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TO THE SENATE COMMITTEE ON TRANSPORTATION AND ENERGY
AND
TO THE SENATE COMMITTEE ON ECONOMIC DEVELOPMENT, TOURISM,
AND TECHNOLOGY

THE TWENTY-NINTH LEGISLATURE
REGULAR SESSION OF 2017

FRIDAY, FEBRUARY 3, 2017
2:45 P.M.

TESTIMONY OF DEAN NISHINA, EXECUTIVE DIRECTOR, DIVISION OF
CONSUMER ADVOCACY, DEPARTMENT OF COMMERCE AND CONSUMER
AFFAIRS, TO THE HONORABLE LORRAINE R. INOUE AND THE HONORABLE
GLENN WAKAI, CHAIRS, AND MEMBERS OF THE COMMITTEES

SENATE BILL NO. 660 - RELATING TO ENERGY STORAGE

DESCRIPTION:

This measure proposes to create the energy storage market acceleration program and energy storage market acceleration special fund to be administered by the Hawaii Green Infrastructure Authority. This measure proposes to establish an energy storage system rebate for energy storage system providers and allows for rebates under the program to be paid out of the energy storage market acceleration special fund and appropriates the funds from the Hawaii green infrastructure special fund.

POSITION:

The Division of Consumer Advocacy ("Consumer Advocate") opposes this measure.

COMMENTS:

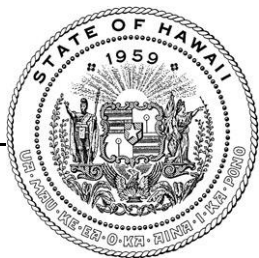
Energy storage will likely play an important role in stabilizing the electricity grid as greater amounts of intermittent renewable energy are added to the electricity generation mix. On the other hand, energy storage is not the only means by which grid stabilization can be achieved. Energy efficiency, demand response, and fast starting and ramping generating units will also be key components in accommodating intermittent resources, all possibly at lower true costs than existing energy storage technologies. Providing a rebate for any given resource can boost an uneconomic option over more cost-effective alternatives. The Consumer Advocate believes that economics and true cost, without subsidies, should drive the market selection of energy resources.

Granted, at present, energy storage technologies, such as battery storage, have exhibited declining costs in recent years. However, in spite of this recent trend, energy storage systems are still very expensive as compared to other alternatives that can be used to modernize the grid. As a result, energy storage systems are likely to be affordable to only the wealthiest consumers until further significant price decreases occur. A rebate that might encourage wealthy consumers to decrease their contributions to the grid would have the potential unintended consequence of placing a greater financial burden on less affluent consumers who must remain connected to the grid without being able to offset their load with rooftop solar photovoltaic systems and/or take advantage of energy storage systems. The Consumer Advocate, therefore, opposes this proposed rebate program that will be potentially detrimental to low income ratepayers and may unduly affect technology investment decisions that should be primarily guided by true and total technology costs.

Also, all utility ratepayers have been paying the Public Benefits Fee¹ as well as the Green Infrastructure Fee, both of which have supported the Hawaii green infrastructure special fund, through their monthly utility bills. However, by appropriating funds for the energy storage market acceleration program from the Hawaii green infrastructure special fund, only the subset of utility ratepayers who receive storage rebates will see substantial benefits from that collective investment. While arguments might be made that energy storage investments by customers can support the grid, investments made on the customer side of the meter do not provide the same overall type of support that is possible with investments made on the utility side of the grid. Furthermore, a rebate program would be contrary to the design of the Hawaii green infrastructure special fund since any rebate would not replenish the fund. As originally envisioned, GEMS beneficiaries would repay the GEMS loans such that the special fund would be replenished and repay the amounts taken from the Public Benefits Fund.

Thank you for this opportunity to testify.

¹ On electric bills, this appears as the PBF Surcharge.



DAVID Y. IGE
GOVERNOR

GWEN S. YAMAMOTO LAU
EXECUTIVE DIRECTOR

HAWAII GREEN INFRASTRUCTURE AUTHORITY

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TESTIMONY OF GWEN YAMAMOTO LAU EXECUTIVE DIRECTOR, HAWAII GREEN INFRASTRUCTURE AUTHORITY

BEFORE THE SENATE COMMITTEE ON TRANSPORTATION AND ENERGY AND THE SENATE COMMITTEE ON ECONOMIC DEVELOPMENT, TOURISM AND TECHNOLOGY

FRIDAY, FEBRUARY 3, 2017
2:45 P.M.

STATE CAPITOL, CONFERENCE ROOM 414

SENATE BILL NO. 660 RELATING TO ENERGY STORAGE

Chairs Inouye and Wakai, Vice Chairs Dela Cruz and Taniguchi, and Members of the Transportation and Energy, and Economic Development, Tourism and Technology Committees:

Thank you for the opportunity to testify on Senate Bill 660, relating to energy storage. This bill proposes to create an energy storage market acceleration program and re-purpose up to \$100.0 million of the Green Energy Market Securitization (GEMS) loan funds over the next two years into an energy storage market acceleration special fund to provide energy storage rebates. The Hawaii Green Infrastructure Authority ("Authority") opposes this bill.

Loan Program. GEMS is a green infrastructure financing program established to provide an alternative means of low-cost financing for Hawaii ratepayers, particularly those ratepayers (defined as renters, low and moderate-income individuals, and non-profit organizations) not otherwise able to access the high levels of upfront capital and/or financing necessary to acquire clean energy systems on reasonable financing terms.

