being worked out, the funds will be loaned to DOE and B&F at reasonable rates and those funds can be made available to DOE quickly through the requested emergency appropriations. Additionally, use of this alternative funding source will mean that these projects will not compete for the limited G.O. bond funds that must be used to address projects statewide.

B&F will provide support to this effort as co-borrower of the loan and will be responsible for the loan repayments. B&F will continue to work with DOE and the Hawaii Green Energy Infrastructure Authority, who oversees the Green Infrastructure Loan Program, to ensure proper implementation of this proposal.



**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

DAVID Y. IGE
GOVERNOR

LUIS P. SALAVERIA
DIRECTOR

MARY ALICE EVANS
DEPUTY DIRECTOR

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Statement of
LUIS P. SALAVERIA
Director
Department of Business, Economic Development, and Tourism
before the
HOUSE COMMITTEE ON EDUCATION

Friday, February 12, 2016
2:00pm
State Capitol, Conference Room 309

in consideration of
HB 2569, HD1
RELATING TO ENERGY.

Chair Takumi, Vice Chair Ohno, and Members of the Committee.

The Department of Business, Economic Development, and Tourism (DBEDT) supports HB 2569, HD1. Part I, Sections 1-4, of this measure require the Hawaii Department of Education (DOE) to: (1) establish a goal of becoming net-zero by January 1, 2035; (2) establish a minimum of one microgrid pilot project in each county at public schools that are civil defense shelters; and (3) expedite the cooling of all public school classrooms to a temperature acceptable for student learning and submit related reports to the Legislature. Part II, Sections 5-10, are recommended by Governor Ige and provides for air conditioning, heat abatement and related energy efficiency measures at public schools using, in part, a loan from the Hawaii green infrastructure loan program.

With respect to Part II of this bill, DBEDT strongly supports the deployment of cost-effective energy efficiency which helps ensure continued progress to our Energy Efficiency Portfolio Standards and the goals of the Hawaii Clean Energy Initiative. DBEDT would also like to note that use of the Green Energy Market Securitization Bonds 2014 Series A bond sale proceeds for cost-effective energy efficiency is consistent with the “green bond” designation.

In order to be consistent with the statutorily approved uses of the green infrastructure loan program, DBEDT suggests that the language on page 7, line 11, add the additional text, “for the purposes allowed under Hawaii Revised Statutes 196-65(b).” Similarly, DBEDT suggests the

following language be added to page 8, line 1, “as permissible under Hawaii Revised Statutes 196-65(b).”

With respect to Part I of HB 2569, HD1, DBEDT supports DOE’s adoption of the Net Zero goal as this is consistent with the State’s clean energy objectives. We further support the deployment of microgrid projects when they are a required infrastructure investment to further our State’s adoption of clean energy in a reliable, safe and cost-effective manner. DBEDT notes that the financial and human resources required to fulfill the duties of this bill under Section 3¹ are not fully addressed in its current budget.

DBEDT respectfully defers to the Hawaii Green Infrastructure Authority on the oversight and use of its funds; the Department of Education on the implementation of this measure; and the Department of Budget and Finance on the use of general obligation bond funds.

Thank you for the opportunity to offer these comments on HB 2569, HD1.

¹ Section 3 of this bill requires the DOE in conjunction with the Hawaii State Energy Office, amongst others, to examine the microgrid pilot projects to be deployed at each county, and identify how to maximize microgrid inclusion at all DOE public schools.



DAVID Y. IGE
GOVERNOR

TARA M. YOUNG
EXECUTIVE DIRECTOR

HAWAII GREEN INFRASTRUCTURE AUTHORITY

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Statement of
TARA YOUNG
Executive Director
Hawaii Green Infrastructure Authority
before the
HOUSE COMMITTEE ON EDUCATION

Friday, February 12, 2016
2:00 p.m.
State Capitol, Conference Room 309

in consideration of
HB 2569, HD1
RELATING TO ENERGY.

Chair Takumi, Vice Chair Ohno, and Members of the Committee.

