



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

**NEIL ABERCROMBIE**  
GOVERNOR

**RICHARD C. LIM**  
DIRECTOR

**MARY ALICE EVANS**  
DEPUTY DIRECTOR

No. 1 Capitol District Building, 250 South Hotel Street, 5th Floor, Honolulu, Hawaii 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804  
Web site: [www.hawaii.gov/dbedt](http://www.hawaii.gov/dbedt)

Telephone: (808) 586-2355  
Fax: (808) 586-2377

**AMENDED 2-4-13**

Statement of  
**RICHARD C. LIM**  
Director

Department of Business, Economic Development, and Tourism  
before the

**HOUSE COMMITTEE ON ENERGY AND ENVIRONMENTAL PROTECTION**

Tuesday, February 5, 2013

8:30 a.m.

State Capitol, Conference Room 325

in consideration of

**HB 810**

**RELATING TO ELECTRIC SYSTEMS.**

Chair Lee, Vice Chair Thielen, and Members of the Committee.

The Department of Business, Economic Development & Tourism (DBEDT) supports HB 810 to establish a policy for the State of Hawaii to support the implementation of advanced grid modernization technology.

Enabling the Public Utilities Commission to consider the value of improving electrical generation, transmission, and distribution systems and infrastructure may facilitate more robust solutions to provide reliable power and enable the grid to accept increased levels of renewable energy.

DBEDT respectfully defers to the Public Utilities Commission on the development and administration of this regulatory measure.

Thank you for the opportunity to testify on HB 810.

TESTIMONY OF HERMINA MORITA  
CHAIR, PUBLIC UTILITIES COMMISSION  
DEPARTMENT OF BUDGET AND FINANCE  
STATE OF HAWAII  
TO THE  
HOUSE COMMITTEE ON ENERGY & ENVIRONMENTAL PROTECTION

FEBRUARY 5, 2013  
8:30 a.m.

**MEASURE:** H.B. No. 810

**TITLE:** Relating to Electric Systems

Chair Lee and Members of the Committee:

**DESCRIPTION:**

H.B. No. 810 directs the Public Utilities Commission to consider in its deliberations the value of employing advanced grid modernization technology (“AGMT”) to improve and enhance the State’s electrical systems and infrastructure. This bill also defines “advanced grid modernization technology” to encompass a host of current and developing technologies and methods to ensure Hawaii’s grids continue to respond to evolving energy needs.

**POSITION:**

The Commission strongly supports H.B. No. 810 and would like to offer the following comments.

**COMMENTS:**

H.B. No. 810 provides valuable legislative guidance and support to the Commission in evaluating the various technologies and methodologies employed by utilities to improve the reliable and efficient operations of Hawaii’s electrical grids. AGMT, when appropriately applied, can provide essential grid support capabilities that can drastically improve grid communications, bolster electric system reliability, and support operational efficiencies. Without such technologies and methodologies the State may be hindered in developing the infrastructure needed to reach its clean energy mandates. The Hawaii Clean Energy Initiative Road Map for 2011 has recognized this point and has noted that

smart grid technologies, as included within AGMT, are “highly critical” early stage technologies needed to enable the State to meet its Renewable Portfolio Standards requirements.<sup>1</sup>

The functional characteristics of AGMT, as described in this measure, clarifies the policy of the State with respect to grid infrastructure improvements and the implementation of useful and cost-effective available electrical system technologies and processes to give guidance to the Commission in performing its regulatory deliberations and related functions.

Thank you for the opportunity to testify on this measure.

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<sup>1</sup>See HCEI Road Map 2011; Braccio and Finch, Booz Allen Hamilton, Inc.; prepared by the National Renewable Energy Laboratory of the United State Department of Energy; August 2011; page 8.



NEIL ABERCROMBIE  
GOVERNOR

SHAN S. TSUTSUI  
LT. GOVERNOR

STATE OF HAWAII  
OFFICE OF THE DIRECTOR  
DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS

335 MERCHANT STREET, ROOM 310

P.O. Box 541

HONOLULU, HAWAII 96809

Phone Number: 586-2850

Fax Number: 586-2856

[www.hawaii.gov/dcca](http://www.hawaii.gov/dcca)

KEALI' I S. LOPEZ  
DIRECTOR

JO ANN UCHIDA TAKEUCHI  
DEPUTY DIRECTOR

TO THE HOUSE COMMITTEE  
ON ENERGY AND ENVIRONMENTAL PROTECTION

THE TWENTY-SEVENTH LEGISLATURE  
REGULAR SESSION OF 2013

TUESDAY, FEBRUARY 5, 2013  
8:30 A.M.