As a public finance authority that uses limited public dollars to leverage private investment in clean energy, the Authority seeks to accelerate clean energy market growth while making energy cheaper and cleaner for consumers, driving job creation, and preserving taxpayer dollars. By deploying public capital efficiently through financing to maximize private investment, and lower the costs of clean energy to spark consumer demand, rather than having the industry rely on subsidies that cannot bring markets to scale, the Authority's goal is to use the GEMS funds to offer financing that attracts private investment, enabling a wider reach with each public dollar and the exponential potential for greater impacts by recycling, re-investing and re-lending that same public dollar.

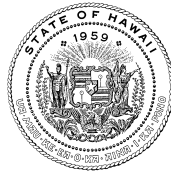
Rebates Will Not Drive the Storage Market. At a "sold out" 2016 U.S. Energy Storage Summit held last month, which brought together industry professionals representing utilities, financiers, regulators, technology innovators and storage practitioners, only 18% believed that incentives (such as rebates or tax credits) would be a growth driver for energy storage. Overwhelmingly, the majority (69%) felt that Residential Rate Reforms (time-of-use or

residential demand charges) would be the instrumental driver for the growth and expansion of the energy storage market.

Eliminate Opportunity for Future Loans. This bill proposes to re-purpose almost 70% of the GEMS Loan Fund into an energy storage rebate program. While the GEMS program has suffered setbacks, the Authority's deployment of loan funds, which began in January 2016, has gained positive momentum that is expected to continue consistently over the remainder of the current fiscal year. The Authority expects to end fiscal 2017 with up to \$60.0 million in GEMS loans funded and/or approved and committed. Re-purposing the remaining \$86.0 million into storage rebates would essentially eliminate the opportunity for future loans under the Authority's on-bill repayment program, currently under development, as well as for other noteworthy clean energy projects.

Thank you for this opportunity to testify.

DAVID Y. IGE
GOVERNOR



WESLEY K. MACHIDA
DIRECTOR

Laurel A. Johnston
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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MANAGEMENT DIVISION
FINANCIAL ADMINISTRATION DIVISION
OFFICE OF FEDERAL AWARDS MANAGEMENT (OFAM)

WRITTEN ONLY

**TESTIMONY BY WESLEY K. MACHIDA
DIRECTOR, DEPARTMENT OF BUDGET AND FINANCE
TO THE SENATE COMMITTEES ON TRANSPORTATION AND ENERGY, AND
ECONOMIC DEVELOPMENT, TOURISM, AND TECHNOLOGY
ON
SENATE BILL NO. 660**

**February 3, 2017
2:45 p.m.
Room 414**

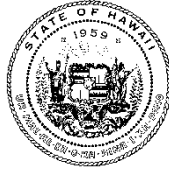
RELATING TO ENERGY STORAGE

Senate Bill. No. 660 creates the Energy Storage Market Acceleration (ESMA) Program and the ESMA Special Fund (ESMASF) to be administered by the Hawaii Green Infrastructure Authority (HGIA); establishes an energy storage system rebate for energy storage system providers; allows for rebates under the program to be paid out of the ESMASF; appropriates \$50,000,000 in FY 18 and FY 19 from the HGIA special fund to the ESMASF for the purposes of paying rebates and administering the energy storage system rebate program.

As a matter of general policy, the Department of Budget and Finance does not support the creation of any special fund which does not meet the requirements of Section 37-52.3, HRS. Special funds should: 1) serve a need as demonstrated by the purpose, scope of work and an explanation why the program cannot be implemented successfully under the general fund appropriation process; 2) reflect a clear nexus between the benefits sought and charges made upon the users or beneficiaries or a

clear link between the program and the sources of revenue; 3) provide an appropriate means of financing for the program or activity; and 4) demonstrate the capacity to be financially self-sustaining. In regards to Senate Bill No. 660, it is difficult to determine whether the proposed special fund would be self-sustaining.

DAVID Y. IGE
GOVERNOR



SARAH ALLEN
ADMINISTRATOR
MARA SMITH
ASSISTANT ADMINISTRATOR

**STATE OF HAWAII
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TESTIMONY
OF
SARAH ALLEN, ADMINISTRATOR
STATE PROCUREMENT OFFICE

TO THE SENATE COMMITTEE
ON
TRANSPORTATION AND ENERGY
AND
ECONOMIC DEVELOPMENT, TOURISM, AND TECHNOLOGY
February 3, 2017 2:45 p.m.

SB 660
RELATING TO ENERGY STORAGE

Chair Inouye, and Wakai, Vice-Chair Dela Cruz and Taniguchi, and members of the committee, thank you for the opportunity to submit testimony on SB 660.

SPO recommends that moneys used to pay for the cost to assist with administering the program be subject to HRS Chapter 103D where applicable.

The SPO supports the intent of the bill, however, SPO has concerns over the verbiage on Page 5, Line 3-6 which states: *“provided that the authority may contract with a third party for services to assist with administering the energy storage market acceleration fund and such procurement of services shall be exempt from the requirements of chapter 103D.”*

The Hawaii Public Procurement Code (code) is the single source of public procurement policy to be applied equally and uniformly, while providing fairness, open competition, a level playing field, government disclosure and transparency in the procurement and contracting process vital to good government.

Public procurement's primary objective is to provide everyone equal opportunity to compete for government contracts, to prevent favoritism, collusion, or fraud in awarding of contracts. To legislate that any one entity should be exempt from compliance with both HRS chapter 103D and 103F conveys a sense of disproportionate equality in the law's application.