The Hawaii Green Infrastructure Authority (HGIA) supports HB 2569, HD1. Part I, Sections 1-4 of this measure require the Hawaii Department of Education (DOE) to: (1) establish a goal of becoming net-zero by January 1, 2035; (2) establish a minimum of one microgrid pilot project in each county at public schools that are civil defense shelters; and (3) expedite the cooling of all public school classrooms to a temperature acceptable for student learning and submit related report to the Legislature. Part II, Sections 5-10 is recommended by Governor Ige and provides for air conditioning, heat abatement and related energy efficiency measures at public schools using, in part, a loan from the Hawaii green infrastructure loan program.

HGIA was originally founded with a broad mandate to accelerate adoption of renewable energy technology by deploying capital to consumers, for-profit, non-profit and public sector entities. HGIA is confident that this initiative will advance progress of our Energy Efficiency Portfolio Standards and the goals of the Hawaii Clean Energy Initiative. The application of Green Energy Market Securitization (GEMS) capital toward public sector energy efficiency improvements, as part of the overall program envisioned under HB 2569, HD1, is consistent with the HGIA's mission and charter, and will complement its portfolio of consumer and commercial

lending programs already in place. HGIA has already proposed a loan program for commercial energy efficiency improvements with many analogous elements to the program contemplated under HB 2569, HD1.

HGIA would also note that a secondary advantage of a market-driven program like GEMS is that funds are available for deployment, subject to appropriation. Given the urgency of the situation in our classrooms, we believe that rapid execution is critical. HGIA has the resources and capabilities to work with HIDOE to bring relief to Hawaii's classrooms as quickly as possible should the legislation be enacted.

In order to be consistent with the statutorily approved uses of the green infrastructure loan program, HGIA suggests that the language on page 7, line 11 add the additional text, "for the purposes allowed under Hawaii Revised Statutes 196-65(b)." Similarly, HGIA suggests the following language be added to page 8, line 1, "as permissible under Hawaii Revised Statutes 196-65(b)."

This proposed legislation is entirely aligned with HGIA's mission. HGIA will continue to work with the Department of Education on the implementation of the efficiency measures, and the Department of Budget and Finance on the use of general obligation bond funds. HGIA would like to work with stakeholders to ensure that improvements in energy efficiency at HIDOE as a result of these investments are measurable and accountable.

Thank you for the opportunity to offer testimony in support of HB 2569, HD1.

STATE OF HAWAII
DEPARTMENT OF DEFENSE

TESTIMONY ON HOUSE BILL 2569
A BILL RELATING TO ENERGY

PRESENTATION TO
THE HOUSE COMMITTEE ON COMMITTEE ON EDUCATION

BY
MAJOR GENERAL ARTHUR J. LOGAN
ADJUTANT GENERAL
AND DIRECTOR OF THE HAWAII EMERGENCY MANAGEMENT AGENCY
February 12, 2016

Chair Takumi, Vice Chair Ohno, and Members of the House Committee on Education.

I am Major General Arthur J. Logan, State Adjutant General and the Director of the Hawaii Emergency Management Agency. I am testifying in support of the intent of House Bill 2569.

The measure to provide power to operate school facilities without reliance on commercial power is a good initiative. It will reduce utility costs of the school. This could benefit the public as the selected school facilities will operate as hurricane shelters.

Thank you for allowing me to allowing me to testify in support of the intent of House Bill 2569.



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Amy Perruso
Secretary-Treasurer

Wilbert Holck
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TESTIMONY BEFORE THE HOUSE COMMITTEE ON
EDUCATION

RE: HB 2569 - RELATING TO ENERGY.

THURSDAY, FEBRUARY 4, 2016

COREY ROSENLEE, PRESIDENT
HAWAII STATE TEACHERS ASSOCIATION

Chair Takumi and Members of the Committee:

The Hawaii State Teachers Association **strongly supports HB 2569**, relating to energy, **with suggested amendments**.

It's getting hot in Hawai'i. According to the National Weather Service, our state set over 50 high temperature records this summer, with the heat and humidity lingering well into the start of fall. In our schools, children and teachers alike became ill from the blistering conditions. Kalaheo High School science teacher Micah Pregitzer recorded temperatures as high as 108 degrees inside his classroom last August, telling reporters, "You're dripping in sweat when you're just sitting there grading papers by yourself with no students in the room. You get the room packed with 36, 38, sometimes 40 students, and it just boosts that temperature up even higher."