TESTIMONY OF JEFFREY T. ONO, EXECUTIVE DIRECTOR, DIVISION OF  
CONSUMER ADVOCACY, DEPARTMENT OF COMMERCE AND CONSUMER  
AFFAIRS, TO THE HONORABLE CHRIS LEE, CHAIR,  
AND MEMBERS OF THE COMMITTEE

HOUSE BILL NO. 810 - RELATING TO ELECTRIC SYSTEMS.

**DESCRIPTION:**

This measure proposes to authorize the State of Hawaii Public Utilities Commission ("PUC") to consider the value of implementing advanced grid modernization technologies throughout the State.

**POSITION:**

The Division of Consumer Advocacy ("Consumer Advocate ") strongly supports the measure and offers the following comments.

**COMMENTS:**

In achieving the State's ambitious goals under the Hawaii Clean Energy Initiative, the State's various electric utilities will require the installation of many new pieces of hardware, software, and instrumentation that modernizes and improves the systems

House Bill No. 810  
House Committee on Energy and Environmental Protection  
Tuesday, February 5, 2013, 8:30 a.m.  
Page 2

that deliver electric utility service to customers throughout the State. In assistance of that end, H.B. No. 810 proposes to allow the PUC to consider the value that various equipment, facilities, processes, products, and systems will have on improving the reliability, resiliency, flexibility, and/or efficiency of the State's electrical generation and delivery infrastructures affected by the higher and higher contributions of renewable energy resources to the State's various electric utility systems. As noted by the PUC in its testimony to this Committee, H.B. No. 810 clarifies the policy of the State with respect to grid infrastructure improvements and gives the PUC legislative guidance as to its duties and deliberations concerning the implementation of advanced grid modernization technologies throughout the State. As part of the Administration's legislative package for the Twenty-Seventh Legislature of the State of Hawaii, the Consumer Advocate strongly supports the passage of this measure and asks that the Committee approve this bill for consideration by the entire Legislature.

Thank you for this opportunity to testify.

# **Testimony before the House Committee On Energy & Environmental Protection**

**By Marc M. Matsuura  
Manager  
Construction and Maintenance Department  
Hawaiian Electric Company, Inc.**

**Tuesday, February 5, 2013  
8:30 am, Conference Room 325**

**House Bill 810 – Relating to Electric Systems**

Chair Lee, Vice Chair Thielen, and Members of the Committee:

My name is Marc Matsuura and I am testifying on behalf of the Hawaiian Electric Company and its subsidiaries, Hawaii Electric Light Company and Maui Electric Company in support of HB 810. The purpose of the bill is to establish a policy for the State for the implementation of advanced grid modernization technology. We are in support this measure.

The requirements of Hawaii's island grid systems are changing with the addition of renewable energy resources and new types of electric loads. Many of these changes are occurring at the edge of the grid at customers' homes and on the distribution system in the form of distributed generation and electric vehicles. As the grid evolves, greater information and control will be needed at the locations of these distributed energy resources to manage the grid more efficiently and effectively. In addition, customers are more technologically sophisticated now than in the past and have greater expectations for quality and service. As such, the utilities will need to work towards developing the functional characteristics that improve the operational capability of the Hawaii systems that are mentioned in the bill.

Thank you for the opportunity to testify on this matter.



# Sierra Club Hawai'i Chapter

PO Box 2577, Honolulu, HI 96803  
808.538.6616 hawaii.chapter@sierraclub.org

## HOUSE COMMITTEE ON ENERGY AND ENVIRONMENT

February 5, 2013, 8:30 A.M.  
(Testimony is 1 page long)

### TESTIMONY IN SUPPORT OF HB 810 WITH A PROPOSED AMENDMENT

Aloha Chair Lee and members of the Committee:

The Sierra Club, Hawaii Chapter, with over 10,000 dues paying members and supporters statewide, respectfully **supports** HB 810. The bill is a smart policy signal for the Public Utilities Commission to build a modern grid infrastructure that can compliment renewable energy production by making better use of fluctuating power sources and advance energy efficiency through the use of smart meters.