Exemptions to the code mean that all procurements made with taxpayer monies will not have the same oversight, accountability and transparency requirements mandated by those procurements processes provided in the code. It means that there is no requirement for due diligence, proper planning or consideration of protections for the state in contract terms and conditions, nor are there any set requirements to conduct cost and price analysis and market research or post-award contract management. As such, Agencies can choose whether to compete any procurement or go directly to one contractor. As a result, leveraging economies of scale and cost savings efficiencies found in the consistent application of the procurement code are lost. It also means Agencies are not required to adhere to the code's procurement integrity laws.

The National Association of State Procurement Officials state: "Businesses suffer when there is inconsistency in procurement laws and regulations. Complex, arcane procurement rules of numerous jurisdictions discourage competition by raising the costs to businesses to understand and comply with these different rules. Higher costs are recovered through the prices offered by a smaller pool of competitors, resulting in unnecessarily inflated costs to state and local governments."

When public bodies or programs, are removed from the state's procurement code it results in the harm described above. As these entities create their own procurement rules, businesses are forced to track their various practices.

Relieving some programs from some laws by exempting or excluding them from compliance with a common set of legal requirements creates an imbalance wherein the competitive environment becomes different among the various jurisdictions and the entire procurement process becomes less efficient and costlier for the state and vendors.

Thank you.

TESTIMONY OF RANDY IWASE
CHAIR, PUBLIC UTILITIES COMMISSION
STATE OF HAWAII
TO THE
SENATE COMMITTEES ON
TRANSPORTATION AND ENERGY
&
ECONOMIC DEVELOPMENT, TOURISM, AND TECHNOLOGY

February 3, 2017
2:45 p.m.

MEASURE: S.B. No. 660

TITLE: RELATING TO ENERGY STORAGE

Chair Inouye, Chair Wakai, and Members of the Committees:

DESCRIPTION:

This measure would create the Energy Storage Market Acceleration Program and Energy Storage Market Acceleration Special Fund to be administered by the Hawaii Green Infrastructure Authority. This measure proposes to establish an energy storage system rebate for energy storage system providers and allows for rebates under the program to be paid out of the Energy Storage Market Acceleration Special Fund and appropriates the funds from the Hawaii Green Infrastructure Special Fund.

POSITION:

The Public Utilities Commission (“Commission”) offers the following comments for the Committees’ consideration.

COMMENTS:

The Commission defers to the Department of Business, Economic Development, and Tourism (“DBEDT”) with respect to the proposal to establish a rebate program for energy storage systems.

However, the Commission has concerns that the Hawaii Green Infrastructure Special Fund was intended and designed to fund a loan program, not a rebate program.

Designating monies from the Hawaii Green Infrastructure Special Fund for a rebate rather than a loan is inconsistent with the purpose and design of the Hawaii Green Infrastructure Special Fund and would result in a lack of funds for the repayment of what is owed on these loans. This could lead to unintended consequences, including increased surcharges and limiting the State's ability to achieve the statutorily required energy efficiency portfolio standards, pursuant to Section 269-96.

Thank you for the opportunity to testify on this measure.



Hawaii Solar Energy Association

Serving Hawaii Since 1977

**TESTIMONY OF THE HAWAII SOLAR ENERGY ASSOCIATION
IN REGARD TO SB 660, RELATING TO RENEWABLE ENERGY
BEFORE THE
SENATE COMMITTEE ON TRANSPORTATION AND ENERGY
ON
FRIDAY, FEBRUARY 3rd, 2017**

Chair Inouye, Vice-Chair Dela Cruz, and members of the committee, my name is Hajime Alabanza and I represent the Hawaii Solar Energy Association, Inc. (HSEA)

HSEA **supports** SB 660. This measure seeks to broaden the scope of the Green Energy Market Securitization (GEMS) program by allowing the GEMS authority to accelerate the energy storage market by strategically deploying dormant funds.

Introduction and General Comments:

As Hawaii transitions away from traditional grid-tied PV systems without energy storage to a market that requires the use of energy storage, the need to maintain a sustainable and low cost market for all residents of the state has never been more imperative.

Currently, there are no state incentives for battery storage systems. Customers who want to lower their bill as well as assist the state's goals to a 100% Renewable Portfolio Standard are now met with a higher cost to do so. Although energy storage costs continue and are projected to decline at an exponential rate¹, Hawai'i's energy policy is ahead of the curve. The PUC's October 2015 decision to end the Net Energy program, combined with the Customer Grid Supply cap being met in late 2016, means that only one viable program (Customer Self Supply) exists for residential customers to connect to the grid. Although the PUC, utility, and several key stakeholders are negotiating a longer-term strategy for residential PV, this will most likely require energy storage in some form.

The legislature has stated several times that its goal is to help make PV available to all people in the state, especially those at the middle and lower income levels. It has also implemented programs such as Community Based Renewable Energy to meet this goals. Unfortunately, requiring an additional expensive component to residential PV systems as a means to interconnect to the grid without providing an appropriate incentive will only result in two things: those fortunate enough to afford it who do not already have a system may grid defect due to cost, or low to middle income people who cannot afford it will opt out and continue paying high energy bills.

This trend is already evident in data regarding the solar industry in Hawai'i. Since the beginning of the CSS tariff a total of 563 projects have been proposed or approved. For

¹ See Deutsche Bank Solar Report attached



Hawaii Solar Energy Association
Serving Hawaii Since 1977

reference, over 3,000 CGS systems were proposed or approved in half that time. As the market slows down, local people and local business, not huge national companies or wealthy snow birds, will suffer. Without a program like SB 660 is proposing, what kind of market is likely to be left by the time battery prices have become more affordable? It is absolutely imperative that the state provide an incentive to customers if it hopes to have a market that will benefit all people, regardless of income.