A recent study conducted by University of California at Los Angeles researchers showed that the percentile gap between students learning in air conditioned and non-air-conditioned environments can reach as much as 17 percent on achievement tests, clearly evincing the impact of a comfortable classroom environment on student success. In a longitudinal analysis contained in "Effects of the Physical Environment on Student Learning," moreover, Glen I. Earthman of Virginia Polytechnic Institute and State University found that students between 4th and 9th grade at demographically similar schools showed increased gains in reading vocabulary, total math, problem solving, math procedures, pre-writing, and editing at schools with air conditioning, as compared with peers from non-cooled schools.



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Earthman demonstrated that the longer and more consistently students are exposed to classroom cooling, the better and more stable their performance gains tend to be. Conversely, students exposed to thermal conditioning for only short or intermittent periods of time achieved less than their peers. These findings are supported by U.S. Department of Education sponsored research, which claims that proper cooling systems lead to better attitudes toward learning, fewer disciplinary problems, and sustained achievement.

We applaud Gov. David Ige's call to cool 1,000 classrooms within the next two years. While previous department of education estimates put the cost of comprehensive air conditioning at \$1.5 billion, that figure has been fallen as investments in experiments with renewable energy technology have proven fruitful. Furthermore, in conversations with photovoltaic companies, advocates for cool schools have learned that employing off-grid DC-powered air conditioners, operated entirely from photovoltaic modules that store energy in power-saving batteries, could cost between \$15,000 to \$30,000 per classroom, a savings of approximately 70 percent from earlier departmental projections (discounting a monthly lease per-classroom payment that could be offset by the department's ongoing and all-encompassing renewable energy savings).

Yet, a number of questions remain about comprehensive classroom cooling, such as:

- What type of batteries and/or solar panels should be used for off-grid and renewable units, and how many of each? Enchanted Lakes Elementary is piloting a lead acid battery, while Kalaheo High School will be employing a salt water battery.
- How many thermal units (BTU) are needed to properly air condition classrooms of varying sizes?
- How should comprehensive heat abatement be funded, especially if the cost of a cooling system can be lowered by up to 75 percent? Administrators at Enchanted Lake Elementary believe that they can install air conditioning at a cost of \$5,000-\$6,000 per classroom, a cost at which, if scaled, could bring down the total for comprehensive statewide cooling for all 7,000 classrooms in need to approximately \$40 million.



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While HSTA supports the goals of this bill—including net-zero energy usage by 2035 for the DOE, microgrid pilot projects that may be scaled to other schools at a later date, and expedited classroom cooling using a variety of energy technologies and financial instruments—we feel that that this measure may be strengthened by combining it into one measure with the contents of HB 2726, which funds air conditioning, heat abatement, and related energy efficiency measures through a loan from the green infrastructure loan program. Additionally, we believe that a timeline for comprehensive classroom cooling should be placed in state law to continue the heat abatement initiatives launched by this bill. Thus, we urge your committee to add an additional section to the proposal to read: “**§302A-Classroom climate control and cooling.** (a) Beginning with the 2016-2017 school year, the department shall develop a plan to air condition public schools that

includes a mix of technologies, including off-grid technology, microgrid technology, photovoltaic technology, and split air conditioning units.

(b) Beginning with the 2017-2018 school year, the department shall develop a master plan to provide air conditioning to all public school classrooms that meet or exceed a temperature of eighty-five degrees Fahrenheit, including a list of priority schools to receive air conditioning by the 2018-2019 school year.

(c) No later than the 2019-2020 school year, the department shall provide air conditioning to at least fifty per cent of public school classrooms that meet or exceed a temperature of eighty-five degrees Fahrenheit.

(d) No later than the 2021-2022 school year, the department shall provide air conditioning to all public school classrooms that meet or exceed a temperature of eighty-five degrees Fahrenheit.”

School should be cool. To improve air conditioning facilities and, in turn, boost student learning, the Hawaii State Teachers Association asks your committee to **support and amend** this bill.