A smart grid allows a utility to communicate with many devices plugged into the grid, as well as power sources. Each device on the network can be given sensors to gather data (power meters, voltage sensors, fault detectors, etc.), plus two-way digital communication between the device in the field and the utility's network operations center. A key feature of the smart grid is automation technology that lets the utility adjust and control each individual device or millions of devices from a central location.

The Sierra Club strongly believes the success of our aggressive clean energy goals will only be accomplished with significant improvements to our existing grid. We recommend adding language indicating the PUC can increase the rate of return on these types of investments so as to provide an even stronger policy signal that we prefer our utilities to invest their limited capitol on improving the grid, rather than investing in more power production facilities. Perhaps a new line after line 22 on page 2, stating "The commission may consider a higher rate of return if necessary to ensure investment in advanced grid modernization technology."

Mahalo for the opportunity to testify.



**Hawaii Solar Energy Association**  
*Serving Hawaii Since 1977*

Before the House Committee on Energy and Environmental Protection  
February 5, 2013, 8:30 AM, Conference Room 325  
HB 810: RELATING TO ELECTRICAL SYSTEMS

Aloha Chair Lee, Vice-Chair Thielen, and members of the House Committee on Energy and Environmental Protection,

On behalf of the Hawaii Solar Energy Association (HSEA), I would like to testify **in strong support for HB 810**, which authorizes the Public Utilities Commission to consider the value of implementing advance grid modernization technology in the state.

Solar is key to our Green Energy Future

As we all know, Hawaii is dangerously dependent upon imported fossil fuels, and the cost and uncertainty of fossil fuels will only increase. Recent reports have indicated that oil may reach \$180/barrel or more by 2020, and scientists have found that climate change is occurring more quickly than generally believed, with the most current data showing that the Antarctic is warming three times the predicted rate. Transforming our electrical grid to a green energy infrastructure will bring both added security and stability to our state's economy, and also contribute to an overall reduction of greenhouse gasses for everyone.

The grid is the weak link

Hawaii has made tremendous progress in meeting its clean energy goals. In its 2011 Renewable Portfolio Standard Status Report, the Utility reports that installs from net energy metering alone were 29.7 MW, more than double 11.5 MW from 2010. 2012 will show an even larger gain. However, installation of non-utility scale PV on many circuits, especially on Maui, has become difficult as the number of renewables has reached the 15% saturation limit. Once this happens, an expensive study must be performed by the utility customer. And even then, installation is not guaranteed, in spite of relaxed standards in some areas implemented just this last year. Utility scale projects have similar concerns. Simply put, in order to move ahead with our clean energy goals, we need an updated electrical grid that can easily accept the latest technology. This bill would give a mandate to the PUC to put the question of grid upgrades front and center.

Thank you for the opportunity to testify.

Leslie Cole-Brooks  
Executive Director  
Hawaii Solar Energy Association





76 North King Street, Suite 203  
Honolulu, Hawai`i 96817  
Phone: 533-3454; E: [henry.lifeoftheland@gmail.com](mailto:henry.lifeoftheland@gmail.com)

COMMITTEE ON ENERGY & ENVIRONMENTAL PROTECTION  
Rep. Chris Lee, Chair  
Rep. Cynthia Thielen, Vice Chair

DATE: Tuesday, February 05, 2013  
TIME: 8:30 AM  
PLACE: Conference Room 325

HB 810 ELECTRIC SYSTEMS

**STRONGLY OPPOSE**

Aloha Chair Lee, Vice Chair Thielen and Members of the Committee

My name is Henry Curtis and I am the Executive Director of Life of the Land, Hawai`i's own energy, environmental and community action group advocating for the people and `aina for over four decades. Our mission is to preserve and protect the life of the land through sound energy and land use policies and to promote open government through research, education, advocacy and, when necessary, litigation.

The opening sentence of this bill is misleading and false.

*"Hawaii's progress toward the widespread use of renewable energy requires modernized electrical infrastructure supported by nimble, robust technology capable of servicing the evolving needs of the grid."*

Consider the following two examples

(1) The grid has only three types of systems: central station wind and solar systems combined with pumped storage hydro (PSH) units. Each

PSH unit has two sets of pipes between a lower reservoir and an upper reservoir so they can simultaneously use intermittent renewable energy resources (solar, wind) to pump water uphill while dropping water through the second pipe to a turbine which would produce reliable energy at a constant rate.