Specific comments:

In order to expedite the process by which the GEMS authority can deploy funds for the proposed rebate program, overarching approval by the Public Utilities Commission should be removed. This control is detailed in the Hawaii Revised Statutes, §196-64.

Although the Public Utilities Commission is a competent and professional regulatory arm of the state of Hawai'i, removing them from the burden of having to approve every deployment of funds by the GEMS authority will allow it more time to focus on its primary mission. Additionally, having GEMS seeks approval from the PUC on every deployment of funds it seeks to make over complicates the matter and ultimately slows the progress towards a 100% RPS by 2045.

We urge the committee to pass SB 660.

Thank you for the opportunity to testify.



Before the Senate Committee on Transportation and Energy & the Senate Committee on Economic Development, Tourism, and Technology
Friday, February 3, 2017, 2:45 p.m., Room 414
SB 660: Relating to Energy Storage

Aloha Chairs Inouye & Wakai, Vice Chairs Dela Cruz and Taniguchi, and members of the Committees,

On behalf of the Distributed Energy Resources Council of Hawaii (“DER Council”), I would like to testify in strong support for SB 660 which establishes an energy storage market acceleration fund to be administered as a rebate by the Hawaii Green Infrastructure Authority (“HGIA” aka “GEMS”).

The DER Council is a nonprofit trade organization formed to assist with the development of distributed energy resources and smart grid technologies which will support an affordable, reliable, and sustainable energy supply for Hawaii.

The investment in energy storage is seen as a crucial next step towards the development of a resilient and reliable electrical grid which can accommodate more renewable energy resources and help Hawaii achieve its clean energy goals. Specifically, energy storage contributes to grid modernization in a variety of ways. Energy storage can be utilized to shift peak load and supply capacity, provide many valuable ancillary services such as fast frequency response and regulating reserves¹, delay or offset the need for grid upgrades, and provide energy back-up during emergencies. Distributed energy storage also provides the greatest number of benefits in comparison to other storage technologies, and should be seen as a key driver in Hawaii’s clean energy development.²

In addition, distributed energy storage puts private capital to work through customer investments which provide benefits to all rate payers. Energy storage also helps keep local dollars at home by reducing the need for fossil fuels, reducing federal tax liability through the federal investment tax credit, and by supporting an industry that provides good local green jobs that cannot be outsourced.

¹ See Docket No. 2015-0412 Demand Response Pilot Project currently underway.

² See “The Economics of Battery Energy Storage,” Rocky Mountain Institute October 2015 at 6 where distributed behind the meter battery storage provides 13 grid services—the greatest number of grid services when compared to energy storage located on the distribution and transmission system.

The establishment of a rebate program under the GEMS authority has several advantages. First, the rebate is designed to be allocated over several installation types from residential, to commercial, multi-family, and utility scale projects connected to Community Solar installations, with a special focus on underserved customers. This means that all types of energy storage installations will be given a fair chance to utilize the rebate, so long as they are market ready and available.

Next, a rebate established under GEMS would put some of the dormant funds to good use by helping to accelerate the adoption of renewable energy for all ratepayers. The proposed rebate would reduce the payback period on an average sized residential energy storage system nearly in half, which would help spur adoption and encourage customers to invest. Also, a GEMS rebate would support existing and new clean energy tariffs such as the interim time of use program and the upcoming demand response tariffs which are designed to provide ancillary services to the grid and will be open for enrollment the end of 2017.

Finally, SB 660 ensures that the control of the monies is kept within the GEMS program and can be used in combination with GEMS loan products in order to offer a timely loan product which can be administered immediately. At this point, only about 2% of the GEMS funds have been utilized even though the program was established by the legislature in 2013. SB 660 makes use of existing funds in a measured and predictable way.

However, the DER Council recommends a smaller allocation of \$50,000,000 to be used over a several year period. We believe that this amount would be enough to jump start the industry and provide customers with more choices while still leaving the bulk of the GEMS funds intact for other loan opportunities. A carefully constructed program would be able to deploy \$50 million over 3-5 years and provide the needed boost to the industry.

Distributed energy generation and storage stands to take Hawaii to a new era where customer invested systems are aggregated and utilized by the utility as a resource for all ratepayers. We ask that the legislature support this next stage in Hawaii's development by voting yes on SB 660.

Thank you for the opportunity to testify

Leslie Cole-Brooks
Executive Director
Distributed Energy Resources Council of Hawaii

TAX FOUNDATION OF HAWAII

126 Queen Street, Suite 304

Honolulu, Hawaii 96813 Tel. 536-4587

SUBJECT: MISCELLANEOUS, Create Energy Storage Special Fund, Raid GEMS

BILL NUMBER: SB 660

INTRODUCED BY: INOUYE, NISHIHARA, RUDERMAN, Dela Cruz, K. Kahele, Riviere

EXECUTIVE SUMMARY: Proposes a rebate program for energy storage systems. Funds the program by raiding the GEMS fund, which may well be in breach of the bond indentures signed when the initial \$150 million for the GEMS fund was raised on the bond market.

BRIEF SUMMARY: Adds a new section to HRS chapter 196 to establish an energy storage market acceleration program, to be administered by the existing green infrastructure authority.

Each person that purchases and installs in this State an eligible energy storage system may apply to the GEMS authority, within twelve months of the eligible energy storage system being first placed into service, to claim a one-time rebate, based on whether the system is residential or commercial, whether the system is connected to an eligible community-based renewable energy project, and based on the federal AGI if the application is for a residential system. The maximum rebate is \$10,000 for most residential or commercial systems, and \$250,000 for one connected to a community-based renewable energy project.

The program applies to eligible energy storage systems that are installed and first placed in service after July 31, 2017.

Appropriates \$50 million from the Hawaii green infrastructure special fund to the energy storage market acceleration fund. Provides that the latter shall be used to pay rebates under this program and DBEDT's administrative costs for operating the program.

Makes conforming amendments.

EFFECTIVE DATE: July 1, 2017.

STAFF COMMENTS: This measure is proposed to encourage taxpayers to purchase residential energy storage systems by allowing taxpayers to claim a rebate based on the storage capacity of a system.

This approach is preferable to an income tax credit, which previous versions of this measure used. First, the tax system is the device that raises the money that lawmakers like to spend. Using the tax system to shape social policy merely throws the revenue raising system out of whack, making the system less than reliable as it is very difficult to determine how many taxpayers will avail themselves of the credit and in what amount. Second, tax credits are nothing more than the expenditure of public dollars, but out the back door. If, in fact, these dollars were subject to the appropriation process, would taxpayers be as kind about the expenditure of these funds when students are roasting in our schools, or when there isn't enough money for social

service programs? Utilizing tax credits other than to alleviate an excessive tax burden cannot be justified and is of a questionable benefit relative to the cost for all taxpayers. Furthermore, a tax credit would require changes to tax forms and instructions, reprogramming, staff training, and other costs that could be massive in amount compared to the loss in revenue from the credit.

Getting the money for this program by raiding the Green Infrastructure Special Fund, however, is quite a different issue.

This fund concerns GEMS, which stands for Green Energy Market Securitization, a program adopted by our state government in Act 211, SLH 2013. It is codified in Hawaii Revised Statutes chapter 196, part IV.

The idea behind GEMS is that the state wanted to facilitate the buildout of “clean energy infrastructure,” which was seen as a necessary step to reaching a goal of 70% clean energy by 2030. (This was under Gov. Abercrombie’s administration, before the current goal of 100% clean energy by 2045 was signed by Gov. Ige.) GEMS is a financing program that provides low-cost capital to finance solar photovoltaic systems and other clean energy improvements for those who may otherwise have difficulty obtaining financing for these projects. Low-credit homeowners and renters, as well as nonprofits, are among those who qualify for project financing through GEMS. The “securitization” part refers to how this money was going to be raised. The plan was for the State to raise \$150 million on the bond market. Those dollars would then be loaned to these individuals and business entities so they could purchase renewable energy systems or other energy efficiency paraphernalia.

Remember that “raising the money in the bond market” means borrowing it. That money needs to be paid back, with interest. That’s where ordinary folks who get an electric bill every month come in. Buried in the electric bill is a “Green Energy Infrastructure Fee” collected by the utility and passed on to DBEDT. For residential customers, the fee was \$1.29 per month from December 2014 through June 2015. It went up to \$1.42 per month through December 2015, and is anticipated to be \$1.30 per month for the first half of 2016. Commercial customers, of course, pay more.

This fee pays for principal, interest, and other charges. According to “Revenue Requirements Certificates” filed by DBEDT with the PUC in Docket 2014-0134, principal and interest on the bonds exceeds \$6.5 million every six months, and there are other financing costs, most of which were expended in the beginning to set up and market the bond issue. Official filings with the Public Utilities Commission in Docket 2014-0135, indicate how much was actually deployed, and we understand that the actual deployment is dwarfed by the administrative costs necessary to set up the program and maintain it to date.

Apparently, GEMS is an attractive target for raiding because most of the \$150 million raised in the bond issue is still there. But some things need to be remembered: First, it’s a financing program, not a grant program. Second, it’s been established for specific purposes.

The first point, that it is a financing program rather than a grant program, means that if we are using GEMS money we are supposed to be borrowing it. Principal and interest on the GEMS

bonds were and are being paid by a surcharge on utility bills. If we use GEMS money, we need to pay it back in the future or we need to admit that the surcharge is an additional tax on the ratepayers.

The second point is that the financing program is for specific purposes, namely to fund green infrastructure costs, meaning clean energy technology like solar and wind; demand response technology; and energy use reduction and demand side management infrastructure, which infrastructure owners will then pay back. This is where the disconnect occurs: a rebate isn't paid back. Investors who bought bonds might not be happy about a significant deployment of the capital for purposes other than those mentioned in the GEMS statute as it existed when the bonds were sold. At a minimum, we had better make sure that we are loaning the money at institutional market rates, and are not breaching covenants in the bond indenture.

Digested 1/30/2017



Before the Senate Committee on Transportation and Energy and Committee on Economic Development, Tourism, and Technology

February 3, 2017

SB 660: Relating to Energy Storage

Aloha Chairs Inouye, Wakai, and members of the Committees:

On behalf of Stem, Inc. (Stem), I would like to testify in strong support for SB 660. The bill will modify the Hawaii Green Infrastructure Loan program and direct funds towards the creation of the Energy Storage Market Acceleration Program. The premise of the bill is to utilize existing state funding to support customer adoption of grid-interactive energy storage systems. This new program will provide solutions for both the electricity grid and the installer business community via the new, high-growth sector of energy storage.

Stem is a leading provider of innovative energy solutions that combine powerful learning software with advanced energy storage. Stem is currently partnered with Hawaiian Electric Company ("HECO") on a 1MW renewables integration pilot to help the utility reach the State's lofty renewable energy goals.