(2) There is no grid. Every customer has maximized energy efficiency, installed renewable energy systems, and has lithium batteries for their cell phone, personal computer and photovoltaic panels.

In both cases the entire state's electricity needs are powered by renewable energy, in one case using a simple grid and in the other case no grid.

The first sentence of HB 810 should read, *"the utility will maximize their profits by adding costly infrastructure that may or may not lead to greater renewable energy penetration but definitely will do little to support community values or provide ratepayer relief."*

Smart Grids may be the preferred solution for those who have come to believe that overhauling the 19<sup>th</sup> century electric grid is preferable to any other alternative, that the utility knows best, and that issues of reliability and cost should be left to others.

### Simplicity versus Complexity

The difference between simple models and complex models is that complex models require experts, consultants, hired guns, patents and confidential business information.

Complexity requires consumer confidence that legislators, regulators and bureaucrats will do the right thing as large vested interests throw huge amounts of cash, awards, prizes, trips and gifts aimed at getting acceptance of their preferred solutions.

Some would even say that complex models can not be understood by the layperson who just gets in the way of those who know what they are doing and are getting handsomely paid for it.

Simple models are driven by community values. They are community friendly and utilize participatory democracy. Thus they are less

efficient to implement but in the long-run are more desirable from a societal perspective.

Could a complex system be better than a simple solution.

Yes, but not because its proponents say so based on the thickness of their pocketbook.

Rather, the choice of solutions must be based on *community values and involve* scientifically sound and data driven analysis.

For example, take the smart meter as a gatekeeper.

Upstream gatekeeper: all customer supply and demand data is sent upwards to a huge utility-run computer that measures instantaneous operational changes to the grid on a 1/1000<sup>th</sup> of a second basis, to maximize grid efficiency.

versus

Downstream gatekeeper: Red, yellow and green lights appear on cell phones letting customers know when there is adequate/inadequate energy on the grid. People are able to use apps to turn off systems when demand is high. Each color has a different cost per kWhr to the customer. Sort of like cell phones having cheaper weekend rates.

It is intuitively obvious that experts and utility executives prefer the upstream gatekeeper because that will maximize their financial interests.

But without any analysis it may turn out to be true or false. The answer may differ based on the island or the type of customer.

For example, large commercial banks processing billions of dollars in checks, may believe that a grid offering 99.9999% reliability is not reliable enough, and may have opted to have installed on-site back-up systems. Some major hospitals in Hawai`i have done just that.

The use of the term "Advanced grid modernization technology" implies that those who favor other solutions are the backwater luddites who oppose progress and oppose the inter-island grid.

It is interesting that the term "Advanced grid modernization technology" does NOT reference

community values

lower electric rates

lower environmental impacts

lower cultural impacts, or

lower greenhouse gas emission impacts.

### **Public Utilities Commission re the Smart Grid**

On October 20, 2008 the Hawaii Clean Energy Agreement was signed by the HECO Companies, the Consumer Advocate and the State. The parties agreed "in principal that a 'smart grid' is a critical component of Hawaii's energy future."<sup>1</sup>

On December 1, 2008 HECO, MECO and HELCO filed an Application (Docket No. 2008-0303) with the Commission for approval of the Advanced Metering Infrastructure (AMI) Project.

The Commission granted intervener status to Life of the Land (LOL), the Hawaii Renewable Energy Alliance (HREA) and the Hawaii Solar Energy Association (HSEA).

On July 26, 2010 the Commission dismissed the application, without prejudice, and closed the docket: "In the commission's view, any new AMI or preferably AMI/smart grid application should include or be preceded by an overall smart grid plan or proposal filed with the commission."

On November 25, 2009 HECO received Stimulus Funds to develop a "Green Smart Grid ("GSG") Roadmap," and hired Accenture to do the

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<sup>1</sup> HCEI Energy Agreement p. 31

work.<sup>2</sup> "The Smart Grid Roadmap spans 20 years and defines short-term initiatives as well as medium-term and long-term capabilities. An individualized roadmap for each operating company as well as a consolidated blueprint is presented."<sup>3</sup>

HECO's Web site notes further that: "The Hawaiian Electric companies have been involved in smart grid pilot projects [.] The company is now developing a comprehensive Smart Grid Roadmap."<sup>4</sup>

We are waiting for the Smart Grid Roadmaps

The HELCO 2013 Rate Case is the first and only docket to address the "Smart Grid" as envisioned in the HCEI Energy Agreement. It does so by including the key components of the Smart Grid concept, while minimizing the use of the term "Smart Grid." Included in the rate case are studies and implementation of Smart Grid concepts.