Stem was the first company to successfully complete HECO's current Standard Interconnection Process with a grid-connected, advanced energy storage system. Stem is also working with the Hawaiian Electric Companies on a data transparency / data availability project for commercial customers of all Hawaiian Electric Companies, including providing a "super smart meter" for three years to all public schools in the Companies' service territories.

I. SB 660 will encourage private investment to upgrade the grid

This bill provides a strong market signal that the State of Hawaii is committed to supporting customer adoption of clean energy. Stem strongly believes that many consumers and businesses will be looking to adopt energy storage over the next few years. These systems can help reduce energy costs and provide other benefits, such as resiliency, back-up power, grid capacity and ancillary services. SB 660 will help consumers bring down the upfront costs of adopting these systems, while leveraging private capital to finance the remaining costs, ensuring all ratepayers in Hawaii have access to energy storage.

This bill will motivate those considering energy storage systems to invest in grid-interactive systems rather than fully off-grid systems. The State will see the deployment of private capital on energy storage systems with an emphasis on interconnected systems that can support the grid. This means that private capital is also being leveraged to upgrade the grid – rather than rate payers carrying the entire burden of those upgrades.



II. SB 660 supports Hawaii's long term energy and climate goals

With an RPS goal of 100% by 2045, it is clear that Hawaii's electrical grid is going to need technologies that support the integration and reliability of intermittent renewable energy resources. Also, that state has some of the highest penetrations of roof-top solar anywhere in the U.S., which means that consumers are now playing a direct role in the continued stability of the grid. This bill will help consumers and businesses adopt grid-connected energy storage systems that, when aggregated, can act as a "virtual power plant" resource for grid operators. These systems can play a vital role in solving the "duck curve", and other related issues that come from high penetrations of variable renewables.

The value of supporting the adoption of distributed storage is that these systems will be located at customer's facility at the end of the distribution feeder line where they can best be utilized to relieve distribution congestion. With distributed storage's ability to provide benefits to the customer, as well as to the grid, it lowers the overall cost of maintaining the grid which supports reducing costs for all ratepayers.

III. SB 660 will provide economic development opportunities

This bill not only supports the development of a local workforce focused on the deployment of stand-alone energy storage, it also provides the solar industry the opportunity to expand into a new line of work: installing storage systems along with rooftop solar systems. This can be a key driver to developing a grid resource that provides resilience and security, serves the needs of a changing electricity grid, and creates local Hawaiian jobs.

Thank you for the opportunity to provide this testimony.

Tad Glauthier
VP of Hawaii Operations
Stem, Inc.



February 2, 2017

Senator Lorraine R. Inouye, Chair
Senator Donovan M. Dela Cruz, Vice Chair
Committee on Transportation and Energy

Senator Glenn Wakai, Chair
Senator Brian T. Taniguchi, Vice Chair
Committee on Economic Development, Tourism, and Technology

Re: Testimony on SB 660 (Relating to Energy Storage)
Friday, Feb. 3, 2017 @2:45 p.m.
Conference Room 414, State Capitol

Amber Kinetics is a California based company that has developed the first utility-scale flywheel capable of providing safe, cost-effective, four hour discharge duration energy storage to supply both capacity and ancillary services to help meet Hawaii's renewable energy goals.

Hawaii is leading the nation with its goal of 100 percent renewable energy for electricity by 2045. We commend and support the legislature's commitment to advancing this goal through initiatives that support renewable energy technology.

Amber Kinetics' technology can store renewable energy for optimal dispatch, replace or defer fossil fuel peaking generation or transmission, avoid distribution upgrades, and increase the overall reliability of the grid.

Amber's flywheel storage system acts as a mechanical battery. The storage system helps make renewable energy, such as solar, which changes its output according to the weather, be more consistent.

This mechanical form of energy storage also has a number of distinct advantages relative to other storage technologies such as chemical batteries. These include unlimited cycling, no degradation, no fire risk, and no hazardous material storage or disposal needs. Our company has been awarded a 20 MW/80 MWh Energy Services Agreement with PG&E for a project in California, and has commercial units operating in the Philippines.

Amber welcomes the opportunity to expand the use of our technology in Hawaii to help the

A REVOLUTION IN ENERGY STORAGE

32920 Alvarado-Niles Rd., Ste. 250, Union City, CA 94587

AmberKinetics.com



State achieve its laudable renewable energy goals. In 2016, Amber and HECO signed an agreement to install an Amber flywheel at Campbell Industrial Park as a demonstration project. The flywheel is expected to be in full operation this year. Previously, we were selected for grant funding by the Hawaii-based Energy Excelsator, which is helping fund the HECO demonstration.

Amber generally supports rebate and tax credit programs that increase the availability of energy storage. The integration of energy storage technology is essential for Hawaii to meet its renewable energy goals. Providing for energy storage system rebates would incentivize growth of an essential component of the green energy infrastructure.

Amber supports the concept of an energy storage rebate program, but has serious concerns about SB 660. The definition of "eligible energy storage system" in SB 660 is both vague and narrow.

SB 660 defines "eligible energy storage system", in part, as "any identifiable facility, equipment, or apparatus that: (1) Receives electricity generated from another source or other sources, stores that electricity within a battery"

Instead of using the phrase "within a battery", we recommend the definition be amended to make clear that an eligible energy storage system includes flywheel energy storage by being changed to "within a chemical battery or a mechanical battery, such as flywheel energy storage".

A more inclusive definition of energy storage systems will promote diversity in the energy storage market and more sustainable and efficient energy storage technologies.

Thank you for the opportunity to comment on this bill.

Sincerely,

A handwritten signature in black ink, appearing to read 'Bill Barnes', is written over a light blue horizontal line.

Bill Barnes
Managing Director, Development



**SENATE COMMITTEE ON TRANSPORTATION & ENERGY
SENATE COMMITTEE ON ECONOMIC DEVELOPMENT, TOURISM, AND TECHNOLOGY**

Feb. 3, 2016, 2:45 P.M.
Room 414
(Testimony is 2 pages long)

COMMENTS ON SB 660

Aloha Chair Inouye, Chair Wakai, , Vice Chair Dela Cruz, Vice Chair Taniguchi,

Blue Planet Foundation strongly supports accelerating the market for energy storage. The development of a robust energy storage industry to serve local residents and businesses is a key component for strengthening the security of Hawaii's energy industry, and minimizing its environmental impact. But we must oppose this bill as drafted, because it threatens to derail the Green Energy Market Securitization (GEMS) loan program.

GEMS has been developed as a way to fill gaps and lower the cost of clean energy financing. Moreover, the program has been pointed squarely at addressing the needs of low-income and moderate-income energy customers. **To date, more than 90% of the energy upgrades financed by GEMS have been provided for the benefit of low-income and middle-income consumers.**¹

The development of GEMS has not been an easy process, as the program, and its governing regulatory framework, have been developed, tested, and improved. Thankfully, the program has turned a corner, and the regulatory process is becoming more efficient. Similarly, revisions to the GEMS program offerings² have spurred increased interest, with **more than \$100 million in projects in the pipeline**, and an anticipated \$60 million in clean energy financing to be deployed this year.³

On December 23, 2016, the GEMS authority approved using up to \$10 million to finance solar hot water projects on Molokai. This type of program has a transformative power to reshape the energy landscape on Molokai, by reducing energy demand, lowering energy costs, and providing more consumer options. This can only happen if GEMS retains its ability to finance such projects.

¹ This information was provided at the Hawaii Energy Policy Forum's legislative briefing in January 2017.

² Such as a lower interest rate, which is fixed regardless of the consumer's credit score. *Id.*

³ *Id.*

Generally, ensuring that GEMS continues to grow and fulfill its powerful promise should mean expanding the options for consumers to use GEMS financing, for key solutions such as energy efficiency, energy storage, and solar power. To this end, a number of new consumer options are under development, or have already been filed with the PUC. For example, in July 2016 the program filed a notification with the PUC regarding its solar + energy storage loan product. However, that program was suspended by the PUC in August 2016.

In its most recent quarterly report, the GEMS program noted that the ability to finance energy storage is “critical” to fulfilling its mission. We agree. We also share the program’s hope that its prior program notification regarding energy storage (and other notifications, such as for energy efficiency) will soon be able to proceed.

For these reasons, we support providing legislative policy guidance that GEMS may—and should—use its financing to accelerate energy storage.

However, we must remember that **GEMS is designed as a loan program**. When funds are deployed, the expectation is that they will be repaid by the consumer, and thus can be rolled over into a new loan. This expands the pool of consumers that can benefit from GEMS. This concept is fundamental to the original legislative intent of the program, and it is critical to its long-term success in helping low-income and middle-income customers. In contrast, a rebate program would not be repaid, and once the funds are expended GEMS could no longer serve its target.

For these reasons, we suggest the following alterations to the bill, if it is to be passed:

1. **Authorize below-cost energy storage financing.** Rather than requiring GEMS to issue rebates that would quickly eat away at the funds available for GEMS financing, the program could be authorized to issue below-cost financing for approved energy storage projects. That financing could help to support the energy storage market, while preserving a larger portion of the GEMS funds that can be rolled over into additional loans and enable more and more consumers to benefit.
2. **Expand to cover all forms of energy storage.** The current draft limits eligible energy storage devices to batteries. Other forms of energy storage (e.g. mechanical energy storage, thermal energy storage) can be equally valuable to the grid, and should also be encouraged. We suggest replacing the phrase “within a battery” with the phrase “within a chemical, mechanical, or thermal energy storage device.”

Thank you for this opportunity to provide comments.

From: mailinglist@capitol.hawaii.gov
Sent: Monday, January 30, 2017 7:22 PM
To: TRE Testimony
Cc: mmchau@hawaii.edu
Subject: *Submitted testimony for SB660 on Feb 3, 2017 14:45PM*

SB660

Submitted on: 1/30/2017

Testimony for TRE/ETT on Feb 3, 2017 14:45PM in Conference Room 414

Submitted By	Organization	Testifier Position	Present at Hearing
Marian M. Chau	Individual	Support	No

Comments:

Please note that testimony submitted less than 24 hours prior to the hearing, improperly identified, or directed to the incorrect office, may not be posted online or distributed to the committee prior to the convening of the public hearing.

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From: mailinglist@capitol.hawaii.gov
Sent: Monday, January 30, 2017 4:23 PM
To: TRE Testimony
Cc: mendezj@hawaii.edu
Subject: *Submitted testimony for SB660 on Feb 3, 2017 14:45PM*

SB660

Submitted on: 1/30/2017

Testimony for TRE/ETT on Feb 3, 2017 14:45PM in Conference Room 414

Submitted By	Organization	Testifier Position	Present at Hearing
Javier Mendez-Alvarez	Individual	Support	No

Comments:

Please note that testimony submitted less than 24 hours prior to the hearing, improperly identified, or directed to the incorrect office, may not be posted online or distributed to the committee prior to the convening of the public hearing.