The Public Utilities Commission admitted Life of the Land into the HELCO Rate Case.

### Communications

According to the HECO Clean Energy Status Report (2011), "The Hawaiian Electric Companies have developed a Smart Grid roadmap to identify opportunities over time for Smart Grid technologies [.] One such assessment that is currently in progress is the development of a telecommunications master plan to support the development of the Smart Grid as well as other corporate telecommunications needs."<sup>5</sup>

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<sup>2</sup> <http://www.accenture.com/us-en/cQmpanv/PaQes/index.aspx>

<sup>3</sup> HECO Voluminous Hawaiian Electric Response to CA-IR-271, HECO 2011 Rate Case, Docket No. 2010-0080, HECO RIR re CA-IR-271, dated May 12, 2011. Attachment B, p. 1

<sup>4</sup> Hawaiian Electric Website: Hawaii's Energy Future  
[http://www.hawaiisenergyfuture.com/arttcles/Smart\\_Grid.html](http://www.hawaiisenergyfuture.com/arttcles/Smart_Grid.html)

<sup>5</sup> Clean Energy Status Report: (1) MECO Rate Case Application, Docket 2011-0092: MECO-214, p. 15, dated June 30, 2011; (2) HELCO Rate Case Application, Docket 2012-0099: HELCO-210, p. 18, dated May 31, 2012. The last sentence has the same meaning but is said in a different word ordering in the HELCO filing.

## Despite HECO response, customer complaints continue (Aug 16, 2012)

*"A Hawaii News Now investigation into problems with Hawaiian Electric Company's new billing system and the resulting backlog of complaint calls to customer service has prompted a flood of new horror stories, and many people are worried that they will lose power for failing to reach HECO with their billing concerns. ...*

*"We would call and stay on line for an hour each, until hopefully one of us would eventually get through. We'd pass the phone to each other so we could all resolve our issues at the same time but that never ended up working out."*

*Stories of panicked customers with disconnection notices and claims of being over-charged continue to fill our phone lines, website and Facebook page. One viewer even posted a photo of her electricity bill for almost 19-hundred dollars when it's usually around 450-dollars a month."<sup>6</sup>*

## One final thought

A Google search of the term "Advanced grid modernization technology" found only references to the 2013 Hawai`i State Legislature.

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<sup>6</sup> <http://www.hawaiinewsnow.com/story/19300976/despite-heco-response-customer-complaints-continue>



**HOUSE COMMITTEE ON ENERGY & ENVIRONMENTAL PROTECTION**

February 5, 2013, 8:30 A.M.

Room 325

**(Testimony is 1 page long)**

**TESTIMONY IN STRONG SUPPORT OF HB 810**

Chair Lee and members of the Energy & Environmental Protection Committee:

The Blue Planet Foundation strongly supports HB 810, authorizing the Public Utilities Commission to consider the value of implementing advanced grid modernization (“smart grid”) technology in the State. This measure will provide policy guidance to the Commission to help them weigh the often competing objectives in their deliberations. We believe enactment of HB 810 will accelerate Hawaii’s transition to a clean energy future.

Hawaii’s 1890s style power grid is a barrier to the clean energy revolution. Currently, electricity flows in one direction: from the power plant to your home or business. This is much like television in the 1960s. When you turned on the TV, you watched whatever one of the three networks was broadcasting. You couldn’t store the broadcast and you couldn’t contribute your own content. That’s roughly how our power grid operates today.

To take advantage of distributed and diversified sources like solar, wind, and wave, the grid has to become smarter and have the capacity to store electricity. It will resemble today’s Internet—where distributed servers both send and receive packets of information—and less like yesterday’s commercial television. Such a self-aware, robust smart grid will instantaneously adjust to shifts in wind strength or cloud cover over solar, balancing energy loads on the other side of the wire and drawing on stored energy when needed.

House Bill 810 requires that the Commission consider the value of modernizing Hawaii’s electricity grid to accommodate more clean energy sources. Blue Planet fully supports this policy.

Thank you for this opportunity to testify.