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To: The Honorable Lorraine Inouye, Chair
and members of the Senate Committee on Transportation and Energy

Date: February 3, 2017

Time: 2:45 P.M.

Place Conference Room 414, State Capitol

From: Mark Ida
Resident and Voter

Position: **SUPPORT**

Re: S.B. 660, Relating to Energy Storage.

In order to reach the goal of 100% renewable energy by 2045, this bill should be passed. Given the move by the utility to no longer allow energy exported by customers, batteries have become a necessity when installing photovoltaic.

Unless the State plans to allow solar panels on the slopes of Diamond Head and on the shores of Waikiki Beach, we must depend on the rooftops of our residents to meet our energy goals. Permits are at an all time low due to the hard line stance from the utility. A tax credit for batteries will set us on a path to meet our goals and keep the Legislature's promise to Hawaii and the world.

Although many early adopters of new technologies come from a higher economic class, as seen with photovoltaic and electric cars, this group of buyers provides an essential pathway, enabling the masses to adopt these technologies in the near term. As have photovoltaic and electric cars. Did I say that already?

Thank you for the opportunity to provide comments.

SENATE COMMITTEE ON TRANSPORTATION AND ENERGY

February 3, 2017, 2:45pm

Room 414

TESTIMONY IN SUPPORT OF SB 660

Aloha Committee members:

My name is James Strange and I am a law student at the University of Hawaii, Richardson School of Law, founding member of the Energy Justice Program, and industry specialist regarding renewable energy law and policy. SB 660 deserves serious consideration because the adoption of energy storage will be a vital component in achieving the state's 100% renewable energy goals by 2045.

Last year the Public Utilities Commission (PUC) capped the net energy metering program (NEM) and grid supply programs.¹ The cap of these programs means that Hawaii consumers can no longer receive credits for excess energy exported to the grid from new PV systems. This greatly diminishes the value of new PV systems, because most electricity in Hawaii is consumed in the evening when the sun isn't shining.² Energy storage devices return this lost value by storing the excess energy in a battery for when the consumer needs it most. Without this capability, PV systems are far less capable, and the state's movement towards for renewable infrastructure is likely to further diminish.³

Energy storage devices are therefore vital for the continued health and growth of Hawaii's renewable energy industry. Unfortunately, the GEMS program, Hawaii's \$150 million-dollar fund intended to provide PV systems for Hawaii's underserved, cannot currently fund energy storage systems. This will not change without legislative directive because the PUC has so far denied GEMS' requests to fund energy storage with little answer or guidance.⁴

This bill would force the PUC to allocate GEMS funds towards consumer energy storage devices and ensure Hawaii stays at the forefront of the renewable energy industry. This bill would also help ensure Hawaii consumers can continue to invest in infrastructure that diminishes reliance on fossil fuels and results in lower electric rates.

Thank you for your time and consideration,

James Strange

¹ See "Decision and Order No. 33258," filed in Docket No. 2014-0192 on October 12, 2015, at p. 118, 126.

² See Annual Report, Program Year 2014, Hawaii Energy, December 11, 2015. p. 25, available at https://hawaiienergy.com/images/resources/ProgramYear2014_AnnualReport.pdf.

³ See Robert Walton, "*Hawaii Solar Sector on the 'brink of collapse' as employment dips 42%*," Utility Dive, Oct. 7, 2016, <http://www.utilitydive.com/news/hawaii-solar-sector-on-the-brink-of-collapse-as-employment-dips-42/427831/>.

⁴ See Order No. 33866 filed in Docket No. 2014-0135 on August 12, 2016.

Dear Honorable legislators,

Oh, what a difference one simple digit makes! While I am steadfastly opposed to SB 650, I am 100% in favor of SB 660, which as I understand it provides an incentive for adoption of battery storage systems, which are in everyone's best interest. Battery storage will ease the burden on our outdated electrical grid, eliminate any problems associated with exporting power into the grid, and provide people with more choice and more control over their own power usage.

Please help make Hawaii an example for the rest of the world to look to - we have the ability to make a real difference and help usher in an era of clean renewable energy that could literally help save the world. Rarely does an opportunity like this come along - let's encourage it and show the rest of the world what "pono" really means.

I hope you will SUPPORT SB 660. Thanks for your consideration.

With sincere aloha,

Larry Lieberman

Sir/Madam,

I am writing to you today in opposition to SB 650. Elimination of the solar tax credit would be very disruptive to the Hawaii economy and significantly slow Hawaii's clean energy progress. Each island has more distributed photovoltaic capacity installed than all other renewable generation resources combined. New photovoltaic systems coupled with battery energy storage will further accelerate the Hawaii's clean energy goals and at the same time save everyone money by offsetting the need for traditional utility investments. If we are to succeed in achieving our 2045 goal, solar must continue to lead the way, as HECO surely will not as the history shows.

Elimination of the Hawaii Solar Tax credit is very short sighted and will be very costly for Hawaii,

Steven Rymsha
16 Hea Hea Pl
Wailuku, HI
96793

Aloha,

SB 660 is a fantastic way to revitalize the GEMS program and breathe new life into it while at the same time encouraging a strong renewable energy future for Hawaii. I can't imagine a better way to make use of these funds. The state and the nation is on the cusp of a revolution and supporting energy storage is crucial to creating a bright future for generations to come.

I implore you to vote yes on SB660. It will continue to build on the strong energy industry that Hawaii has built and will enable more of our community to benefit from the funds that were so long ago allocated for the same purpose.

Mahalo for all your hard work,

Alistair Rokstad